

One is Not Born a Personality

A biographical history of
Soviet Psychology, including
“The Best Path to Man”

Written by Karl Levitin.

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Preface By Mike Cole

Preface To the Soviet Edition

Levitin's book on psychologists is entitled *One Is Not Born a Personality*. Over the centuries, philosophers, psychologists and educators have been trying to prove that seemingly obvious proposition. All of them have been faced with misapprehension on the part of laymen, scientists and even politicians. Psychological concepts are, in essence and origin, understandable and familiar to everyone practically from early childhood. A child is admonished and, less often, praised for its attention, memory, skills, attitudes, willpower, etc. Almost every adult prides himself on being a psychologist.

In psychology more than in any other science, quotidian and scientific concepts are interwoven. This breeds the illusion that psychology is simple and understandable to all. Psychologists have more reason than any other scientists to be wary of journalists making forays into their domain, in particular into the "holy of holies" which has to do not only with experiments and theoretical problems but also with the personalities of the scientists themselves. To me and many of my colleagues, most of the psychologists portrayed in this book are not just scientists. They are teachers' teachers, our own teachers, colleagues and friends – in short the people nearest and dearest to us. Some of them are still around; one can learn from and argue with them, while others remain only in their works and in our memories. So I opened this book by Karl Levitin in a somewhat guarded mood, but was very grateful to the author upon reading it.

I remember once Leontyev told me he was thinking of writing a book about Vygotsky. He was sure no one could do a better job than he. That may well have been so, but he never got around to writing it. Luria also wanted to write about Vygotsky, but he didn't manage to do it. I would like to write a book about my psychologist father, Petr Zinchenko, about how he worked, fought during the war, and taught. I wanted to write a book about Gorbov, one of my teachers and a close friend. As it was, I had to confine myself to delivering a funeral lecture on that remarkable man at Moscow University.

Perhaps none of this is accidental. As they say, the cobbler's children go without shoes, and the psychologist often finds it hard to write about people.

This may be partly because to write about people who are near to you, you must be able to look at them from a distance, which is not easy. But perhaps what is most needed is a special ability to see a person in his wholeness and complexity, whereas we psychologists arrive at such an understanding only by the arduous path of analysis, schematisation and studying the “anatomy of the spiritual organism.” So psychologists must grudgingly admit that writers and journalists have an unquestioned advantage over them on that score.

My main object in writing this preface is to attest to the truth of everything written in this book. I can do so with some confidence because I literally grew up in the midst of the Kharkov circle of psychologists and knew many of them personally before I ever heard the word psychology. Later the same people taught me psychology in Moscow. And I must admit that the eyewitness accounts and legends, as it were, which are handed down from generation to generation, recorded here coincide with my own impressions and knowledge. Levitin has done a thorough job of collecting these oral accounts and studying the literature (and manuscripts) of those days to recapture the remarkable atmosphere of the early years of Soviet psychology. It was actually a kind of Russian *avant-garde* movement in psychology which followed ten years after the *avant-garde* period in art. Most readers abroad think that both these instances of the *avant-garde* shared the same fate. Like any view, this one is also erroneous in many ways yet it pinpoints something real. It is true that the discoveries of Soviet psychology were very significant, and it is just as true that only now are people abroad beginning to assess them objectively and correctly. But this assessment is a slow process, and then, too, the assessments are tinged with incredulity. How could a science have been formed and ideas decades ahead of their time been generated in such difficult circumstances, and in the face of biased criticism at that? True enough. Conditions were hard, there were plenty of annoying distractions, hunger and unfair judgments; there was scientific and ideological struggle. But there was also the joy, the exhilaration of pioneers. These people loved their country, their people and their science. They were genuine patriots; they thought nothing of fame and were not concerned with their reputations as thinkers.

They were eager to lay the foundations of a Marxist psychology. And they did not want it served to them on a silver platter – the root of many debates at the time – they wanted to build it themselves. Psychology developed not from theory but from practice in the young Soviet land.

Educational and child psychology and the study of the handicapped (Vygotsky), the treatment and study of identical twins (Luria), the concept-forming process in schoolchildren (Leontyev), the psychological aspects of the illustration of fairytales and the development of the child's mentality (Zaporozhets), the way children master the simplest tools (Galperin), the development and shaping of memory in schoolchildren (Zinchenko) – this is but a random selection of the list of problems tackled by the team led by Vygotsky and, following his death, by Leontyev and Luria.

For them, theory was a means and not an end. They were all anxious to make their contributions to the great transformations taking place in the Soviet state, and they succeeded. They did everything to ensure that psychology would contribute as much as possible to these transformations and take a worthy place among the sciences. Speaking of practice, Vygotsky wrote: “The stone which the builders have neglected should be made the keystone.” And this proved to be quite a valid approach: it led to a theory. Now, listening to the members of the Kharkov school, and Vygotsky's colleagues in Moscow and Leningrad, recalling the atmosphere of those years, one wishes one could have worked with them at the time.

They worked hard and with great *élan*. Making a name for themselves, furthering their careers, and getting published were the farthest thoughts from their minds. By a quirk of fate, Luria began his “career” by organising a journal in his undergraduate years, and was subsequently appointed a member of the editorial board by Academician Vladimir Bekhterev. Vygotsky got his start publishing the works of Ilya Ehrenburg. Ten years later, they had produced such a large body of work that it would have been impossible to publish it all, they had a hard time finding a firm that would tackle the job. But science has a way of providing its own motivation and being its own reward, so they worked fervently for the sake of the future. They believed, as talented Soviet writer Mikhail Bulgakov would later say, that “manuscripts don't burn.” And their manuscripts didn't. They survived even the horrors of the Nazi invasion and are still being published.

Some psychologists have not been quite so forthcoming in publishing their works. New times bring new songs. Perhaps the older scholars prefer that their fondest creations of years past remain unpublished for fear they might seem naive and unsophisticated. The truth is, however, that first scientific works, like first love, have a unique charm and a freshness of vision verging on revelation. This may be why early works tell us

more about the personalities of their authors. I am glad the author of this book has quoted from the early works of the leading Soviet psychologists.

And now a few words about controversies and criticism. The psychological school of Vygotsky described in this book has never had any fear of either. Moreover, the adherents of the school criticised each other with a severity that would baffle an outsider. But they always did so with passionate conviction. I think that sets a good example for relationships within a school of thought, an example many present-day mentors and pupils would do well to emulate. Like the author of the book, my memories tend to focus on the school of Vygotsky, Luria and Leontyev although this book is not only about their immediate pupils and colleagues. Vygotsky's school had a far-reaching influence on Soviet psychology and attracted many followers. For example, Meshcheryakov was a pupil of Luria, Zaporozhets and Sokolyansky. I think it would be appropriate to note the main features of that scientific school which is now widely known as the psychological theory of activity.

1. The development of the psychological theory of activity in this country was not a passing fad but bade its time. The first unpublished work of Luria raises a voice of youthful protest against metaphysical psychology.

2. The psychological theory of activity is the achievement of the whole of Soviet psychological science. Vygotsky's school shares the credit for it with some other psychological trends. Ananiev, Basov, Rubinstein, Smirnov, Teplov, Uznadze, and others come to mind, but Rubinstein's contribution was by far the most important.

3. The psychological theory of activity critically assimilated the achievements and experience of psychology the world over.

4. The psychological theory of activity has solid historical and philosophical precedents and traditions which were expounded, with a view to psychological tasks, by psychologists themselves, notably by Vygotsky, Davydov, Leontyev and Rubinstein, as well as by many Soviet philosophers and methodologists, including Dienkov, Kopnin, Lektorsky, Ogurtsov, Shvyrev, and Yudin, to name but a few.

5. The psychological theory of activity draws on a solid general scientific tradition, the assimilation of which is an important condition for its further development. One might mention the theory of that remarkable evolutionist Alexei Severtsev, who regarded psychology as a powerful

factor in evolution. Then there are the achievements in physiology of the brain, study of the sense organs, and the appendages contained in the works of Sechenov, Sherrington, Vvedensky, Ukhtomsky, Pavlov, and Bernstein. Zaporozhets, Luria and many others proceeded from their initial studies.

6. The psychological theory of activity has deep roots and traditions in the humanities and the arts. These traditions are only partially elaborated in the works of Vygotsky, El'konin and Leontyev. Further work in that direction is highly topical. Psychologists have yet to master the scientific legacy of Mikhail Bakhtin, Paul Valeri, Alexei Losev and many others.

7. The psychological theory of activity in its original and present form is intimately linked to applied psychology. There is a constant exchange of ideas, methods and results between the theory and its practical application. In a number of fields of psychology this theory has become highly operative in the true sense of that word.

8. The main points of the psychological theory of activity have been reflected in virtually all fields of psychology, so quite naturally it is often described as general psychological theory.

9. The psychological theory of activity is not yet complete in every detail. Like any living theory, it is still developing and does not fear contradictions.

Elaborating the above theses would take a book as large as Levitin's. I feel, however, that the author approaches his subject matter in an interesting way and gives superb illustrations in many cases even if he does not always argue the point to the end.

I wish I could say more about the work of Vygotsky and his pupils and associates all of which has had a great impact on the development of psychology throughout the world. By and large, however, Levitin's book succeeds in getting that message across. And anyway, I think it is best to allow the reader to judge for himself.

I know that a preface is supposed to describe the book and say something about its author, but I found myself writing about something else. And perhaps it is for the best as I am sure that the reader will be able to judge the work on its own merits. The important thing for me is that this exhaustive study has evoked pleasant memories about people who were close to me and has provoked some thoughts. I hope that readers abroad will welcome this excellent opportunity to get an inside look at what has

been done by the psychologists in our country. Working as a scientist is always a hard way of earning a living. Scientists deal in words, but they understand the aphorism of that remarkable Russian poet Osip Mandelstam who said that the word can be flesh and bread can be joy.

Professor Vladimir Zinchenko,
Moscow State University

From the Author

The fate of this book was finally sealed in the autumn of 1979 in Tbilisi where an international symposium on unconscious psychological activity was being held. Several hundred scientists from all over the world, including many psychologists from this country, had gathered in the capital of Soviet Georgia. Some very familiar and very necessary voices were conspicuously absent from among the multilingual chorus. In the late seventies, Soviet psychology suffered several irreparable losses, including the deaths of Luria and Leontyev. These two thinkers differed from each other, yet they were united by their association with Lev Vygotsky, the man who directed their scientific efforts. Pupils and colleagues of Vygotsky, they themselves had fostered a following, and some of their followers were present at the international forum in Tbilisi. They were joined by the invisible threads of a common theoretical foundation and a general style of psychological thought coming from the same school, that of Vygotsky, perhaps the most promising one in contemporary psychology.

It so happened that I was able to observe the activity of many of these people over a period of years. During all this time, tape-recordings, notebooks with sketches, and pieces that were almost complete were accumulating in my files waiting to be put together into a book. But for that to happen, two things were necessary: an initial impetus and documented information on the life and thoughts of Lev Vygotsky before the memorable year of 1924 when that obscure teacher from Gomel became, almost overnight, one of the major Soviet psychologists.

Well, the stimulus was provided by the symposium because the themes it discussed were related to those which were debated in the early “Vygotsky” years, and in the three fat volumes of reports presented at the symposium, I found several dozen references to the works of Vygotsky. A further stimulus was my talk with Roman Jakobson who shared his reminiscences with me about Alexander Luria, the most loyal, consistent, devoted, and – although it may seem an odd word to use – the most tender pupil of Lev Vygotsky.

In Tbilisi, I ran into a man who had been a friend of Vygotsky in his little known youth in Gomel. Let me explain. In Tbilisi, I met a doctor of medicine by the name of Feigenberg who presented an interesting paper on the principle of complementarity in psychology. His mother was from

Gomel and, as it turned out, her family and the Vygotsky's were very friendly. When we got back to Moscow, Feigenberg arranged for me to meet his mother's brother, Semyon Dobkin, who was a friend of Vygotsky when they were young. Dobkin's reminiscences filled in the gap and enabled me to connect everything I had heard, read and thought about Vygotsky and his school in recent years into a coherent picture. And so this book saw the light of day.

As the reader will see, the bulk of it consists of my records of the meetings and talks with its protagonists, the leading Soviet psychologists. Their kindness and sympathy were invaluable to me in collecting and sorting out the material on the work of this interesting and productive school in Soviet psychology, the school of Vygotsky. To my deepest regret, most of them are no longer with us, so I cannot address my sincere thanks to them personally.

The contribution of the editors in making the book clear and coherent could only be appreciated by someone who had seen the original manuscripts. I am grateful to them for their tremendous efforts. I benefited enormously from the advice of Professor Petrovsky and the critical advice of Professor Zinchenko. I received great help in working on the book from Yelena Luria, the daughter of the late Professor Luria who has preserved and put her father's archives in order.

I chose the kind of narration for this book that will enable me to tell, if only briefly, about many Soviet psychologists who were in one way or another involved in the emergence and development of the Vygotsky school. At the same time, I have been careful to take a retrospective view of things and to keep my perspective. This is the reason for the five chapters which are very different in form and content, but which I hope add up to a coherent picture. I have treated the archive materials, transcripts of talks and publications accurately. But don't expect to find literal or direct quotations in this book: after all, the spirit is almost always more important than the letter.

Karl Levitin

Moscow, 1980

Chapter I. Lev Vygotsky.

A Biographical Profile

The mechanism of cognition of oneself (self-consciousness) and cognition of others is identical. Traditional theories for understanding the psyche of others proceed either from direct claims that it is unknowable or from a hypothesis of one kind or another which seeks to build a plausible mechanism which is essentially the same in the theory of sensation and in the theory of analogies: we learn about others inasmuch as we learn about ourselves; by learning the anger of others I reproduce my own.

Actually, the reverse is nearer the truth. We are conscious of ourselves because we are conscious of others, and by the same token as we are conscious of others, because we are to ourselves what others are to us.

Lev Vygotsky

Lev Vygotsky, an outstanding Soviet psychologist, was born on 5 November 1896 in the town of Orsha not far from Minsk, the capital of Byelorussia. He finished the gymnasium in the city of Gomel in 1913 and entered Moscow University. In 1917, after receiving a law degree and taking a course in psychology and philosophy at the People's University of Shanyavsky, he returned to Gomel to teach literature and psychology at the school there. He also conducted classes at a drama studio and often delivered lectures on literature and science. At about the same time, he organised a psychology laboratory at the Gomel Teacher's College. There he delivered a course of lectures which later became a book called *Educational Psychology*.

Vygotsky began his work in Moscow in 1924, first at the Institute of Psychology and then at the Institute for the Study of the Handicapped. During the same period, he headed the department for the education of mentally and physically handicapped children at Narkompros (People's Commissariat for Education) and taught at the Krupskaya Academy of Communist Education and at the Institute of Education in Leningrad. During that period, Vygotsky gathered many young researchers working

around him in the field of psychology and the study of the handicapped. Most of these followers are prominent Soviet scientists today.

All in all, Vygotsky wrote 200 scientific works. His major published works include: *Consciousness As a Behavioural Problem* (1925), *Educational Psychology* (1926), *The Development of Voluntary Attention in Childhood* (1929), *Essays in the History of Behaviour* (jointly with Luria) (1930), *Thought and Speech* (1934), *Selected Psychological Studies* (1956), *The Development of Higher Psychic Functions* (1960), *The Psychology of Art* (1965; second enlarged edition, 1968). The Soviet Pedagogika Publishing House is currently preparing a six-volume collection of Vygotsky's works.



In his later years, Vygotsky was interested in the medical aspects of his psychological investigations. This led him, already a full professor, to enter the Medical Institute as an undergraduate first in Moscow and then in Kharkov. During his visits to Kharkov to take his undergraduate examinations, Vygotsky simultaneously delivered a series of lectures on psychology at the Ukrainian Psychoneurological Academy. Shortly before his death, Vygotsky was offered the position of head of the Psychology Department at the National Institute of Experimental Medicine.

Vygotsky died of tuberculosis on 11 June 1934 at the age of thirty-seven.

The life of Lev Vygotsky was not too eventful but it was full of inner content. His searches were adventures of the spirit.

Now from a distance of more than half a century his short life appears somewhat different. A perceptive psychologist, an accomplished student of the arts, a talented teacher, a great connoisseur of literature, a brilliant stylist, a penetrating researcher in the study of the handicapped, an imaginative experimentalist, a thoughtful theorist – certainly he was all these things. But above all he was a thinker.

“Lev Vygotsky undoubtedly occupies an exceptional place in the history of Soviet psychology. It was he who laid the foundations for its further development and determined its present state in many respects ... There is hardly an area of psychology to which Vygotsky did not make an important contribution. The psychology of art, general psychology, developmental psychology, and psychology of education, the study of handicapped children, patho- and neuropsychology – he infused new energy into all these areas.” Thus wrote the journal *Voprosy Psikhologii* (Questions of Psychology) in 1976 in an article marking Vygotsky’s 80th anniversary.

It is difficult to believe that these words refer to a person who devoted a little over ten years of his life to psychology, and that after hard years darkened by a debilitating disease which eventually took his life. Then there were the everyday difficulties which distracted him from his work and thoughts, and he had to cope with the lack of attentiveness and misunderstandings of others which sapped his strength and hurt him. Moreover, problems of psychology was not his sole interest. Other passions, sometimes far removed, also fell within his intellectual purview.

“I don’t think there was any period in his life when he did not think or write about the theatre,” I was told by Vygotsky’s sister Zinaida, who was quite attached to him and felt both an emotional and an intellectual kinship. She was well aware of his concerns, joys and sorrows. “Literature, especially his favourite poetry, always gave him much solace in life and always engaged his attention,” recalls Semyon Dobkin, a friend of his childhood and youth.

Georgy Schedrovitsky, a prominent Soviet methodologist with a special interest in the history of psychology, believes that the strength of Vygotsky was precisely this: he was not a professional psychologist and so from the start was free of the limitations of any of the dominant schools of the time. I think one could go along with that view but with the essential reservation that the underlying basis of all his concepts was the Marxist philosophy to which he pledged fealty.

It is interesting to recall the opinion of Stephen Toulmin, Professor of Social Thought and Philosophy at the University of Chicago:

“...It is just this general theoretical orientation toward history and culture that has enabled Soviet behavioural scientists to achieve the level of interdisciplinary collaboration and intellectual integration they have. In particular, it was an early exposure to Marxian historical thinking that en-

abled Vygotsky himself to tackle the problems of child development in his own original way ... And, in studying these processes, Vygotsky and his successors were only helped by having started out from a 'historical materialist' position.

“That being so, it should be evident that Vygotsky’s and Luria’s ... respectful references to Marx and Engels ... represent something more than ... political lip service. This is something that even Vygotsky’s Western admirers have not always understood.

“Vygotsky was more than happy to call himself a Marxist ... The general frame provided by a 'historical materialist' philosophy gave him the basis he needed for developing an integrated account of the relations between developmental psychology and clinical neurology, cultural anthropology and the psychology of art – an account that we in the West can afford to take very seriously today. This had nothing to do with the demands of ideological conformity ...

“If we are to assess the work of the Soviet psychologists fairly, or judge the true theoretical relevance of historical materialism to theories of human behaviour and development, we must therefore take care not to be distracted by our political attitudes toward the government of the USSR. Otherwise, we shall make the same mistake the early nineteenth-century British anatomists and physicians made when they denounced French physiology as 'atheistical'. It will then be we ourselves, not Vygotsky and Luria, who are the ideologues.”

I have quoted at length because this quotation pinpoints the main motive force of Vygotsky’s work. The categories of dialectical and historical materialism run through all his work. To take just one of a hundred possible instances, here is an extract from his discourse on the role of the word which reveals his profound understanding of the law of “negation of the negation,” and awareness of the dialectical nature of any process in constant development, and of the “swapping” functions of word and action:

“We cannot settle either for Goethe’s formula or the Biblical one to the effect that ‘in the beginning was the Word’... These formulas need to be extended. They say what was in the beginning. But what was afterwards? A beginning is but a beginning, i.e., the starting point of movement. The process of development proper must contain a negation of that starting point and movement towards higher form of action which lie not at the beginning but at the end of the process. How does that

happen?... The *word*, itself becoming intellectual and developing on the basis of action, elevates that action to a higher stage subordinating the child and endowing it with the gift of arbitrariness. Inasmuch as we seek to give a brief formula, the thought must be expressed in this sentence: *if action independent of the word is at the beginning of development, the word become action is at its end. The word makes man free.*"

In the 1920s and early 1930s, Marx and Engels were being read anew, as it were, as the foundations of Marxism were examined with a view to applying them to particular concrete sciences and current research. In 1925, the Moscow journal *Arkhiv K. Marksa i F. Engelsa* (The Archives of Marx and Engels) published Engels' *The Dialectics of Nature* simultaneously in Russian and German. That quickened interest in the study of another book, *Anti-Dühring*, which also sets out his views on the laws relevant to all natural sciences. Of course, Vygotsky could not help being caught up in the storm of often conflicting opinions and judgments provoked by these books. Later, in the early 1930s, the journal *Pod Znamenem Marxizma* (Under the Banner of Marxism) published previously unknown pages from Marx's manuscripts on differential calculus. Marx applied the instrument of materialist dialectics which he had created to the rigorous field of mathematics. And he came to the conclusion that the emergence of the previously unknown phenomenon of differential calculus from the bosom of ordinary mathematics consisted in the "swapping of the method," an exchange of roles between the derivative and the symbolic coefficient of the differential, the two key concepts of this new branch of mathematics.

We quote from a book devoted to Marx's mathematical manuscripts:

"...A rather curious thing happens: the symbolic coefficient of the differential, which initially appeared as a symbolic expression of a 'derivative', i.e., of a completed operation of differentiation, now acts as the symbol of those operations of differentiation which have yet to be carried out. ...The question is reversed because instead of looking for a symbolic expression for real differential coefficients [for $f(x)$] a real differential coefficient is sought to express it symbolically."*

Even if the mathematical essence of the above baffles the lay reader, the amazing (but far from accidental) similarity between Marx's argument about mutual transformations of the two concepts of differential analysis

* Lev Katolin, *We Were Bold Fellows*, Znanie Publishers, Moscow, 1979, pp. 109-110.

and Vygotsky's ideas about word and action swapping functions cannot escape him. It does not matter that Marx's mathematical works first appeared in print in 1933, i.e., after Vygotsky had expressed many of his thoughts. It is not a matter of Vygotsky "poaching" on Marx's method and applying it to his own particular field. He accomplished something incomparably greater: he became imbued with Marx's thoughts and ideas.

What Vygotsky did before he became a psychologist is far from irrelevant. After all, in his time there were quite a few knowledgeable and intelligent Marxists, yet it was Vygotsky who turned to psychology, the ancient science of the human soul. Therefore, this makes the reminiscences of his young years and his more mature period which I have been lucky enough to record all the more valuable.

In conclusion, I would like to quote a few lines written by Vygotsky himself. They refer to drawings by the artist A. Bykhovsky, but I think they express the feeling one gets from reading both the published and unpublished Vygotsky, the greatest and most gifted Soviet psychologist:

"Thus nature is embodied in a drawing, in the rhythm and play of lines, divesting itself of its heavy substance and the overlying layer of things until suddenly there is a glimpse of the object's true outline, its secret plan, its hidden meaning."

“Ages and Days” (Semyon Dobkin’s Reminiscences)

Man is a reed...
But he is a thinking reed
Blaise Pascal

I knew Lev Vygotsky from childhood and I cherish my memories of him. We were never friends in the every-day sense. Our relations were based on our mutual interests in questions which we thought were crucial for understanding life. This may be why my reminiscences do not give a full portrait of Vygotsky, but record only some of the traits of that versatile man.

I think it might be appropriate to say a few words about the city where Vygotsky spent his childhood and youth, about his family and his environment. Gomel was a relatively small town but one of the liveliest within the Pale (the territory where Jews were allowed to live in Imperial Russia).

The Vygotsky family* was among the most cultured in the city. His father was a department chief at the United Bank in Gomel and a representative of an insurance society. He was a man of wide horizons, intelligent, and inclined to irony, not humour but bitter irony. The reality around him gave ample food for such an attitude. He was drawn to social activities although any such activities were difficult to pursue at the time. Even so, he managed to accomplish a good deal.

On his initiative, an excellent public library was organised. Lev and I used it extensively. His father had a rather stern disposition while his mother, on the contrary, was very gentle. She knew German well and was fond of Heine. Vygotsky inherited her love of that great poet.

Vygotsky was the second child in a family of eight children. He had an elder sister, four younger sisters, and two younger brothers. He was particularly close to his sister Zina who was some eighteen months younger than he. The family occupied a flat of six rooms, four large and two smaller ones. One room was occupied by the three elder daughters,

* Vygotsky replaced the “d” in his name for “t” in the early 1920s because he believed that his name derived from the name of the Village of Vygotovo where the family had its roots.

another by two younger daughters and a third by the three sons. There were also his parents' bedroom, the dining-room and his father's study. So Lev did not have a room to himself. But finding a place for studies or a friendly talk was never a problem. His father's study was often at the children's disposal. There, they arranged all sorts of meetings and would go there to be alone for a while or to meet with a small group of friends. The dining-room was also a place for communication as there was invariably lively and interesting conversation during the obligatory evening tea at a large table. Talks over the samovar were one of the family traditions which played an important role in the formation of the mentality of all the children, especially the older ones.

Such, then, was the atmosphere of the home in which Vygotsky grew up.

He did not enter the gymnasium (secondary school) at once. There were two gymnasiums for boys in Gomel, a public one, and a private Jewish gymnasium run by Ratner. The public gymnasium was rather difficult to enter – one had to pass rigorous examinations with the highest marks – and the quality of the teaching there left something to be desired. So the parents preferred that their son first study at home with a tutor, then pass examinations for the first through fourth and then fifth and sixth forms of the public gymnasium before entering Ratner's private school to finish the last two years there.

Vygotsky had a remarkable teacher, Solomon Ashpiz, who in his student years had been exiled to Siberia for taking part in the revolutionary movement. Ashpiz was a wonderfully gentle person. He made a living by giving private lessons, but he was not a tutor in the common sense of the word. He took only the ablest of children in order to develop them still further. Ashpiz was a mathematician by training, but he taught all the other subjects as well. A kind, good-humoured man, he would never interrupt his pupils while they were answering a question. He would usually sit with his eyes closed, giving one the impression that he was taking a nap. If he ever opened his eyes, it was to sharpen a pencil, as was his habit. However, as soon as the pupil had finished answering it immediately became clear that the teacher had not missed a single word. He would ask the pupil to repeat the places where errors had crept in. And it became clear at once – almost without his help, as it were – where the mistake lay. His pupils benefited a great deal from the fact that he made them think independently. In fact, “made” is not the word, he simply encouraged his pupils to think. Of course such a person had a great deal to

impart to his pupils, especially if they happened to be as gifted as Vygotsky.

I got to know Vygotsky well under the following circumstances: his sister Zina and my elder sister Fanya were classmates and had been friends since their first days at school. When they were in the fourth or fifth form, they decided to organise a circle for the study of Jewish history. The nationalities question was a very serious issue in tsarist Russia, quite a sore point, so naturally they wanted to know more about their own people. Only girls from their class were admitted to the circle, but my sister also introduced me. We chose Vygotsky, who was then fifteen, to preside over our discussions.

In spite of his young age, Lev managed to bring some extraordinary elements, worth remembering in more detail, to our studies. To begin with, I must say that he had little interest in the pragmatic study of history, which was also true of the other members of the circle. We wanted to find answers to such questions as “What is history?” “What distinguishes one people from another?” “What is the role of the individual in history?” In other words, we studied the philosophy of history. Vygotsky was at the time very enthusiastic about the Hegelian view of history. His mind was then engaged by the Hegelian formula “thesis, antithesis, synthesis,” and he applied it to analysing historical events.

The circle met regularly for two years until Lev went to Moscow to study at the University. But I can safely say that not only the members but also Vygotsky had gained much during that period. In order to conduct the seminars, he had to do a lot of reading and some deep thinking.

Many people know Vygotsky principally as a general psychologist and a researcher in the study of the handicapped and a student of art. Actually he was first and foremost a thinker in the fullest sense of the word. He was a historical thinker. His historical approach to any problem, characteristic of all his scientific work, took shape in those early years when he was preparing for our seminars.

... I was three years younger than Vygotsky, and there is usually a huge gap separating adolescents of fifteen and twelve. But our participation in the study circle drew us closer together and we talked about history and literature. As the years went by, our talks generally concerned questions which interested us both and about which he knew much more than I did. We had some other common interests in those early years. One was stamp-collecting, a very popular hobby then as now. Our inter-

est in philately came about in the following manner: Vygotsky had a cousin, David Vygodsky, who was several years older than he. David later became a remarkable linguist and philologist, was close to Roman Jakobson and Viktor Shklovsky, and is warmly remembered by the writer Marietta Shaginyan in her autobiographical notes. He had a heart of gold, imagination, and intelligence, and was a man of great erudition. He not only knew and loved poetry but was himself an original and interesting poet. I think he had a great influence on Vygotsky during his young years. Well, David Vygodsky was, among other things, an Esperanto enthusiast. He was a “delegito,” i.e., a local representative of the Esperanto movement in Gomel. Inspired by David’s example, we also took to studying Esperanto. Esperantists used their language to correspond on all manner of questions, including trading stamps. Thus, Esperanto and stamp-collecting extended our horizons and brought distant countries closer. Vygotsky chose a youth in Iceland as his first pen pal.

We also shared a passion for chess. Vygotsky was a good player. Chess theory was unknown in Gomel at the time, but he was fond of non-standard gambits. He had a life-long interest in chess, although not to excess. What he really loved from his youth and until his last days was theatre and poetry. As long as I can remember, he was forever citing favourite verses. As a schoolboy, he was fond of Pushkin but, unlike most of us, he preferred not his lyrical verse but pieces such as “A Scene from *Faustus*,” “Once There Lived a Poor Knight,” “The Little Tragedies,” of course, and especially “A Feast During a Plague.” He singled out lines that he felt were important and skipped all the rest. For example, the beginning of “Mozart and Salieri”: “They say: there is no justice here on earth. But there is none hereafter. To my mind this truth is as elementary as a scale.” This is not the end of Salieri’s monologue, all of which is very significant, but Lev never bothered to quote the lines that followed. To him, the opening words were sufficient for grasping the essence. Another favourite poet was Blok. He was particularly fond of quoting from the “Italian Poems” which had a touch of tragedy about them.

The impressions of those years went a long way in determining his future interests and attitudes.

As I have already said, Vygotsky spent two years (the seventh and eighth forms) studying at Ratner’s school. It was a great change for him to emerge from a family atmosphere where he was surrounded almost exclusively by women into the company of schoolchildren, who are a pretty difficult lot to deal with. The intellectual level of his classmates was

rather high, but Vygotsky stood out even among them. The depth of his interests, his skill in analysing complex questions – in short, his ability to think – all this drew his classmates and teachers to him.

In the summer of 1913 our families rented dachas in Belitsa, then a suburb of Gomel. Lev was finishing the gymnasium and was already taking the so-called “deputy’s exams,” i.e., exams attended by a “deputy,” a representative of the educational authority of the province who had the decisive say in giving marks. More often than not, the official appointed was a teacher from the public gymnasium, most of whom looked down on the teachers and pupils of the private gymnasium and were often extremely anti-Semitic. Lev, however, did brilliantly at these exams and was almost certain to get an honours certificate. But midway through the examinations appeared a circular letter from Minister of Education Kasso. In tsarist Russia there was a quota for the admission of Jews to institutions of higher education. This quota was three per cent at Moscow and Petersburg universities. In practice, that meant that gold medallists were assured of admission, silver medallists had a fifty-fifty chance, while anyone who finished school without honours had no chance at all. While preserving the quota, the Kasso circular introduced a new rule whereby Jewish applicants were to be enrolled by casting lots. The idea was very simple: a university education should be received not by the most gifted but by average young people who were unlikely to be high achievers in the future.

... I remember sitting with Vygotsky on the porch of his dacha. He had just washed his younger sister’s feet, and read her some nursery rhymes of which he was very fond himself: (That summer I got to know him as a solicitous brother and considerate son.) Then he showed me the newspaper with the report about the new circular, which meant a great misfortune for him personally and for his whole family since it dashed his career plans and hopes of getting a university degree.

“There,” said Lev, “now I have no chance.”

The news seemed so monstrous to me that I replied quite sincerely:

“If they don’t admit you to the University it will be a terrible injustice. I am sure they’ll let you in. Wanna bet?”

Vygotsky, who was a great better, smiled and stretched out his hand. We wagered for a good book.

He did not make a single mistake on his final exams and received a gold medal. At the insistence of his parents, he applied to the medical de-

partment which was considered most suitable because it guaranteed a modest but secure future.

True, Vygotsky was more interested in the humanities, but what were his options? The history and philology departments were out because they trained mainly secondary school teachers, and Jews were not allowed to be government employees in tsarist Russia. And the law department, too, generally turned out court officials, although it also opened the opportunity to become an attorney.

And then the incredible happened: late in August, the Vygotskys received a cable from their friends in Moscow telling them that Lev had been enrolled at the University by the draw. On the same day, he presented me with a volume of Bunin's poetry inscribed "To Senyain memory of a lost bet." I don't think anyone was ever so happy about losing a bet.

At that time, Lev's interests were far from medicine, and hardly a month passed before he transferred to the law department. It so happened, however, that in his last years, he worked on problems connected with medicine and, already a professor of psychology, enrolled as a medical student.

Although he was not terribly keen on jurisprudence either, he continued to read law. At any rate, with a law degree he could become a lawyer, and for a Jew this meant the important right of living beyond the pale.

To "indulge himself," Vygotsky joined the Shanyavsky People's University in Moscow where he majored in history and philosophy. There was no such department at the Imperial University. Shanyavsky University was a school of the highest standards even though its degree was not recognised by the tsarist authorities and gave no rights to its holders. In 1911, the government cracked down on Moscow Imperial University. Most of its students had been expelled as a result of a student strike. In protest against the repressive actions of the Minister of Education Kasso, more than a hundred leading scholars left the University. Among them were Timiryazev, Lebedev, Zelinsky, Zhukovsky, Chaplygin and Vernadsky. Many of those who left found refuge at the Shanyavsky University. Vygotsky gained much more from the atmosphere at that University and from mixing with the students and teachers there than from his studies at the law department. Thus, years later, when he was gravely ill, he

asked his former professor at Shanyavsky University, Yuly Aikhenvald, to see to the publication of his works.

His studies in law had an impact on Vygotsky. I remember that in 1915 or 1916, while on vacation in Gomel, he set up “a literary court” with his friend Vladimir Uzin. They chose Garshin’s story “Natalia Nikolayevna” in which a man commits a murder from jealousy. Uzin was immediately chosen as the judge while Lev was offered a choice of being prosecutor or defence counsel. He didn’t mind doing either and was prepared to argue both points of view. At first I was puzzled: of course it was not a real but a literary trial, but how was it possible to defend opposing points of view? Then I realised that he could see the arguments in favour of both sides. He had acquired this approach to analysing cases as a law student. But his whole mode of thinking was such as to defy one-sidedness, prejudice and undue confidence in the correctness of a particular conception. His whole scientific career was marked by his extraordinary ability to understand not only the things with which he himself could identify but also the other’s point of view.

Perhaps his studies at the law department helped Vygotsky develop his gift of oratory, although I must say that he had a knack for expressing his ideas clearly and convincingly from childhood. He was able to make anything he spoke about sound interesting and exciting. And when people admired his gift for story-telling he would say, “It is not I who am talented; my theme is exciting.”

I think at this point I should tell you something about Vladimir Uzin, a man who had undoubtedly influenced Vygotsky. Vladimir Uzin was much older than all of us. He had no formal education, but thanks to his rare intelligence and ability he had made himself one of the best educated people of the time. He was a polyglot, and was particularly good at Latin and Spanish. After the Revolution of 1917 he wrote many works on literary criticism and essays on theatre and translated from the Spanish. The Russian edition of the plays of Lope de Vega came out with his foreword. But in those remote years Uzin earned his living in Gomel by giving private lessons in Latin and other subjects.

At home for a holiday, Vygotsky decided to brush up on his Latin and began to take lessons from Uzin. Before long, their meetings developed into a friendship which proved to be life-long.

During his student years Vygotsky became even more interested in literature. He perfected his remarkable ability to find lines dear to his

heart in almost any author. For example, his favourite poem by original satirical poet Sasha Cherny, "To a Sick Man," was far from satirical. He especially liked the opening lines which went something like this: "There is the hot sun, there are the naive children and the exquisite joy of melodies and books. If not, there still were Beethoven and Pushkin, Heine and Grieg."

He grew even more fond of Tyutchev's poetry in those years. And with Tyutchev too he was able to find "his own" lines which were not purely lyrical but had a philosophical message. He would often recite these lines:

We still believe in miracles,
For all the lessons and the truths
That life has taught us;
We know there's beauty that won't pall
And strength that cannot be exhausted;
That flowers of a loveliness unearthly
To earthly withering will not succumb,
And dewdrops, fallen on them in the morning,
Will not be dried up by the midday sun.
It is a faith that won't deceive you
If you live by it alone from first to last;
Not everything that flowered once must wilt,
Not everything that was must pass.

Vygotsky was always fond of Blok, whose poem "The Rose and the Cross," had an extraordinary appeal for him: "There is misery and loss all around you. What lies in store for you? Raise your raggy sail and put a cross on your armour-plated chest." I often got the impression that when he quoted these lines, he was thinking of his personal future and destiny.

And of course, he had felt an affinity for the poetry of Heinrich Heine since childhood.

All these poems tell us something of Vygotsky's perception of the world at the time, and in this sense, his literary interests are more revealing than his early scientific interests.

Fiction also had a great influence on him. He had a very high opinion of Bunin, and his 1912-1916 stories, especially "Light Breathing." He wrote an analysis of this story which was later included in his *Psychology of Art*. He considered Andrei Bely's *Petersburg* the most remarkable novel of the time. Of the Russian literary classics, Dostoyevsky moved him most

of all in those years. This was probably because two of his novels, *The Karamazov Brothers* and *The Possessed* (entitled *Nikolai Stavrogin*) were staged at the Moscow Art Theatre.

He developed an interest in theatre while still a schoolboy. He staged Gogol's play *The Marriage* during a summer vacation. And he was something like a director, going over all the roles, male and female, with the participants. He watched the visiting central companies eagerly. And he did not miss a single play at the summer theatre in Gomel, although most of their productions were, alas, quite mediocre. His passion for the theatre manifested itself much more fully in the student years. In Moscow, the Art Theatre was his favourite. For the milieu in which Vygotsky lived, the Art Theatre taught them something about the outside world, and its productions provoked thoughts about life and oneself. His interest in theatre led to his acquaintance with the then famous theatre critics, Nikolai and Abram Efros.

In speaking of the role of the theatre in Vygotsky's life, I must note the profound impression *Hamlet* made on him while he was still a child. As a schoolboy, he began writing an essay on *Hamlet*, which as far as I remember, he did not show to anyone. It was his most closely guarded secret. The essay was eventually published as a supplement to the second edition of *The Psychology of Art*. This version may have been revised in subsequent years, but he started it as an adolescent. I think it bears repeating that Vygotsky was a born thinker, and he approached Shakespeare's tragedies as a thinker. In his student years, Gordon Craig dispensed with sets in his production of *Hamlet* at the Art Theatre, an audacious and unexpected move which lent greater importance to the acting. Vygotsky was especially interested in that production.

Of the great thinkers of the past who exerted the most influence on Vygotsky, Baruch Spinoza is among the foremost. Vygotsky had a profound, life-long interest in the thoughts and work of this philosopher. He conceived and began a major work on Spinoza in his youth, but he never completed it. In 1970, *Voprosy Filosofii* (Questions of Philosophy) journal published its opening section on Descartes, whom Vygotsky considered to be a forerunner of Spinoza. Perhaps Vygotsky's archives contain other parts of that work. In 1915, his sister Zinaida entered the Non-Credit Women's University Courses in Moscow, shared a room with Lev, and was constantly informed about his interests. She chose the philosophy of Spinoza as the theme of her course paper, a theme which her professors later suggested for her Candidate's dissertation. Zinaida became a promi-

nent linguist and co-author of many foreign language dictionaries published in this country. Constant contact with her must have influenced the scientific interests of Vygotsky.

... When did Vygotsky become interested in the science of psychology and how did he arrive at that interest? In part, the turn to that science was a natural corollary of his interest in fiction, notably the psychological novel. At the same time, his acquaintance with some scholarly works quickened his interest in the subject.

The first of these works was Alexander Potebnya's *Thought and Language* which he read while still a schoolboy. Although Potebnya was primarily a linguist, this book, published in the 1850s, touches upon psychological questions. Reflections on the complex problems which in the time of Potebnya (and even in Vygotsky's younger years) were still *terra incognita* for the science of psychology may have provided a starting point for his deeply original monograph *Thought and Speech*. Even the titles of these books are somewhat similar. Two other books Vygotsky read in his early years as university student influenced him. One was *The Varieties of Religious Experience* by William James, who was in those years regarded as a major psychologist. That monumental work brings together accounts of the mystical experiences of many people as different as Francis of Assisi and the spiritualist Madam Blavatsky. James analyses this testimony in detail seeking insight into such unusual experiences. At the same time it is somewhat uncritical.

Vygotsky was powerfully impressed by that book and so was I (he gave it to me to read). So we discussed it at length. I was eager to get a straight answer about which experiences described by the author were authentic and which were rubbish and charlatanism not worth serious attention. But Vygotsky would usually reply, "perhaps it is true and perhaps it isn't." At times it seemed to me that he simply didn't think it worth his while to discuss these complex problems with me as I was too young. Still I think his replies reveal a characteristic trait of his thinking, namely the ability to see a problem from different, often opposite angles, the desire not to miss an important phenomenon only because it appears to be incredible.

The other book was Freud's *The Psychopathology of Everyday Life*. Freud's ideas were new and unusual for us, and they provoked thought about the underlying causes of many psychic phenomena.

Of course, psychology played a certain part in the curriculum at the History and Philosophy Department at Shanyavsky University. Even so, I think these books were a great stimulus to Vygotsky's interest in psychology.

I have now come to the period when both of us engaged on a new and important undertaking.

Upon graduating from the University, Vygotsky returned to Gomel, and in late 1918, he and his cousin David began teaching literature at school. At the time I was teaching history at the school of the Dnieper Naval Flotilla. I have never since had such an attentive, interested and thoughtful audience as those sailors who listened avidly to everything I said, trying to grasp the meaning of the historical events then taking place. While my work at school was interesting, I felt that it was not challenging enough.

As a senior school pupil, I had read a translation of the novel *Richard Ferlong* in *Russkaya Mysl* magazine. It is about an engraver who publishes beautiful books, illustrating, editing and printing them himself. His life is full of the printer's joys and sorrows, but it is an exciting life. All this appealed to me very much, so I decided that when I grew up, I would go into publishing. I thought the right moment had come for that, I confided in Vygotsky about my plans, and he too became enthusiastic about the idea. "We must bring David into this," he added.

After a lot of discussion, we decided to publish the best world literary monuments and modern writings. What would we name our publishing house? We spent hours discussing the name and ended up with "Ages and Days." We invented a trademark: a sphinx and a butterfly.

There was no problem in finding material from the "ages." We wanted to publish the selected works of Pushkin, then a volume of Roman elegiac poets and some equally famous literary classics. Choosing modern works and getting in contact with contemporary authors was more difficult. But there, Vygotsky's connections in Kiev, which he had visited for a short time looking for a job, came in handy. One of the people he wrote to was Ehrenburg, who promptly sent us his latest poems which had already been published under the title *Poems about Russia*. But now he gave the collection a new title, *Fire*. So this was the first book we published.

We were also planning to publish Vygotsky's "In Praise of an Ass," an essay on Krylov's fables which was included, in a slightly modified

shape, in *The Psychology of Art*, and a collection of couplets by David Vygotsky. There were several printing shops in Gomel. We found one whose manager gladly took up our order.

There was a paper factory not far from Gomel, so there was no shortage of paper in Gomel in 1919 when most of the country was starved for paper.

So we managed to publish our first book, a collection of impassioned verse by Ehrenburg. We wanted to follow up with something more balanced and harmonious, so we decided on the Greek-born French poet Jean Moreas. That book was printed in another, better equipped shop and looked more attractive.

Now we had to market our products, but that proved to be easy. The local branch of the Soyuzpechat agency and its head immediately said that they would buy all the editions we put out, regardless of the number of copies. Unfortunately, circumstances then took a sharp turn for the worse. A special commission arrived in Gomel with the task of marshalling all the local resources, and that included paper. This meant an early demise of our publishing business. Our circumstances also changed. David Vygotsky decided to return to Petrograd where he hoped to get an interesting job. I was offered an opportunity to go to study in Moscow. Vygotsky was to stay in his native town for a few more years, so I have little first-hand knowledge of that period of his life – the period when he organised a psychology laboratory at a Teacher's College, delivered some very interesting lectures and was preparing a book *Educational Psychology*.

So, we had managed to publish just two books. But that was not the main thing. The main thing was that the three of us had made a veritable journey through *Ages and Days*, discussing the things that were uppermost in our minds. Perhaps this determined a great deal in all our lives. When Vygotsky's book on the talented artist A. Bykhovskiy came out in Moscow seven years later (*The Drawings of Bykhovskiy*) he presented a copy to me inscribed, "To Dear Senya, unforgettable companion in travelling through *Ages and Days* from the author for severe judgment. November 14, 1926."

There is not much more for me to remember. In 1920, I moved from Gomel to Moscow. When we parted, Vygotsky was not in very good health. He was unwell, it was difficult to get enough food, and there was tuberculosis in their family. In a month or so, he wrote me that he was seriously ill and was being sent to a sanatorium for treatment. Thinking

that he had not much longer to live, he asked me to see literary critic Yuly Aikhenvald, whom he had known well since his days at Shanyavsky University, and persuade him to accept the manuscripts which would be left after his death and try to publish them. Of course I went to see Aikhenvald. He received that request with great attention and promised to do all he could. I wrote Lev about that conversation, tried to assure him that his illness was not fatal, and said I was sure he would recover. And that is what indeed happened. Lev had been right, though, in asserting that his major works would not be published until after his death.

Several months later, I had an opportunity to visit Gomel for a few days to see my friends and relations. I met Vygotsky there. Only a year had passed since we parted, but he was in a totally different company, surrounded by young people unknown to me including, I think, students from the Teacher's College. Again he was not in very good health, but he tried to keep going. There were few people of kindred spirit left in Gomel, both his sisters and David Vygotsky having left town. But Vygotsky did not want to leave his parents.

In 1924, he married Roza Smekhova, a vivacious, intelligent, pretty girl. She had a gift for staying cheerful throughout the many difficult situations in which they found themselves.

In 1924, Vygotsky delivered a brilliant report at the Psychoneurological Congress in Petrograd which earned him an immediate invitation to come to work in Moscow. He took up lodgings in the building of the Experimental Psychology Institute which had housed the Historical and Philological Department while I was a student of philosophy there. Vygotsky was given a room in the basement. By an odd coincidence, it also contained the archives of the department's philosophical section. Vygotsky became interested in the archives and extracted materials of the seminar on ethnic psychology, including my own report, from it. It was devoted to a theme which we had discussed in our circle at the gymnasium led by Vygotsky, namely, the historical destinies of nations. When next I visited him, he told me that he liked the report. Of course I was glad to hear it, but still the main idea of the report was his, not mine. The historical approach characteristic of the scientific method of Vygotsky helped him solve many complex problems in psychology and other fields.

So, after a break of some four years, we again began to see something of each other. But Moscow is a far larger city than Gomel. What with the longer distances and the pressures of daily life, we could not see each

other as often as before. Besides, he had become immersed in psychology while I had chosen a different occupation, publishing. Yet when we met, we always had a lot to talk about, and I was always sorry to leave.

Vygotsky was as fond of poetry as ever. In those years, he had added Boris Pasternak to his list of favourite poets. He spoke enthusiastically about the correspondence of Spinoza which had been published in Russian. He also spoke about new materials for his *Psychology of Art*.

Increasingly Vygotsky was moving from general questions in psychology to developmental psychology. He investigated the development of both normal and handicapped children and was a pioneer in various fields of special psychology in the Soviet Union. That work increasingly carried him away and he committed all his genius, all his passion and strength, to it. Neither illness nor any other circumstances could tear him away from that important and engrossing work.

I remember visiting Vygotsky, who was quite ill, in the last years of his life. "They have invited me to go to Sukhumi to study the monkeys at the primate centre," he said. "It's very interesting work, and things will be quieter there. But I am afraid to go alone. Would you go with me?" I replied without hesitation. "Of course I will." However, these plans never materialised. Vygotsky's health grew worse.

He died at the Serebryany Bor Sanatorium. Vygotsky was fond of ambiguous words and expressions and riddles which lent themselves to different interpretations. When he realised that he was dying, his last words were: "I'm ready..." This, too, could be interpreted in a number of ways...

“The Mozart of Psychology”

An imaginary exchange of views between Artur Petrovsky, Roman Jakobson, Stephen Toulmin, Lev Vygotsky, Vladimir Zinchenko, Georgy Schedrovitsky, Mikhail Yaroshevsky, Michael Cole, Vasili Davydov, James Wertsch, Alexander Luria and Alexei Leontyev.*

Essentially, only one thing interests us in life: our psychic state ... Millions of pages are occupied with the depiction of man's inner world but the results of that work – the laws of the spiritual life of man – have yet to come.

Ivan Pavlov, “Twenty Years of Objective Study of the Higher Neural Activity (Behaviour) of Animals.”

... To my mind this truth is as elementary as a scale.

Alexander Pushkin, “Mozart and Salieri”

PETROVSKY: Interest in psychology has now become universal and this is not at all surprising. The vigorous development of the psychological science is a direct result of the scientific and technological revolution with its interest in Man, the main protagonist in social and industrial progress. Soviet psychological science, which has a tradition of more than half a century, became known in the West only recently. However, beginning in 1966, i.e., since the 18th International Psychological Congress in Moscow, it has commanded growing attention. Of particular interest are Soviet studies carried out by a school associated with Lev Vygotsky, an outstanding scientist who died young in the mid-30s. Some American psychologists believe that psychology in the USA is presently repeating the basics of Soviet psychology, the foundations of which were laid by Vygotsky and his pupils to a large extent. The growing interest in psychology in the USSR, in particular, the trend connected with the name and works of Vygotsky, is understandable and well justified.

JAKOBSON: It so happened that I was probably the first man in the West to become interested in the works of Vygotsky, I have “discovered”

* Unless otherwise specified, the contributions of the participants to the imaginary round table have been drawn from the author's notes of his talks with them. – *Author*.

that great scientist whom no one knew or understood in the West. I happened to get hold of a book on aphasia by Alexander Luria in which he mentioned his teacher, Vygotsky. Our closeness with Luria owes much to the ideas of Lev Vygotsky which are near and dear to both of us. The teaching of Vygotsky helped psychologists, chiefly those in the Soviet Union, to pass on painlessly from behaviourism and Gestalt psychology to the psychological views which still prevail today.

TOULMIN: A ... breakdown of communications has apparently kept most American psychologists out of touch with important developments in Russian psychology ever since the end of the First World War. Much powerful Soviet work in psychology from the 1920s and 1930s on, both theoretical and experimental, remains largely unknown in the US, and is only now being made available in English translation – owing largely to the energy and initiative of Michael Cole at Rockefeller University, New York.

Professor Cole edits a quarterly journal of translations *Soviet Psychology*, and is responsible for two of the three books of ... the anthology *Soviet Developmental Psychology* [which] comprises selected papers from his journal. Yet if Michael Cole is still republishing in English papers originally written by L. S. Vygotsky and his colleagues, some fifty years ago, he is doing so not as “an archival undertaking,” but because “a great deal of Soviet psychology from the 1920s and 1930s has much relevance for contemporary American research.”

Now that a substantial part of this corpus is in our hands, including some key documents not previously translated, two major questions face us: (1) what have we to learn from this material? In particular, what are we to make of the strong claims that Cole and his colleagues advance on its behalf? Given all these last fifty busy years of American research in a couple of dozen different fields of academic psychology, clinical neurology, linguistics, and educational theory, can behavioural scientists here really have overlooked fruitful questions and lines of investigation pursued by their Russian counterparts all these years? And (2), why has this literature been ignored for so long? Was so serious a breakdown of communications really possible in the mid-twentieth century? How could an entire school of important psychologists and neurologists have been working and publishing in Russia for forty years, and still be largely unknown in the West?

The answers to these two questions are connected. As we can now see, differences of theory, method, and philosophy between the two countries have given rise to differences in the organisation of psychological and neurological research, and have been reinforced by them in return. So, intellectual and institutional factors alike have distracted most Western behavioural scientists from the significance of this Soviet work.

As a result (it seems) we are now, and only now, ready to digest its results and incorporate them into our own scientific ways of thought ...

... Over the last fifty or sixty years, Russian psychology has appeared equally strange and uncongenial to most Western eyes. The only 20th-century Russian psychologist whose name is widely known in the West is, of course, Pavlov. And the nature of the work for which Pavlov is best known – his studies of salivation in dogs, and similar reflexes – has tended to confirm prior Western prejudices about any communist system of psychology: as viewing human beings in a crudely materialist and reductionist (not to say, inhuman) manner. Yet this view of Soviet psychology has been founded from the beginning on misconceptions, and even on mistranslations.

... Pavlov himself by no means saw all human behaviour as fundamentally “conditioned,” i.e., as a passive response to external stimuli. On the contrary, his central questions had to do ... with the differences between reflexes that manifest themselves *unconditionally* and those that do so only *on certain conditions*.

How, then, did the Russian terminology of Pavlov’s original writings, with its references to “conditional [*uslovnye*] reflexes” as contrasted with “unconditional [*bezuslovnye*] reflexes,” become transformed into the English terminology of “conditioning” and “conditioned (rather than conditional) reflexes”? The answer is: this seems to have happened in the course of the transmission of Pavlov’s ideas to the West, which took them out of their original, scientific context in Russia, and plunged them into ... the ... context of American behaviourist psychology. Whereas Pavlov in the original was very much of a “whole active organism” type of psychologist, his American readers turned him into the mechanical determinist and dogmatic materialist ...*

* These and all the other pronouncements of Stephen Toulmin, Professor of Social Thought and Philosophy at the University of Chicago are drawn from his article “The Mozart of Psychology,” published in *The New York Review of Books* on 28 September 1978.

VYGOTSKY: Pavlov's teaching about conditional reflexes must be considered the basic and determining factor in the development of the natural psychology in this country. True, that teaching was born and managed to make its main strides and gain world-wide recognition before the Revolution. But, strange though it may seem, it was little known in Russia and it made no impact on the development of Russian psychology in the prerevolutionary period. In that period they were rendering unto God what was God's and unto Caesar what was Caesar's: psychologists studied the psyche while physiologists studied neural activity and there was an abyss separating the two.

It was only in the revolutionary epoch that the theory of conditional reflexes became seminal for the development of the psychology. A contributing factor was the advance of that theory and a certain completeness which it received in Pavlov's book *Twenty Years of Objective Study of the Higher Neural Activity (Behaviour) of Animals* (1923). But the main reason was the profound inherent affinity between the ideas of the Revolution and the new theory. The Revolution immediately assumed patronage over the new psychology.

And indeed, the new teaching immediately struck everyone as being of the same order of importance as the teaching of Darwin. Darwin discovered the origin of hereditary experience in the hereditary system of animals. Pavlov discovered the origins of individual, learned, personal experience and the way it is superimposed on hereditary innate experience. If Darwin has provided the key for the biology of species, Pavlov provides the key for the biology of individuals.

He shows how any element of hereditary experience – reflex – can, under the influence of the environment, be connected with any element of the external world – irritant or stimulus – and how this gives rise to a very complex but perfectly logical picture of the individual behaviour of a particular animal.

Pavlov's classic experiments are amazingly simple, a simplicity that is the hallmark of true genius. Just consider: they are based on the fact of "psychic salivation" known to every child whose "mouth waters" at the sight of food. His method is determined by an idea of association known since the time of Aristotle. That led many to overlook the novelty of his teaching behind the simplicity: "What sort of science is it? Every hunter who trains dogs knows that."

One had to acquire the new outlook brought by the Revolution to discern in the new theory something that was unknown not only to hunters training dogs but to the wisest sages. The revolutionary core of this new theory consists of three things: its profoundest link with the animal roots of human psychology and the elementary forms of life; its broadest perspectives in properly human, historical forms of neural activity; the connection it effects between the roots and the perspectives by throwing a bridge from biology to history – the underlying idea and method of the conditional reflex.

In one respect, Pavlov's work is a direct answer to the task set by Sechenov*, viz., to show the earthly origin of all the highest psychic processes, to demonstrate that man is an entity in the set of phenomena represented by our planet and that *all his life, even his spiritual life*, as far as it can be the object of scientific study, is a terrestrial phenomenon. Pavlov's teaching shows the earthly, animal origin of the higher forms of behaviour from the lower ones, revealing the mechanism of that origin and the process of the transformation of the conditional into the unconditional. All the higher forms of behaviour, and all the conditional forms are a superstructure over the unconditional; any act of behaviour, no matter how complex, is ultimately based on reflex.

That deals a final blow to dualism in the science of man inherited from religion, which distinguished between the soul and the body. In light of the new teaching, the path to an independent psyche in its own right is thus cut off. After the materialist understanding of organic and inorganic nature, after a materialist understanding of the social history of mankind there has come the turn for a materialist understanding of the most difficult, complex and obscure element – man himself.

That includes man in the general context of everything "earthly" and spreads the general laws which govern the real world and are studied by science to man and his mental life ... This broad perspective backwards, into the depth of animal life, far from keeping us within the sphere of primitive, lower forms of behaviour, on the contrary, enables science to rise and penetrate into the higher levels of neural activity with the instrument of precise knowledge for the first time. This accounts for the unusual optimism of our researchers. In studying man and the world, they

* Ivan Mikhailovich Sechenov (1829-1905), the "father of Russian physiology," and a founder of neurophysiology.

are firmly confident that by pursuing objective investigations they will gradually attain a complex analysis of the full scale of infinite adaptations to the world which constitutes life on earth. "The movement of plants towards light and the search for truth through mathematical analysis," says Pavlov, "are not these essentially phenomena of the same *order*? Are not these the latest links in a nearly infinite chain of adaptations taking place in the whole living world?"

The following episode illustrates that even Pavlov's individual experiments opened great vistas. A dog is given food and at the same time an electric current is administered to its skin. "The electric current, no matter how powerful, becomes a signal, surrogate for food, a conditional stimulus for the food centre. Electrical stimulation now induces not a defensive reaction but a food reaction: the animal turns to the experimenter, licks its lips and begins to salivate as before eating. The same effect is obtained when electricity is replaced by burning or wounding the skin."

We see a step forward in the study of the higher neural activity – a conditional reflex to a destructive or pain stimulus. But what a powerful experiment: the dog reacts joyfully to pain, you inflict a burn or a wound on it and the dog is drawn to you ...

Pavlov's teaching claims primacy in contemporary Russian psychology because, as has been said, it links the roots with perspectives: the principle and method of conditionality in the operation of the reflex. It would be no exaggeration to say that it plays the same role in the science of the individual as the evolutionary principle and method play in biology. The method consists in taking something given, elementary, natural and simple and tracing its change depending on the conditions under which that activity takes place. In the broadest philosophical sense of the word, the whole world of history, culture and language is a realm of conditionality. In that sense the method of conditional reflexes acquires the broadest implications as a natural historical method applied to man, the bond between history and evolution.

The teaching of conditional reflexes has enjoyed the broadest development since the Revolution: in the Pavlov school and in the Institute of the Brain opened in Moscow under the Communist Academy it has produced a series of brilliant discoveries, one can say that the key laws of higher neural activity are now clear: science is poised for a deeper, more profound, more complex analysis of behaviour.

The Bekhterev school studies conditional reflexes of man: an attempt is being made to make the scheme of the reflex cover all the facts of psychic life ever established by psychology and thus to translate them into an objective language and to link the new theory with everything of scientific value produced by psychology in its historical development. An attempt to create a new system of psychology based on the conditional reflex theory is made in Bekhterev's book *General Foundations of the Reflexology of Man*. The same school is developing the problems of genetic reflexology which traces the development of conditional reflexes from an infant's first day. This lays the foundation for an objective study of child psychology.*

ZINCHENKO: In recent years some major publishing houses abroad have put out books by outstanding Soviet psychologists including Vygotsky, Luria and Leontyev. For example, A. N. Leontyev's book *Activity, Consciousness, Personality* came out in twenty countries. Vygotsky's *Mind in Society* was published in the USA in 1978, followed by the publication of Luria's autobiography *The Making of Mind* in 1979. In a preface and afterword to that book, Professor Cole ranked Luria with the most outstanding psychologists of the nineteenth and twentieth centuries, putting him, as it were, among the world's top five. A Marxist school of psychology was formed in the FRG by Holzkamp who considers himself a pupil of Leontyev, although he met him only once. There is tremendous interest among the world's psychologists in Soviet psychology of the 1920s and 1930s. The journal *Soviet Psychology* published in the USA prints Soviet works on the psychology of those years translated from the Russian and the Ukrainian. I could multiply the examples which indicate interest in, and often admiration of, Soviet psychology.

All the more reason to hear "The Mozart of Psychology" himself (as Toulmin called Vygotsky) on how Soviet psychology developed in those formative years.

VYGOTSKY: Historically, psychology has never developed in a straight line. In 1874 Brentano called for the creation of a single psychology in place of the many psychologies which then existed under a common heading. He was aware that this was a demand of the times, with which such sciences as mathematics, physics, chemistry and physiology had

* Here and elsewhere Vygotsky's contributions to the imaginary round table are drawn from his article "Psychological Science in the USSR."

complied at different points in time: the demand to identify universally recognised scientific truths. Brentano used to say that in science, like in politics, unification is impossible without struggle. Thus, the road to the creation of a single science of psychology was the road of struggle.

In 1917, William Stern repeated Brentano's diagnosis, pointing out that in spite of the spectacular successes of precise psychological investigation, there were still many psychologies, not one psychology. But in the long period which separates these two statements, the crisis in psychology developed to such an extent as to reveal far more clearly the true historical tasks involved in uniting many psychologies into a single science.

Russian psychology, which was under strong West European influence in its development is no exception from that historical law. Both trends – towards unification and division – have been clearly represented throughout its history.

The foundations of Russian natural psychology were laid by the original work of Ushinsky, Sechenov and Wagner. The greatest influence was that of Sechenov who regarded the psychic and the physiological in man as phenomena of the same order, as related phenomena “of the same earthly origin, of one and the same planet.”

He believed that the future of psychology as a science is in the hands not of the metaphysicians but of the natural scientists. He was also aware of the inappropriateness of the contemplative method for science and the metaphysical nature of subjective psychology, and he was the first to elaborate the concept of psychic reflexes.

Impetus to the intensive development of both psychologies was given by the creation of experimental laboratories and institutes by Nechayev in Petrograd (who gravitated toward applied and educational psychology) and by Chelpanov in Moscow (who was inclined toward theoretical studies). But the feud between the two psychologies did not subside for a minute, so the prerevolutionary years witnessed a revival of metaphysical psychology. By that time Russian psychology, following that of Europe, had realised that it was a blend of two disparate elements and tried to develop the idea of two sciences. Witness Nikolai Lange: “Thus there appeared two different psychologies, in other words, psychology revealed two sides to it, two faces, like Janus.”

Perhaps this idea was most dramatically expressed in the work of Semen Frank, *The Soul of Man*, which came out in July 1917 and was the summation of one of the two roads pursued by Russian psychology on

the eve of the Revolution. It was an attempt to restore psychology “in the old literal and precise meaning of the word”; its main message was opposition to a “psychology without the soul,” to the transfer of the methods and principles of natural sciences to psychology. The author understands the implications of the struggle between two psychologies quite accurately and sees it as a “simple *ousting of one science by a totally different one.*” “Genuine advances in psychology,” writes the author, “were due to a sharpened religious and moral consciousness.”

A historian of Russian philosophy has every grounds for saying that this book “marks a profound turning point in the views on psychology.” “We have returned to metaphysical psychology,” he writes and concludes his review in the following way: “So, Russian psychological literature has come full circle, as in the West. It started with speculations about the soul which led to the denial of the very existence of the soul, and then psychology without soul and physiological psychology turned experimental and little by little began to incorporate speculative elements.”

Russian psychology, however, has clearly revealed not only the trend towards a division between two rival sciences but also another historical trend, that of unification of psychological disciplines and trends into a single science. “Keeping the inner unity of psychology” was a historic task of Russian psychology stressed by Georgy Chelpanov in his speech at the opening of the Moscow Institute of Psychology. He said the task of the Institute was to “take measures to preserve the unity of psychology.” “Psychology is falling into parts totally unconnected with each other,” he said. “As a result, psychology is forfeiting its unity. It is threatened with disintegration.” It is only the existence of institutes to perform the task of unifying psychology that would enable “psychology here in Russia to follow the correct road. Then the development of psychology in Russia would reach a completeness and perfection to enable us to speak proudly about ‘Russian psychology’ in the same way as they speak today about German, English and American psychology.”

As in the West, the latter trend prevented a clear realisation of the first, obscured the historical picture and led to misconceptions. The idea of unity obscured the idea of division, while in fact unification was only possible after prior division. This is highlighted by one historical episode. The opening of the Institute of Psychology in Moscow was hailed as a milestone by, among other people, Ivan Pavlov, who in his scientific work proceeded from Sechenov’s views and in his experiments on the brain ruled out any mention of subjective states. He said in a letter that

the task of the scientific study of the activity of the mind “is so enormous and complex that it calls for all the resources of thought, absolute freedom, complete divorcement from any clichés to the highest possible degree – a diversity of points of view and approaches, only then would success be possible. All those who work in the sphere of thought, from whatever side they approach their object, will each see their own share, and the shares of all will sooner or later add up to the solution of the greatest task of human thought.”

On the other hand, the opening of the Institute of Psychology generated hopes that its work would clarify “the fundamental difference between the nature of man and the nature of all other living substances, a difference indicated by our faith and everyday experience.” Chelpanov viewed the fact as a reunification of Russian psychologists representing opposing trends. He said: “This can be seen as the beginning of the unification of Russian psychologists in a common undertaking.” “The question ‘who should develop psychology’, which only recently divided philosophers, psychologists and physiologists, has hopefully become a thing of the past.” Nothing could be further from historical truth than this assertion: the incompatible proved incompatible once again, and before long the struggle between two psychologies became apparent to everyone.

A historian will have no difficulty tracing the dependence of psychological ideas on the general course of social life: there is ample evidence to prove the point. The triumph or defeat of each of the two psychologies was logically determined by the upsurge and ebb of socio-political changes and drew upon the progressive and reactionary moods of every epoch.

... In 1914, the opening of the Institute of Psychology was hailed by Pavlov on the one hand and by a bishop who praised the study of the “God-like nature of the soul,” on the other, which is clear evidence to the historian of the social implications of the strange combination of those two incompatible psychologies which were superficially united on that day.

This, I believe, should remove any need for explaining the basic proposition in the light of which one should regard psychology in the USSR: the historic task of psychology in a revolutionary country is to make psychology a natural science, completing the historical division and

unification of all positive knowledge obtained by psychology throughout its long history into a single scientific system.

TOULMIN: The central figure in this story was Lev Semyonovich Vygotsky, who died of tuberculosis in June 1934 at the age of thirty-seven.

The last years of Vygotsky's life had been a hectic race against his disease. (He was perhaps the last of those consumptive geniuses who gave the word "hectic" its peculiar complex of meanings.) He left behind him no polished well-organised oeuvre, but rather a devoted band of colleagues ... Vygotsky's colleagues and pupils continued working in the directions he had opened up, and they were later able to contribute to the rehabilitation of the subject: partly through their war work on "aphasiology" (or clinical neurology) of patients with brain injuries, partly through the improvement of educational techniques.

While some of Vygotsky's immediate associates are still at work in Russia, they are mainly in their seventies. His most distinguished co-worker [was] Alexander Romanovich Luria, whose extraordinary range of interests and abilities ... made him very possibly the finest all-round psychologist of the century ... Luria was Beethoven to Vygotsky's Mozart – and Vygotsky can be seen as the Mozart of psychology as Sadi Carnot was of physics... The wide-ranging intellectual possibilities pursued by Luria ... from literature across the board to neurophysiology by way of linguistics and educational innovation, had all been initially suggested in discussions with Vygotsky and his associates during the years around 1930.

Luria's own comment in his autobiography... reads: "Vygotsky was a genius. After more than half a century in science I am unable to name another person who even approaches his incredible analytical ability and foresight. All of my work has been no more than the working out of the psychological theory which he constructed."

Ah, but what a "working out"! ...

Vygotsky himself had not begun as a psychologist. He majored in literature at the University of Moscow immediately before the 1917 Revolution, and his initial research was in critical theory, notably on Shakespeare's *Hamlet*. (The resulting book, *The Psychology of Art*, has been available in English since 1971.) With this background, Vygotsky was quickly drawn into discussions going on in and around the Institute of Psychology in Moscow about the social and cultural structuring of "consciousness." (These discussions date from 1924 on when K. I. Kornilov

took over the directorship of the institute.) Vygotsky's energy and originality soon made him a leader in these discussions – he even embarked on a medical training, so as to master the neurological and psychiatric phenomena relevant to comprehension, concept-formation, and consciousness – and he remained a dominant figure in the debate until his premature death.

Yet it is only since the later 1950s that Vygotsky's ideas began to have their full impact on scientific psychology, even in the Soviet Union. Until 1962, his name was known in the West only in connection with an elegant test for studying children's grasp of concepts, using simple play blocks and with a controversy in which he successfully contested Jean Piaget's earlier views about the role of inner (or "egocentric") speech in the child's life. The publication of an English version of his 1934 monograph on *Thought and Language* (MIT Press, 1962) gave American readers a first taste of his analytical approach. But now, at long last, we have a representative selection of his theoretical essays, in a new collection prepared by Michael Cole and his co-workers under the ingenious title *Mind in Society*. ... It has two solid virtues. It was prepared with the active collaboration of A. R. Luria, so it can certainly be claimed to be authoritative. And it provides the sense we have long needed of Vygotsky's overall theoretical enterprise, of which his studies on thought and language are one, but only one, aspect.

SCHEDROVITSKY: The contribution of Vygotsky to psychology, its methodology and philosophy can only be understood within the historical context in which he began working, i.e., the main lines and trends in the science which developed simultaneously. The history of psychology is incredibly complex and dramatic, as indeed is psychology itself in the variety of layers that have always been present in it. Perhaps the fact that should be stressed above all others is that psychology existed for a long time – even into the twentieth century – merely as part of philosophy. There were philosophers who dealt with psychological problems. One of them was the founder of experimental psychology, Wilhelm Wundt. Other such philosophers included representatives of the Würzburg school such as Kulpe, Ach, Bühler, Messer, Marbe, Meyer, and Watt. The Gestalt philosophers – Wertheimer, Koffka and later Kurt Lewin – are more psychologists than philosophers in their method of work. Philosophers dealing with psychological problems tended increasingly to specialise. At the same time the reverse process was taking place: psychology developed a special mode of perceiving phenomena, and a world-view of

its own. The situation thus became more and more complex. And this is what makes Wilhelm Wundt, a profound and refined philosopher and psychologist, so interesting. He developed a so-called *Volkspsychologie* which was a form of psychological sociology. He also created what was, in fact, the first specialised institute of experimental psychology in Leipzig.

TOULMIN: In their introduction to *Mind in Society*, Michael Cole and Sylvia Scribner do well to draw our attention to Wilhelm Wundt, as being the common intellectual precursor of mid-twentieth-century psychology in both Russia and America. Only we must at once notice that the research ... in the two countries has continued quite different parts of his work. ...Wundt propounded the explicit view that complex mental functions, or as they were then known, “higher psychological processes” (voluntary remembering and deductive reasoning, for example), could not *in principle* be studied by experimental psychologists. They could only be investigated, he maintained, by historical studies of cultural products such as folktales, customs, and language.

Once we leave the world of pin-pricks, points of light, and other such “simple sensations,” we enter a complex and culturally conditioned realm. The more subtle mental phenomena we encounter there do not take the forms they do merely as the “effects” of universal, mechanically operating “causes,” rather they vary from culture to culture. It is not that, in Wundt’s opinion, these “complex mental functions” are incapable of being studied scientifically at all. It is simply that they have to be investigated with an eye to their special status, viz., as products of the historical evolution of human culture and society. To use Wundt’s own term, they form the subject matter not of experimental psychology but of a more interpretative and historical *Volkspsychologie*. The only part of Wundt’s psychology that has been influential in the United States hitherto has been his experimental program. As imported into this country by his pupil, E. B. Titchener, Wundt’s experimental techniques were divorced on arrival from their original theoretical context, and were subsequently generalized and taken as a model for the rest of “psychological science.” Meanwhile, most American psychologists have overlooked Wundt’s parallel writings about *Volkspsychologie*; so that they have ignored his arguments about the historical-cultural character of all “higher mental processes,” and the vanity of looking for universal, cause-and-effect relationships in the “higher mental realm.”

In Soviet Russia, by contrast, the historical materialist background provided by the philosophy of Marx and Engels, together with the earlier scientific work of Sechenov, made Wundt's cultural-historical approach to "higher psychological processes" congenial from the start. ... [Russian psychologists'] own work thus developed naturally along lines parallel to those sketched out in Wundt's *Volkspsychologie*, and they were never as tempted as their Western colleagues were to fall for the equation of "scientific method" with positivism. Not that they took Wundt's warning against attempting to investigate higher mental processes experimentally as Gospel; but the experiments they did perform in this "higher" realm were always designed with a particular eye to the relevant cultural and historical factors. The power of Vygotsky's own empirical studies, for instance, is largely connected with the fact that he refused to begin by isolating his "experimental subject" from all contextual cues – as experimental psychologists in the US so often do – but, instead, considered his subjects' behaviour always in relation to their specific "cultural-historical" situations.

YAROSHEVSKY: Vygotsky viewed Marxist psychology not as a school (like the associationist, experimental, and other schools) but as the only scientific psychology. Unlike those authors who had lost their sense of historicity and demanded that psychology "break with the past" and "make a new beginning," Vygotsky believed that transformation of psychology on the basis of Marxism did not in any way mean abandoning all previous work. Every effort of free thought to gain insight into the psyche and every attempt at deterministic investigation were preparing a future psychology and therefore would necessarily be incorporated into it in a modified form. Like the development of a socio-economic formation in Marxist doctrine, so the development of the psyche must be regarded as a natural historical process. Vygotsky's subsequent work demonstrated the fruitfulness of this methodology.

Vygotsky considered that the philosophy of Marxism was adequate to meet the demands of the science of psychology proper, which was looking for a way out of the crisis. He did not regard it as something introduced from outside by people initiating a reform in psychology (as Chelpanov believed). Vygotsky's explanation of the crisis of psychology was influenced by Lenin's analysis of the crisis situation which emerged at the turn of the century in the natural sciences, the development of which required a new methodology essentially along dialectical materialist lines. Vygotsky saw Marxism as a model whereby a philosophical doctrine is

applied to a concrete science. That task could not be tackled by the direct introduction of the universal categories and laws of dialectical materialism into the concrete sciences. Equally fruitless was the approach whereby isolated utterances from Marxist works were thought to provide a ready-made psychology, i.e., a solution to the question of the specifics and laws of the human psyche. To apply Marxism to a particular science it was necessary to work out a methodology, i.e., a system of concepts which could be applied to that particular science. As Vygotsky wrote, "It is impossible today to approach particular psychological investigations directly proceeding from universal principles equally applicable in physics and psychology without working out a concrete methodology first; one cannot measure the height of a human being in kilometres, it can only be done in centimetres."

In *Capital*, Vygotsky stressed, the general principles of dialectics operate in a mediated way through the categories of value, class, commodity, rent, etc. And Vygotsky believed that any concrete science oriented towards Marxism had to be based on that model. Psychology needed its own *Capital*. "What one can expect to find in the founders of Marxism," writes Vygotsky, "is not a solution of the question, nor even a working hypothesis, for the latter are created on the basis of a given science, but a method of structuring it."

COLE: Vygotsky began with *Das Kapital*. When Engels' *Dialectics of Nature* appeared in 1925, Vygotsky immediately incorporated it into his thinking. Whatever ... shortcomings Vygotsky's thinking may have had, opportunistic parroting of Marxism was not one of them. As he remarked: "I don't want to discover the nature of mind by patching together a lot of quotations. I want to find how science has to be built, to approach the study of mind having learnt the whole of Marx's *method*." *

VYGOTSKY: While the teaching of conditional reflexes, as Pavlov correctly remarked, constitutes "the foundation of psychological knowledge," one can say that natural psychology has been put on a solid foundation. But that made the methodological reform of science, the revision of the fundamental philosophical ideas underlying that dual science even more urgent. Historical psychology at the time of the Revolution had so much that was alien, heterogeneous and incompatible with the

* Quoted from the afterword to Luria's *The Making of Mind*, Harvard University Press, Cambridge (Mass.), 1979, p. 204.

trends which the Revolution introduced into all of cultural life that a revision and critique of traditional psychology became inevitable.

That revision was carried out under the strong influence of American behavioural psychology. It was a totally new phenomenon in the history of Russian psychology which had previously been under the influence of German and English, and to some extent, French ideas. However, the influence of American behaviourism was reflected back to this country as it had emerged as an independent scientific trend under the influence of the Russian objective school. The teaching on conditional reflexes was at the basis of the American system, and Watson, the father of behaviourism, justly names Pavlov and Bekhterev as the originators of the theory. For the first time, Russian psychology had not only developed independently but itself had exerted a powerful influence on psychology in other parts of the world, notably in the United States. Thus, the American influence was a re-importation of the earlier Russian influence.

Be that as it may, the Russians, following the Americans, proclaimed that psychology is a science of the behaviour of living creatures. In 1921, Pavel Blonsky in his *Essay on Scientific Psychology* attempted to reform psychology, to create a psychology not only without soul, but also without consciousness (or psychological phenomena), as a natural scientific theory of behaviour.

The new idea was congenial to the Revolution, and behavioural psychology began to spread rapidly on Russian soil, replacing the traditional empirical psychology. In fact, in America as well as in Russia, behavioural psychology was an extension of the struggle of the two psychologies mentioned above.

The Russian version of American behaviourism was dominated by three ideas: the desire to have a solid psychological system genetically and mathematically grounded on the basis of scientific materialism; the desire to bring psychological theory closer to the theory of society which prevailed in the intellectual realm during the Revolution and which was new for academic science; and finally, an awareness of the great challenges facing psychology on that new path. "We have yet to discover man," wrote Blonsky, "and what strange ignoramuses we will most probably appear in the face of the future great discovery!... We are to discover the 'social man' and his relationship with the surrounding environment, to describe it not in general words but in mathematical formulas."

The year 1922 saw the publication of Konstantin Kornilov's *Teaching on Human Reactions* which approached the same idea from the other end. Experimental study of reactions arose from the traditional teaching about the types of reaction as found in Wundt's school. Kornilov introduced a new element into that study, namely, the investigation of the dynamic aspect of that reaction, the temporal aspect of which was studied by Wundt and his pupils. The application of the new approach yielded profoundly revolutionary conclusions. The study revealed that thinking activity and the external manifestation of movements are inversely related to each other: the more complex and intense the thinking process, the less intensive the external manifestation of movement. That led the author to the formulation of the principle of monopolar expenditure of energy, whereby intellect is but a restrained process of will which does not translate itself into action. At the same time, the author proposes a new conception of reaction, or rather extends that psychological concept to mean the basic and primary manifestation of life. In his view, the study of psychology should begin not from sensation or perception but from reaction: the former are "abstract concepts" while the latter is given in experience. "Psychology must become the study of the reactions of a living organism covering all the forms of its manifestation with respect to its environment," the author concludes.

Both in Blonsky's initial formulation and in this last one, the basic trend is the isolation of materialist psychology (historically long overdue) and the inclusion of its object in the context of the natural sciences. "Both its method and object of study place psychology among the natural scientific disciplines," says Kornilov.

However, these early attempts to give psychology a new appearance have one shortcoming in common: both authors overlook the difference between those reactions and movements which form the subject matter of psychology and those which are of no interest to the psychologist. If reaction is the chief manifestation of life, then an inflammation is undoubtedly a reaction, as is rising temperature, but is a psychology of inflammations or fever possible? If psychology, according to Blonsky, is a science of behaviour, i.e., the totality of movements, then what feature and what criterion would enable us to distinguish the movements that are of interest to psychology from those which are irrelevant to it, for example, peristalsis?

However, the imperfection of these first attempts at a new psychology is the imperfection of *first steps*: the direction indicated was correct,

and before long it led to a new formulation of the idea of reform in psychology. In 1923, Kornilov in his report on "Modern Psychology and Marxism" delivered at the National Congress on Psychoneurology stressed the need for applying the methodology of dialectical materialism to psychology. The same idea was championed by Struminsky, Blonsky and others ... That marked a decisive and historic turn in the development of psychology. Psychology identified itself as a Marxist discipline. It *consciously* made itself part of the "iron inventory of materialist ideology" and consciously placed itself in the service of the Revolution. At the same time, it embarked on the *only road* which would insure the realisation of psychology as a science.

To make advances in a totally new area proved exceedingly difficult: it was accompanied by errors and miscalculations, both in the theory of dialectical materialism and psychology itself. One must keep in mind that Marxist psychology is the historical goal of our epoch, a goal which can only be met by the combined efforts of several generations of psychologists, because the words "Marxist psychology" do not mean a particular branch of psychology or a particular trend within it: these words mean scientific psychology as a whole, Marxist psychology is a synonym for scientific psychology, and in that sense Marxist psychology will be the crowning achievement of a long historical process by which psychology will become a natural science.

The attempt to build psychology on the basis of dialectical materialism was not entirely new. "The idea of giving a Marxist description and interpretation of human behaviour in place of the old psychology is maturing in many places simultaneously," said Blonsky. And this proves that the task was historically justified, that it flowed logically from the present state of the science, that the movement was backed by a powerful historical trend.

What has the new psychology yielded so far? Not much, as yet. We have some methodological premises; the first steps have been made in theoretical and experimental investigations, but the important thing is that Marxist psychology has will for the future which is objectively and historically justified.

It may seem at first that one event is dividing the historical trend toward creating two psychologies, in the usual sense of the term, and Marxist psychology: the relationship of psychology to history and sociology and their subdivisions. The early proponents of the doctrine of two psy-

chologies thus divided their respective spheres: physiological psychology, which gravitated toward the natural sciences and studied man as a creature within nature; and ideological psychology, which gravitated toward the humanities, since it studied man as a historical creature.

It was fear that the materialistic conceptions of natural psychology would penetrate into the social sciences that prompted Dilthey and other researchers to divide psychology into two “distinct sciences.” He maintains that “inclusion in the natural sciences” lends psychology a touch of refined materialism. For the lawyer or literary historian, such psychology, far from providing a solid basis, is dangerous. All subsequent developments have revealed the corruptive influence of the insidious materialism of interpretative psychology proposed by Spenser for political economy, criminal law, and teachings on the state.

This is precisely the point where Russian psychology decisively diverges from the path outlined by the originators of the idea. Materialist psychology wants to be social psychology in the first place... But doesn't it psychology thereby encroach on the tasks of other sciences, doesn't it distort the very historical foundations upon which it rests? Not at all: first, as distinct from Dilthey and his school, it proceeds from the theory of historical materialism, which regards history as a natural historical process; second, it adopts the idea of the two psychologies and thereby carries it to its logical conclusion, asserting that in the end, only materialist psychology is possible *as a science*, while the other psychology is not science but metaphysics.

SCHEDEVOVITSKY: The desire of psychology to become “scientific,” to develop its own methods of research and experimental confirmation of its hypothesis, in short, to become like the “normal” sciences, is a long-standing one and has become more intense. Yet to counter it, another and equally important and authoritative trend, the so-called cognitive (*Verstehen*) psychology, is developing. The idea and the term go back to Dilthey who believed that we can explain nature, but we can only interpret spiritual life. According to Dilthey, the uniqueness of the object of research calls for a unique method of analysis. The decades which have gone by have not buried the ideas which were first enunciated at the end of the last century. On the contrary, a new science – hermeneutics – has now appeared on the borderline between psychology and philosophy. Hermeneutics is the study of interpretation. This parallel strand of psychology also falls within its purview and has produced powerful offshoots. The struggle between introspectionists and those who adhere to

objective methods continues to the present, while the battles of those remote days are still relevant.

Textbooks usually write that an experimental psychology of thought appeared at the turn of the century simultaneously in Germany (the Würzburg school of which I have already spoken) and in France (Janet, Binet, Ribot). Both these schools, however, are introspectionist in method because they could not imagine a way or method of studying thought other than through interpretation and introspection. The proposition that scientific psychology cannot exist outside interpretation can be discussed at length, but to show the situation in which Vygotsky was beginning his work one must stress the unassailable fact that psychology did not have a scientific object at the time.

Two major schools have made important steps. On the one hand, there are the behaviourists, who adhere to a strictly objective analysis starting from the phenomenon. On the other hand, the Gestalt psychologists who proceed from consciousness and what it fixes in the field of phenomena. Only after this do they begin to work out their data in other ways, by looking for a physical analogue, for example. But there one finds that the notion of the psyche as the object of psychology characteristic of the mid-nineteenth century is immediately destroyed. And indeed, behaviourism deals not with the psyche but with actions, operations, and movements, i.e., external forms of behaviour while the Gestalt psychologists analyse not the psyche but consciousness and what we perceive through consciousness.

This was the background against which Vygotsky began his work.

At this point I think it is worth emphasising one fact: Vygotsky was not a psychologist by training. His interest centred on language, and one of his intellectual mentors was Alexander Potebnya, the outstanding Russian philologist, linguist and thinker who wrote *Thought and Language*. Vygotsky was interested in structural and comparative historical linguistic studies. He wanted to combine these two trends. He found aesthetics and the artistic perception of the text engaging.

I think that Vygotsky initially intended to occupy himself with aesthetics and philology. Gradually, however, his studies led him to the category of consciousness. He probably believed that this category would provide the key concept and principle for his philological and artistic studies. It seems he had to turn to psychological concepts in order to explain phenomena of artistic and aesthetic perception which he regarded

as odd. However, what was initially just a spin-off and instrument led him to pose a new question: what is consciousness? That very consciousness to which he turned, presumably as an obvious phenomenon with the help of which he hoped to understand and explain more complex things – the perception or creation of fiction. And so Vygotsky became immersed in what to him was a new but extremely interesting world with its own complex and intriguing problems. As often happens, he hoped that he would sort everything out quickly so he could return to his main subject. As it turned out, he never went back, and the problem of consciousness occupied him until his death.

The task he set for himself could not have been solved by a specialist. He had to formulate the object of investigation, and that is a matter for philosophers and methodologists of science. All this shows, in my view, that Vygotsky was a philosopher and methodologist who dealt with psychological problems, notably, the problem of consciousness. He became interested in the question of what contemporary psychology was and what its state was in his time. I believe – and this may be a simplistic view – that at first he began to read one book after another, hoping to find ready answers to his questions, and because he was a prodigious worker, he was able to look through a lot of books. The unsolved problems of psychology unfolded before him in all their complexity and contradictoriness. As a result, in 1926 Vygotsky wrote a book on the historical implications of the crisis in psychology, which meant that he had assumed the position of methodologist with regard to psychology. He began to operate, as it were, within the whole of psychology and set about discussing its destiny, i.e., specific methodological questions. He wanted to identify psychology's place with respect to all other cultural phenomena and to know what it would be in the future and in what direction it would develop. Such an approach, of course, did not prevent him from delving deeper and deeper into psychology, becoming a theoretical psychologist, and discussing the problems of consciousness, personality, and signs.

And in this, his background in philology and his familiarity with the problems of the sign and semiotics came into play. Vygotsky was well aware of the discussion between the structuralists and the adherents of historical linguistics, and he was imbued with the idea of symbolism. He was very much at home in one of the most problematical areas of thought of his time, the problem of the symbol and sign. At that time, symbolism was the property not of psychology but of philology and linguistics. The fact that Vygotsky was familiar with these problems from

his “pre-psychological” life and that he was aware of the discussions in philology, linguistics and aesthetics had far-reaching consequences. He introduced a body of ideas into psychology which had been alien to it. He didn’t think these ideas up, but he transplanted them to new fertile soil.

Vygotsky burst into psychology and immediately came to grips with its moot points. Such a thing could only have happened in the heady 1920s when all previous thinking had broken down following the Revolution.

The range of ideas introduced by Vygotsky, alien to traditional psychology, called for special means of discussion and analysis. And he drew many of these means from philology and linguistics.

So his position as a methodologist with regard to the whole of psychology and the historical view he held of it; close attention to the problem of the sign and putting the sign in the forefront; a historical approach that was at the same time structural and the attempt to synthesise them – these are, in my view, the key points in the work and ideas of Lev Vygotsky. It turned out, however, that in the process Vygotsky broke down the traditional object of psychology. His works were not psychological in the common meaning of the word; moreover, they practically destroyed the traditional object of psychological analysis.

This calls for some elaboration.

Vygotsky considers the behaviourist scheme “stimulus-reaction” in quite formal terms and takes a very simple model to discuss a question which had long been answered by the Gestalt psychologists: are human actions and movements reactions to certain stimuli? Naturally he answers it in the negative. Gestalt psychologists liked to say that if all human actions were reactions to a stimulus we would all make a movement of dropping a letter into a mailbox every time we passed one. Vygotsky makes use of another example offered by the medieval scholastic philosopher Buridan. His famous donkey finds itself in front of two heaps of hay and, being unable to make up his mind which one to eat, dies of hunger. Vygotsky says: Let us imagine that the animal’s behaviour is indeed structured in this way. The fact would still remain that man’s behaviour is organised differently. Wherein lies the difference? The difference is that man introduces a *sign* into the situation described by the “stimulus-reaction” formula. He takes a coin and says: if it comes up heads I go to the left and if it comes up tails I go to the right. And in this way he resolves the dilemma the donkey cannot solve. Man introduces an object,

invests it with meaning, and then acts in accordance with that meaning. We attach labels to everything around us: a “good” person is to be loved, a “bad” person is to be hated. All that is needed is to attach the correct labels.

Vygotsky records the commonplace truth that man’s world is full of signs, that we in fact live in a world of signs, and that our actions are determined not by objects *per se* but by the signs which have been attached to them. Later Kurt Lewin developed this idea by saying that all the objects around us seem to desire something – a cake wants to be eaten, and a cigarette wants to be smoked. This brings Lewin back to the problem of interpretation.

Vygotsky maintained that the signs, being in principle an instrument (his teaching was sometimes called “instrumental”), is directed not toward external objects but toward man. The sign is a means of restructuring the consciousness of man and influencing the consciousness of other men. This idea, enunciated by Vygotsky half a century ago, is highly relevant today.

DAVYDOV: Vygotsky was a famous methodologist of psychology and of the human sciences in general. However, in Soviet psychology this well-known fact has been declared more often than it has been properly discussed due to the frame of reference adopted by researchers who generally did not transcend the current state of the psychological theory of activity believing, with good reason, that this state of affairs derived genetically from his work. And yet such a theory does not contain concepts sufficient for a proper consideration of Vygotsky’s methodology. Of course, if one sees him only as the forerunner of a specific psychological theory, then Vygotsky should be considered as a psychologist only. But in that case, Vygotsky’s role as a methodologist would be ignored or, at best, merely asserted. Yet the most striking thing is that the inherent link between methodology and experimentation constitutes the nucleus of his work.

This brings us to an interesting problem. It has been noted almost universally that some contradictions have been found in Vygotsky’s work. Galperin believes that the contradiction lies in Vygotsky’s interest in emotions and the rationalistic position which he later assumed in the field of psychology. El’konin identifies this contradiction as the gap between Vygotsky’s historical method and his contraposition of “cultural” and “natural” psychic functions. Leontyev had a profound grasp of the nature

of that contradiction. He believed that there was some discrepancy between Vygotsky's premises and their realisation, thus providing us with the ultimate insight into the inner logic of Vygotsky's conceptions in terms of the psychological theory of activity. If one goes beyond this position, Vygotsky's "contradictions" give us glimpses of the complex interaction of two aspects of his activity as a methodologist and experimenter.

Vygotsky's work is not all of a piece: Vygotsky the psychologist has not used all the opportunities provided by Vygotsky the methodologist, and he did not base all of his psychological ideas on his own methodology. Both these aspects of his activity evolved, and not always in tandem. One must also bear in mind the unique features of his work due to his particular circumstances and his remarkable individuality. As his pupils attest, Vygotsky had the "carelessness of a genius," that is, he was not overly concerned with the accuracy of his formulations and at times did not bother to observe discipline in terminology. Besides, he was racing against time. He wrote all his major works in the interval between two bouts of tuberculosis, i.e., between 1926 and 1934. One should not discount, of course, the fact that he was often unable to find corresponding terms or a form of expression adequate to his ideas simply because none were available in the 1920s. Vygotsky was far ahead of his time, and some of his basic ideas can only now be clearly formulated with the help of the terminology developed in the 1960s and 1970s. But perhaps only future developments in philosophy and methodology will enable all his main ideas to be adequately stated.

Even so, many things can be definitely said at present. For example, we are quite sure of Vygotsky's ideas on the problem of consciousness.

In the 1920s, Soviet psychologists quickly destroyed the traditional, subjective-empirical psychology which prevailed in Russian science before the Revolution. And the same years saw impatient attempts to replace it with a new Marxist, materialist and objective psychology. Moreover, psychologists were strongly influenced by Pavlov's physiology of higher neural activity, which was seen as a model of scientific objectivity and materialism. Its successes were enough to impress any scientist in the early 1920s. Soviet psychologists in those years were also greatly influenced by the idea of explaining psychological processes in straightforward sociological terms. Considering that the Soviet humanities had not yet interpreted and assimilated Marxist philosophy with sufficient depth, these ideas were often regarded as authentically "Marxist." Finally, of the psychological schools proper, the greatest influence on Soviet psychology

was exerted by behaviourism, which was attractive because it was seen as an objective, materialistic trend.

The influence of these and a series of other circumstances produced a very complex picture in psychology. Some defined psychology as “the science of behaviour” (Borovsky, Blonsky), others as “the science of reflexes” (Bekhterev), others thought that psychology was “the science of reactions” (Kornilov), and still others described it as a science “of the systems of social reflexes” (Raisner). Despite the differences in these formulations their general thrust was undoubtedly directed against the notion of psychology as “the science of the soul.” Making psychology objective was the goal of all the trends. To achieve this aim, psychologists were prepared to forego the study of any subjective elements in the human psyche. The psyche was reduced either to a system of behavioural reactions or to a combination of conditional reflexes or a set of what a modern scholar would describe as “social positions” or “social roles.”

What did that mean in relation to the problems of consciousness? Many prominent Soviet psychologists (Blonsky and Borovsky) practically ignored this problem. They believed it was beyond the scope of scientific psychology, as it was incapable of being studied by objective methods. Another group of psychologists headed by Kornilov, on the contrary, considered consciousness to be the key object of psychology. And some few psychologists led by Chelpanov still adhered to the traditional psychology of consciousness.

It would seem that the above three positions exhaust every possible attitude to the problem of consciousness, but Vygotsky challenged all of them at once. He broke through the presuppositions to which the Soviet psychologists of those years had confined themselves without being aware of it. This arose from a premise which was tacitly and unconsciously accepted by all: *consciousness can only be studied as it was studied by subjective empirical psychology*. Vygotsky managed to escape this trap because he approached the problem of consciousness not from a psychological but from a methodological angle. To get a genuine opportunity to study the essence – genesis, structure, determinants – of consciousness, he argued, one must adopt a methodological position whereby consciousness becomes the object of study *per se*. That, in turn, makes it necessary to work out a more general principle of explanation. One must look for a layer of reality of which consciousness is itself the *function*. If consciousness could serve as a principle of explanation – and that was precisely the case in traditional psychology, which described consciousness as “the common

master of psychic functions,” “the stage on which the psyche unfolds” – any study of its essence would be automatically impossible, and only a description of the individual phenomena pertaining to it would be possible.

To give consciousness a different methodological status (I am deliberately using the terms of the 1960s and 1970s because this modernisation helps express Vygotsky’s idea for which there was no adequate terminology in his time) one had to identify the layer of reality that determined it. And Vygotsky accomplished that by representing consciousness as an element in the structure of man’s *labour activity*.

The idea that consciousness is determined by labour activity led Vygotsky to the idea of the “psychological tools” created artificially by mankind which represented an element of culture. Initially they were directed “outward,” toward the partner, but then they turned “inward upon oneself” to become the means of governing one’s own psychic processes. Vygotsky considered *signs* to be such “psychological tools.” He viewed symbols in a unique way – not as a reflexologist (who considered a sign to be a conventional stimulus in the system of conditional reflexes), and not as a representative of Freudianism where a sign is regarded as a visual symbol of unconscious drives. For Vygotsky, a sign is a symbol which has a certain meaning worked out throughout the history of culture.

This treatment of the symbol goes back to Vygotsky’s early work on the psychology of art and to his humanitarian philological background as a whole. One could single out several trends that influenced Vygotsky in particular: historical linguistics, the thinking of Humboldt, Steinhilber, Potebnya; scholars of kindred spirit such as Bakhtin; symbolism in literature and art in the twentieth century, and possibly the works on semiotics by Ferdinand de Saussure. The idea of the sign as a “psychological tool” in Vygotsky’s theory is one of the most successful applications of semiotics in psychology.

WERTSCH: ... One can see the influence of two areas of study which gave rise to much of Vygotsky’s genius – Marxism and semiotics. Thus, Vygotsky was interested in the role of sign systems as mediating devices, but he viewed this as an extension of Marx’s notion of how the tool or instrument mediates labour activity.

For Marx and Engels, labour was the basic form of human activity. It lies at the foundation of any explanation of socio-cultural history and of the psychological characteristics of the individual. Their analysis stressed

that in carrying out labour activity humans do not simply transform nature, they are also themselves transformed in the process. For Marx, labour is primarily "... a process going on between man and nature, a process in which man, through his own activity, initiates, regulates, and controls the material reactions between himself and nature. He confronts nature as one of her own forces, setting in motion arms and legs, head and hands, the natural forces of his own body, in order to appropriate nature's productions in a form adapted to his own wants. By thus acting on the external world and changing it, he at the same time changes his own nature. He develops the powers that slumber within him, and subjects them to his own control." That is, humans do not remain unchanged or unaffected by their participation in labour activity which transforms nature. They are constantly being influenced by this activity and by the demands placed on them as a result of the impact it had had on nature.

The tools that are available at a particular stage in history reflect the level of labour activity. New types of instruments are needed to carry out the continually evolving new forms of labour activity. The other side of the dialectical coin is that each new level of tools or instruments gives rise to yet another round of ways of conceptualising and acting upon the world.

This unending, dialectical process is particularly important in the case of sign systems. They are constantly changed to deal with new situations, but they are not the passive servants of activity. They exert a strong influence on the present and future forms this activity can take. This is a point which has been stressed by Soviet semioticians for half a century now. When trying to understand the role of the instrument or tool in Vygotsky's theoretical framework, one should not forget that before he became interested in psychological issues, he was a semiotician. One of the main cornerstones of his psychology was the similarity between Marx's notion of how the tool or instrument mediates overt human labour activity and the semiotic notion of how sign systems mediate human social processes and thinking. In both cases, the point is that instruments are not only used by humans to change the world; they also transform and regulate humans in this process. Daniel Lucid has recently [in his *Soviet Semiotics: An Anthology*, 1977] made this point in connection with Soviet semiotics as follows:

"The ultimate implication of Soviet semiotics is that human beings not only communicate with signs but are in large measure controlled by

them. Sign systems regulate human behaviour, beginning with the instruction given children and continuing through all the programs introduced into the individual by society. A sign system possesses the capacity literally to mould or 'model' the world in its own image, shaping the minds of society's members to fit its structure." *

DAVYDOV: In Vygotsky, the sign is deliberately treated as a psychological tool, like it is in semiotics, as a result of a conscious theoretical premise. Undoubtedly its shaping was influenced by the semiotic or near-semiotic ideas to which he was exposed beginning in 1910. In general, Vygotsky avidly took in the most interesting and promising scientific trends of his time.

PETROVSKY: The attempt to involve psychology in evolutionary theory was made by prominent biologists, Alexander Severtsov and Vladimir Wagner. The central problem that arose in this connection was determining the role of psyche or "psychic capacities" (Wagner) not only in the individual lives of animals but also in the process of their evolution. In his book *Evolution and the Psyche* (1922), Severtsov considers a form of the organism's adaptation to the environment which he describes as adaptation through modification of the behaviour of animals with no change in their physique. This results in various types of psychic activity in animals.

Severtsov showed that this evolution followed two main paths, reaching its supreme development in the two branches of the animal kingdom. In arthropoda, the behavioural mechanisms, such as instincts, developed progressively and were reinforced through heredity. But the perfect, complex apparatus of instinctive activity is at the same time very conservative: the animal is unable to adapt itself to abrupt changes in the environment. In chordata, evolution followed a different path: although instinctive activity did not reach a very high level, adaptation through individual modification of behaviour developed progressively and greatly enhanced the flexibility of the organism. A whole superstructure of individual behavioural mechanisms emerged in addition to hereditary adaptability. In man, this superstructure developed to its highest degree, owing to which he became a creature that could adapt to many conditions and

* Quoted from the preface to the English translation of a chapter from Vygotsky's book *The Development of Higher Mental Functions*, translated as "The Instrumental Method in Psychology." The translation was made for a conference on the work of Vygotsky (Chicago, October 23–26, 1980) by James V. Wertsch, who teaches at the Department of Linguistics, Northwestern University, Evanston, Illinois, USA.

even create an artificial environment of culture and civilisation. Biologically speaking, no creature possesses greater adaptability, and consequently, none has greater chances of survival than man.

This view was shared by Wagner whose work, like that of Severtsov, reveals the merits and shortcomings of the “biological viewpoint” in the study of human psychology. He advanced some progressive ideas, believing that the scientific study of psychology can proceed only in accordance with evolutionary teaching: from the simple to the complex, from animal to human and not vice versa. According to Wagner, after the theory of evolution was developed from a hypothesis into a scientifically established fact, no exceptions to it could be allowed, even for man. This is not to say that Wagner argued that human psychology should be abolished and its tasks delegated to biopsychology or comparative psychology. However he did maintain that psychology will be able to make a scientific analysis of the human psyche only when it masters the laws of the evolution of psychic abilities.

COLE: Vygotsky [and Luria] met regularly with Sergei Eisenstein [the great Soviet film director – *Ed.*] to discuss ways in which the abstract ideas that formed the core of historical materialism could be embodied in visual images projected upon the movie screen. By happenstance, Zaporozhets, who had been an actor in the Ukraine before going to Moscow and had been recommended to Sergei Eisenstein, eventually ended up a psychologist. At the end of 1920s he played the role of psychology’s “ear” in the world of film, attending Eisenstein’s discussions which he reported to Vygotsky and Luria. Eisenstein enlisted his psychologist friends’ help in solving not only the difficult problem of translation between verbal and visual concepts but also the empirical problem of assessing success. With their aid, he constructed questionnaires for audiences composed variously of students, workers, and peasants, to determine if they had understood his images as he intended. It is a measure of the breadth of his interests that for Alexander Romanovich [Luria], the relation between modes of representing ideas and modes of thought was no less important in the cinema than in the laboratory.

TOULMIN: A vast amount of busy research has gone on in the US during the last fifty years in dozens of different branches of psychology, neurology, linguistics, and educational innovation. But no common theoretical picture has been developed capable of integrating all their results. The different branches have, thus, also been separate branches. Given the positivist conceptions about “scientific method” dominant in

American psychology, the behavioural sciences have proliferated into dozens of highly specialized, and largely non-interacting, sub disciplines: so behavioural scientists have organised their research on the principle that the more narrowly and sharply defined a question can be, the more “scientific” it is ... They see their empirical task as the pursuit of statistical correlations between the numerical values of “quantifiable” variables. In the introduction to *Mind in Society*, Michael Cole and Sylvia Scribner include a curious apology about Vygotsky’s experimental methods:

“Vygotsky’s references ... to experiments conducted in his laboratory sometimes leave readers with a sense of unease. He presents almost no raw data and summaries are quite general. Where are the statistical tests that record whether or not observations reflect ‘real’ effects? ... Those steeped in the methodology of experimental psychology as practiced in most American laboratories may be inclined to withhold the term ‘experiment’ from Vygotsky’s studies and consider them to be little more than interesting demonstrations or pilot studies ...”

Cole and Scribner must surely have their tongues in their cheeks. Many classic experiments in the natural sciences, from Galileo’s “rolling ball” experiment on, have been precisely what Vygotsky’s are: viz. “interesting demonstrations or pilot studies,” having the power to open up whole new areas of insight and exploration ...

For instance, psycholinguists in America tend to study not how young children catch on to entire functional “language games” but rather how they master particular grammatical aspects of language, e.g. the use of the future tense ... Meanwhile, many Western neurologists have speculated about clinical disturbances of brain functions in adults, without seriously asking about the prior developmental processes by which such functions initially came to be cerebrally represented at all, during childhood ...

Nobody in the West, for instance, experiments and writes with equal authority – as Luria did – on such diverse topics as the syndromes of aphasia, cross-cultural differences in reasoning patterns, intellectual development in identical twins, and the performances of calculating prodigies. Few American psychologists, indeed, would even think it worth trying to do so.

As seen from Moscow, again, American behavioural scientists appear polarised – for lack of a broader theoretical framework focused on the historical-cultural conditions of behaviour – into two sharply opposed

philosophical sects, or ideological factions, all of them seemingly committed to one or another variety, either of “idealism,” or of “mechanical materialism.” That is why they have paid so little attention to the point that Vygotsky and his associates have found so crucial: namely, the processes through which the world of “ideas” and the world of “material conditions” find their essentially historical point of union – by their joint embodiment in the life of the individual child, as an outcome of its socialisation and enculturation.

... Neither party sees enculturation and socialisation as having the theoretical significance they have for the Russians.

The “idealists” insist that we are cultural beings from the start. The “mechanical materialists” view enculturation as yet another response by our essentially biological Nature to variations in material conditions. Either way, the theoretical significance of enculturation, as the historical point of union for “ideas” and “material conditions,” is too easily lost.

LURIA: A child perceiving an unfamiliar object without naming it perceives it through other psychic processes than an adolescent who has mastered language and is analysing the incoming information with the aid of verbal meanings. The child who develops the habit by drawing conclusions from its personal experience is using a different system of psychic means and relies on a different system of psychic processes than an adolescent who mediates every act of his behaviour by norms which have taken shape as a result of social experience.

The prevalence of immediate impressions in the case of the child is replaced in the adolescent by the abstracting and generalising function of speech, both inner and external, which influences every act of his behaviour.

Vygotsky, who provided a detailed analysis of fundamental changes in the psychic processes (changes demonstrating the successive forms of reflecting reality), had every reason to say that while the child thinks by remembering, the adolescent remembers by thinking. Thus, complex types of activity and reflecting reality are shaped along with radical changes in the psychic processes involved in carrying out these types of reflection and activity.

This provision, which Vygotsky described as the *semantic and systemic structures of consciousness* opens up new and unprecedented prospects for psychology.

Now psychologists are able not only to describe the changing forms of man's conscious life which differ in children and adults, but also to analyse the fundamental changes in the structure of those psychic processes which underlie psychic activity at different stages of development, to study those changes in the "interfunctional relations" of which we were previously unaware. This makes it possible to trace the historical formation of psychic systems.

Early Soviet psychological studies concentrated on the changes in the psychic development of the child. The brilliant discoveries made in that field brought essential changes to the basic concepts of psychology, which is now (in terms of its theoretical premises) increasingly different from the psychology of half a century ago. I am referring to Vygotsky's description of the development of the meaning of words, to Leontyev's analysis of change in the structure of activity as the child develops, to Zaporozhets' description of the formation of complex types of voluntary activity, and to the studies of Galperin and El'konin of the shaping of inner "mental actions." All these works have made a lasting contribution to the development of psychology. *

PETROVSKY: Vygotsky's theory of higher mental functions is based on two hypotheses: on the mediated character of psychic activity and on the origin of the internal psychic processes from the activity that was initially external and "interpsychic." Proceeding from Engels' premise, Vygotsky suggests that human psychology has a distinctive feature stemming from the role of labour and the use and making of tools in productive activity. That distinctive feature consists in the mediated character of psychic activity in humans. Thus, in Vygotsky's theory, instruments and signs are homologous as they are both based on a mediating function. The use of signs (words, figures, etc.), i.e., the transition to mediating activity, changes the structure of psychic activity in the same way that the use of tools changes the natural functions of the organism and intensifies man's system of psychic activity.

Another pioneering thought of Vygotsky, the idea of internalisation, also represents elaboration of Marxist theory. Vygotsky set out to trace a dialectic pattern in the shaping of the human psyche that would reflect the essence of the development of not only individual functions but of the personality as a whole. This brings up the problem of the correlation

* See A. R. Luria, *On Historical Development of Cognitive Processes*, 1974.

between the external and internal psychic functions. Vygotsky thus formulates the “general genetic law of cultural development”: “Every higher psychic function must go through the external stage in its development because it is the initially social function.” That makes it possible not only to trace the genesis of psychic processes but also to understand the general course of the development of the individual.

The historical approach to the human psyche has been further developed in the work of Leontyev and his associates. They regard psychic activity as a special form of activity, a product of external material activity transformed into the internal activity of the mind in the course of social historical development.†

LEONTYEV: The concept of internalisation (“implanting”) is usually associated in Soviet psychology with the name of Vygotsky and his followers who have made important studies of that process.

The original ideas which led Vygotsky to the concept of the origin of internal psychic activity from external activity, differ in a very fundamental way from the theoretical conceptions of his contemporaries. These ideas grew out of the analysis of the specifically human activity, viz. labour activity, productive activity carried out with the aid of tools, activity which is social from the start, i.e., which is pursued only through human cooperation and communication. Accordingly Vygotsky singled out two major interconnected principles that invariably lie at the basis of psychology. They are the “instrumental” structure of human activity and its inclusion in the system of relations with other people, which determine the peculiarities of the human psychological processes. The tool mediates activity linking man not only to the world of objects but also to other people. Owing to this, human activity *absorbs the experience of mankind*. And that is why man’s psychic processes (his “higher psychological functions”) acquire a structure that must include ways and methods which have evolved over history and are handed down to him by the people in the process of cooperation and communication. However, one can only pass on a means and a mode of performing a particular process in an external form, that is, in the form of action or in the form of external speech. In other words, the highest human psychological processes can appear only if man interacts with man, i.e., as an *interpsychological* processes, before they can be performed by the individual independently;

† *History of Psychology*, Mysl Publishers, Moscow, 1976.

some of them lose their initial external form in the process becoming *intrapsychological*.

The proposition that internal psychic activity is derived from practical activity shaped historically as a result of the emergence of a human society based on labour and that these psychic activities with individuals of every new generation are formed in the course of ontogenetic development were complemented by another important proposition: simultaneously, the very form of psychic reflection of reality changes because *consciousness*, the subjective reflection of reality, the subject's own activity and self, emerges. Consciousness is *knowledge*, but only in the sense that individual consciousness cannot exist without social consciousness and language, which provides its actual substratum. In the process of material production, people also produce language, which is not only a tool of communication but also a repository of meanings worked out by society.

The old psychology regarded consciousness as a metapsychological plane of psychic processes. But consciousness is neither innate nor engendered by nature: consciousness is engendered by society, it is *produced*. Therefore consciousness is not the starting point or condition of psychology but its problem – an object of concrete scientific investigation.

The process of internalisation thus does not consist in external activity's being *transposed* into the pre-existing interior "plane of consciousness"; it is rather a process by which that interior plane is *formed*.

After his initial series of studies of the role of the external means and their "implantation," Vygotsky turned to consciousness and its "units" – verbal meanings, their shaping and structure. Although in these investigations, meaning was considered primary, as it were, as something underlying life and governing activity, the opposite thesis was immutable for Vygotsky: it is not meaning or consciousness that underlies life. The reverse is true: *life underlies consciousness*.

The study of the development of mental processes and meanings (concepts) singles out from activity only one area, albeit an important one – the mastering by the individual of the modes of thought worked out by mankind. That, however, fails to cover even cognitive activity – either its formation or its functioning. *Psychologically*, thought (and individual consciousness in general) is broader than the logical operations and meanings which encompass them. Meanings in themselves do not generate thought but mediate it, like a tool, which does not generate action but mediates it.

In his later work, Vygotsky repeatedly expressed that fundamental provision in various forms. The plane of thought in speech, the last one that has remained “hidden” is, according to Vygotsky, to be found in motivation, in the sphere of emotions and will. The deterministic view of psychic life, he wrote, excludes “ascribing to thought magic powers of determining human behaviour by its own system only. The positive programme that followed from this demanded that the problem be reversed once more while preserving the active function of meaning and thought. For that to be done, it was necessary to go back to the category of operational activity and extend it to internal processes, i.e., the processes of the mind.”*

TOULMIN: Through his brief career, Vygotsky’s preoccupations centred on *consciousness*: more specifically, on the modes in which consciousness is “represented” – both mentally and neurologically – in the life of the individual. In his view, these problems cannot be convincingly dealt with by focusing either on our genetic inheritance and innate capacities alone or on the influence of external, environmental factors alone. Vygotsky was willing to take neither the “nativist” route preferred today by Chomsky ... nor the “external conditioning” route followed by Skinner ... Those two routes – he insisted – were not the only options available to us. Instead, he undertook a new kind of developmental attack on these problems.

In the course of a child’s upbringing, education, and social experience, the child comes to “embody” in itself certain modes of perception, thought and behaviour ... In short, it becomes both socialised and enculturated. (In Soviet jargon, the child’s “consciousness” becomes “structured” as it does on account of the “cultural-historical conditions” in which it is embedded.) What Vygotsky set out to discover was how these changes take place, and what more general processes they typically involve. Certainly, in his view, they rest neither on maturation alone nor on conditioning alone; and, furthermore, they clearly implicate both psychological and neurological processes. In psychological terms, Vygotsky’s goal was to discover how enculturation, socialisation, and the development of thought processes are shaped by the child’s inner life – especially by the use it makes of “inner speech.” In neurological terms, similarly, he wanted to find out how the social, cultural, linguistic, and intellectual

* This and the following words of Leontyev are taken from his book *Activity, Consciousness, Personality*, Moscow, 1977.

skills it acquires during the formative years are supported by, and “represented in,” the cortical mechanisms of the maturing nervous system.

In coming to developmental psychology from aesthetics and literary criticism, Vygotsky was exceptionally sensitive to the varied and changing roles of language in a child’s mental life. He studied with particular care the manner in which the child makes use of, and relies on, language in making new skills its own. Typically, those skills are first mastered and exercised in social and instructional settings, among and alongside other human agents, more or less in the way of public linguistic regulation and commentary. Subsequently, they are consolidated in the course of solitary play, with the help of “talking to oneself,” and then they become part of the child’s unthinking repertory of abilities bit by bit, through being the topics first, of the child’s progressively more condensed inner speech, and finally of its silent thought.

The earlier monograph on *Thought and Language* gave us a fair grasp of Vygotsky’s ideas about this process of “internalisation with the help of inner speech”: the process through which operations and calculations originally conducted overtly, in the public domain – by demonstration and verbal regulation, between the child and its mentors – become parts of the child’s own personal repertory, to be repeated covertly and at will, as inner or private “mental” operations. (Those who know that earlier book will recall the striking final essay in which Vygotsky discusses the “compression” of internal speech – with illustrations from Dostoyevsky and Tolstoy – and considers the manifold ways in which “a cloud of thoughts” may be condensed into a single word.)

The new book, *Mind in Society*, puts those ideas into a broader theoretical context and permits us at last to sort out for ourselves how Vygotsky’s work relates to that of his contemporaries and successors in the West. Most particularly, it clarifies the central role that Vygotsky allots to language and symbolic thought in shaping the structure of adult mental life. These things are for him – quite literally – psychological tools by which we impose specific forms on our mental or “inner” world, just as we use physical tools to impose specific forms on the material or “outer” world ...

At the pre-speech stage, the first elements of a language game are prefigured without any direct use of language. Then, during a crucial formative stage, language – whether public or inner or both – serves as a scaffolding within which the rest of the complex is mastered, memorised,

and consolidated. Finally, at the mature adult stage, the linguistic elements lose all mnemonic function, and become purely “symbolic.” Once this has happened they can at last be dealt with independently, or “in the abstract.” With this possibility in mind, some novel philosophical questions are worth raising: e.g. “Is the ‘meaning’ of any specific utterance necessarily the same for the young child, the intact adult, and the brain-damaged aphasic?” Or, more precisely: “In what respects ... can we regard the ‘meaning’ of any term or utterance as ... ‘exactly the same’, or ‘totally different’, for individuals at different points in life?”

LEONTYEV: The embodiment of sense in meaning is a highly intimate and psychologically substantive process which is by no means automatic or momentary ... Scientific psychology knows that process only in its particular manifestations: in the phenomena of people “rationalising” their real motives, and in the throes of transition from thought to word. (“I forgot the word, what I wanted to say and fleshless thought shall return to the abode of shadows,” as Vygotsky cites Mandelstam’s words.)

As distinct from the life of society, the life of the individual is not “self-speaking,” i.e., the individual has no language of his own and has no meanings of his own; he can conceptualise phenomena only through meanings which he borrows “ready-made” – knowledge, concepts and views he receives in various forms of individual or mass communication. The individual, however, does not just stand in front of a shop window of meanings from which he has to choose, these meanings – ideas and concepts – do not await passively to be chosen but invade individual’s communication with people surrounding him in real life.

LURIA: The works of Vygotsky as summed up in his classic book *Thought and Speech* (1934) made perhaps the first decisive step toward the scientific psychological discovery of the process whereby thought becomes a full-fledged utterance (in other words, the shaping of an utterance), and how a full-fledged utterance is transformed into thought (in other words, is understood).

For the Würzburg psychologists “thought” was a kind of spiritual act divorced from images or speech; they assumed that it was perfectly complete before any utterance and was “embodied” in words in the same way as clothing is put on a person’s body. In Vygotsky’s work we find nothing remotely similar to this process of “the embodiment” of thought in word. He rules out “ready-made thought” from the start and counters that assumption with his thesis on the complicated, historically determined na-

ture of thought and the complex, dramatic transition of thought into full-fledged speech. “Thought is not *embodied* in word but is *realised* in word,” said Vygotsky, and that was the starting point of his whole scientific career.

For Vygotsky thought which had to become speech was by no means an elementary and indivisible “spiritual” act.

He believed that thought itself was a complex generalised reflection of reality guided by certain *motives*, i.e., thought was a special process formed in the course of social and historical development as a result of the role which language plays in mankind’s social history. That is why thought, which in the early stages of history was itself a concrete activity which only later became a condensed, inner process, cannot be regarded as an original “spiritual” act. Thought has its own social history, linguistic roots, and an active character in mediating cognition.

Proceeding from these considerations, Vygotsky tried to identify a *motive* which brings forth every thought and the complex structure which, at close quarters, may appear “imageless” and “non-verbal,” but which is in fact infinitely more complex precisely because thought itself can only be considered as a psychological entity with a social origin.

Even the above conception, whereby thought arose from a gradual contraction and speech activity inward directed, suggests that the transformation of thought into linear speech is not direct but mediated and involves an intermediate link, a necessary mechanism for the materialisation of Vygotsky’s thesis that “thought realises itself in the word.” According to Vygotsky, “inner speech” is the link between the original “thought” and its ultimate external (=verbal) utterance.

Inner speech, that necessary link in the process of unfolding thought into utterance was not equated by Vygotsky to “talking to oneself” or to “speech minus sound,” preserving all the grammatical forms of linear external speech. “Talking to oneself” could not have any psychological function; it would merely have doubled the length of the formation of external linear speech and would not have offered any insight into the process of speech generation.

Inner speech as understood by Vygotsky has a very different structure and performs very definite functions distinct from both thought and external speech.

A person who has a conception which he wants to put in the shape of a linguistic utterance knows the subject (or the main theme) of that ut-

terance; naturally, therefore, the subject of the utterance does not require a special designation. However, what has to be said about the subject does require such designation. It is this *predicative content* which must figure in inner speech, the main task of which is to turn thought into a linear speech construction. That is why Vygotsky suggested that inner speech must be predicative in function.

This property is merely the functional quality of inner speech. The other property, a morphological one, is the fact that it is *reduced*, contracted and *grammatically amorphous*.

This inner speech, amorphous in structure and predicative in function, can, in Vygotsky's view, provide an intermediate link between grammatically inchoate thought and a grammatically structured expanded verbalisation.

One must, however, mention another feature of inner speech that enables it to perform the said function.

The conception (or thought) which marks the beginning of utterance formation undoubtedly reflects some real phenomenon, generalising a content which must be given a grammatical form, and categorising the subject of the utterance. Vygotsky probably did more than anyone else in his time to clarify the structure of the meanings of a word without which the substantive structure of thought would be beyond understanding. However, the thought that is to be formulated in speech is always subjective; in other words, it always reveals the complex of properties that have been isolated by the speaker in accordance with his motives, intentions and needs. Vygotsky applied the term "sense" to the subjective character of thought to be uttered, and he opposed "sense" to "meaning" which he understood as a system of objective links behind the word reflecting the real phenomena, irrespective of the needs of the speaker met by these links.

In that frame of reference, inner speech is a mechanism for turning subjective *senses* into a system of extended speech *meanings*, and it is this psychological characteristic of the process, as formulated by Vygotsky, that was the final element in his concept of the process under discussion. One must say that the distinction between the two terms in linguistics is blurred and that later psychological and psycholinguistic literature failed to develop the aspect of his teaching on the intermediate link between thought and speech.

Vygotsky's theory, objectively a major source of contemporary psycholinguistics, was itself purely psychological.

That is why his own writings do not treat the semantic, lexical and morphological structure of inner speech in any detail and do not contain a description of the changes which inner speech undergoes as it becomes a grammatically expanded verbalisation.

It took the work of many linguists and psychologists to study the aspect of the realisation of an utterance which gave rise to a new and burgeoning field of studies – *psycholinguistics*. This occurred thirty to forty years after Vygotsky's death.*

TOULMIN: Many of those who have immersed themselves in the work of Vygotsky and his associates have found the novel unification of Nature and Culture characteristic of his ways of thought becoming part of their own basic theoretical orientation – whether applied to inner speech and the solving of problems “in our heads,” to aphasia and brain function, to the affective components in intellectual functioning, the development of aesthetic perception or whatever ...

When, in his concluding postscript to the English edition of Vygotsky's *Psychology of Art*, V. V. Ivanov wrote, “Vygotsky's studies opened the way to a unification of the biological and social studies, and ... their continuation may have at least as great a significance for science as the deciphering of the genetic code,” that may strike us as an exaggeration. But a claim of this magnitude is by no means ridiculous.

YAROSHEVSKY: Psychology today is increasingly preoccupied with empirical studies rather than theoretical questions and is marked by differentiated rather than integrated tendencies. Meanwhile it is obvious that the progress of empirical studies themselves, which are related to the practice of organising human behaviour, is directly dependent on methodology, as experience has shown.

Since Vygotsky's time Soviet psychologists have done much to construct the theoretical framework of psychological knowledge in keeping with Marxist-Leninist philosophy. However, the requirement of general psychology maintained by Vygotsky, i.e., a special methodology of concrete psychological research, has not yet been adequately dealt with.

* See A. R. Luria, *Basic Problems of Neurolinguistics*, Moscow University Publishers, 1975.

Particularly apropos here is Vygotsky's critique of the positivist idea that the crisis in psychology can be overcome by the construction of a strictly empirical "premiseless" science which shuns methodological "speculation," and which abandons attempts to understand its Logos or historical destiny. Vygotsky refers to the statement that nothing can be born of restraint.

He spoke metaphorically of two types of scientific systems differing "in their attitude to the methodological spine that support them." Methodology is like the spinal chord in an animal. Simple animals like oysters have exoskeletons, without their shell, they become an amorphous mass. For the higher animals, the endoskeleton provides internal support. Prominent American psychologist M. Kettle on his closing address to the 9th International Congress of Psychologists in the USA remarked that psychology is a huge jellyfish which could do with "a few bones." According to Vygotsky, Marxist philosophy could provide the highest type of methodological organisation, one not externally attached to the body of science but providing solid support for its advances by structuring from within.

Many changes have occurred in the nature and form of psychology over the past fifty years. Bowing to the dictate of practice, it has made a spurt in traditional spheres and has penetrated into many new areas which are now difficult to survey. Its links and interactions with other sciences – natural, social and applied – have contributed to its expansion and progress but they have also resulted in its further differentiation into areas that are losing their interconnections. The success of interdisciplinary studies, the significance of which is obvious, often creates a paradoxical situation in psychology: sometimes a particular discipline in psychology is more closely linked with a related (non-psychological) science than with other areas of psychological knowledge proper. Today the borders of psychology are not only broader but also blurred.

Methodological carelessness inevitably leads to a "confusion of terms" and, since language and thought are inseparable, to the growing sterility of the latter. We often come across combinations of disparate constructs in which, according to Vygotsky's caustic remark, "the tail of one system is attached to the head of another, with the body of a third stuck in-between." Elements for such combinations are borrowed from many other fields – cybernetics and sociology, the theory of decision-making and anthropometry. Sometimes all this is simply sealed with the magic word "system" and given fancy mathematical apparatus designed

to give a semblance of coherence, scientific rigour, and precision to a collection of heterogeneous elements.

Extensive use of computer technology insures the automatic processing of experimental data and relieves the scientist's brain of routine operations, giving scope to the search for new problems and solutions. But this brings with it the danger of a "dilettante approach to science" which Vygotsky fiercely opposed referring to the stereotyped use of technical methods and schemes, a tendency monotonously to reproduce these methods without constant criticism of the concepts, ceaseless methodological work and scrupulous testing to determine whether the experimental and mathematical apparatuses are being used to answer questions that are false in the first place.

The growing world-wide influence of Vygotsky's ideas is due to the fact that he had a far deeper grasp of matters than his contemporaries, proceeding as he did from the Marxist theory, of the historical path and trends of psychology. This is evident in his unpublished work *The Historical Meaning of the Psychological Crisis* * which considers a wide range of basic problems of the structure and dynamics not only of psychological but also of scientific knowledge in general in correlation with philosophical knowledge. That manuscript, written half a century ago, reads as if the author were reflecting on questions which are now uppermost in the minds of those who study psychology, philosophy and the history of science. Scholars directly linked with the scientific study of man and his changes are more keenly aware than anyone of the need for a critical analysis of diverse facts, hypotheses, empirical generalisations, and for eliminating the "loose ends" in knowledge. In that sense, Vygotsky's works take on added value today. The above-mentioned paper records Vygotsky's development before he came up with a concrete scientific programme for his research based on his cultural-historic or instrumental conception. According to that conception, the psychologist's job is to study the instruments (tools, signs) through which "natural" psychic processes become cultural processes, external operations are internalised to form the device usually assumed to be an original individual and his inalienable subjective world. Vygotsky's "psychological pedigree" is usually traced to these ideas. Traditionally, they appear on the first page of

* That manuscript, written in 1926, runs some 250 typewritten pages and is included in the first volume of Vygotsky's collected works now being prepared for print by Pedagogika Publishers.

the chronicle of his school. However, it is enough to turn to his unpublished work on the crisis in psychology in order to see things in different light and to discover the vast methodological work that preceded the specialised scientific achievements with which Vygotsky's name later came to be associated. Vygotsky the philosopher and methodologist of science predated Vygotsky the student of higher psychic functions, originator of a cultural-historical conception in psychology, and leader of a major Soviet psychological school.

Was the earlier Vygotsky heeded? His manuscript lay unpublished, but there is no doubt that his ideas were put to use. One can point to some precedents in history when thoughts that were ahead of their time were committed to paper but remained unknown to the scientific community at large. The unpublished notebooks of Leonardo da Vinci and the remarks of Diderot refuting the tract of Helvetius *On Man* are interesting documents of great prognostic value, but they had no influence on the intellectual atmosphere of their time. However, the same could hardly be said of Vygotsky's manuscript. The author was surrounded by his fellow adherents to new psychology and by numerous pupils. There is no doubt that he communicated the propositions of this unpublished material to them. He imparted his perception and analysis of the nature of scientific knowledge to them, and this provided the underlying methodology for the subsequent activity of his school.

Vygotsky's experience is an example of what we would now call reflections on the history of science which precedes the building of a positive system. It is a kind of "critique of psychological reason," but a critique that "X-rays" its historical path and analyses real facts. It goes without saying that facts here mean something other than facts in routine empirical science. Vygotsky stressed that he was proceeding from the analysis of facts of a "supremely general character, as for example, a particular type of psychological system, the trends and fates of different theories, various methods of cognition, scientific classification and schemes, etc.," and that he considered them not from a logical, abstract viewpoint but "as definite facts in the history of science, as concrete living historical events and their trends, locked in combat and concomitantly conditioning each other ... in their cognitive-theoretical essence, that is, in terms of their correspondence to the reality which they are designed to explain." By facts, he meant phenomena concerned with the development of science as a special type of system. In this context, facts become theoretical concepts connected with the rise and fall of entire

systems of scientific truths, crisis situations, etc. Such “metafacts” demand theories different from concrete scientific theories. Vygotsky was very well aware of that when he wrote about the scientific study of science itself. It would be no exaggeration to say that reflection upon science in general, a historical approach to the analysis of the problems of logic and methodology of cognition, were a necessary prerequisite for Vygotsky’s subsequent work.

Vygotsky did not proceed from *a priori* considerations of what the science of psychology could be in general, but from a penetrating study of the historically authentic forms in which that possibility realised itself. History to him was a vast laboratory, a gigantic experimental plant where hypotheses, theories and schools were tested. Before getting down to experimental psychology, he immersed himself in the workings of that laboratory. Before taking the thought and speech of children as the object of his study he considered the fruits of intellectual activity in its supreme manifestation – the structure of scientific knowledge. He was guided by the well-known Marxist thesis that highly-developed forms provide a clue to the secrets of elementary forms. For instance, he said that the word is the “embryo of science.” However, he studied not that embryonic form but the function of the scientific term – the word which carried the largest semantic load. Similarly, he discussed the question “of the turnover of concepts and facts that enhances concepts,” with reference to the evolution of science. But subsequently his scope changed and his findings on the macro-level led to the explanation of conceptualisation in children. A systems analysis of collective scientific reasoning was followed by a theory on the systemic structure of individual consciousness. A comparison of scientific concepts with instruments of labour, both of which can become obsolete, was followed by instrumental psychology with its premise of tools as a means of understanding the world and building an inner image of it.

All the basic questions of cognitive activity – the relationship between theoretical and empirical studies, between word and concept, the modes of using concepts as special “tools” which results in changes in the content of the object, action and its intellectual correlate – all these were first considered in the context of evolving scientific knowledge. It was not until they were tested with reference to that special culture that Vygotsky turned from historical to psychological experience. He saw the child as a young investigator following the same routes as the grown-up researcher. Vygotsky arrived at the dialectics of cognition – historical

method and the principle of reflection – not speculatively but through a special “empirical” historical view that became the starting point for a methodological attack on the fortresses which the former deterministic natural psychology had failed to conquer. *

DAVYDOV: An interesting, albeit a debatable interpretation of Vygotsky’s work given by Yaroshevsky shows that he has seen Vygotsky as an outstanding methodologist of science and a precursor of the modern history of science. Vygotsky’s goal was to formulate normative methodological requirements for a future system of Marxist psychology, i.e., a general psychological theory based on Marxist philosophy. For that, it was necessary, as Vygotsky himself wrote, to create a psychological analogue to *Das Kapital*. And while Marx’s work was subtitled *A Critique of Political Economy*, it was now necessary to give a methodological critique of scientific psychology.

Many people entertained such plans at the time. In the twenties there were many who intended to build a Marxist science. Almost every Soviet theoretical psychologist felt the need to develop such a science and believed his own theories could serve as a model. A lot was said and written at the time about the need for a definitive methodological and philosophical work. But in practice, formidable difficulties were encountered. They were so great that doubts arose as to whether the task could be solved in principle and whether it was constructive. The opponents of Marxist psychology, such as Chelpanov, said that there could be no “Marxist psychology,” calling it mere “word games.”

The heart of the matter was this. It seemed evident that in building a Marxist psychology, the tenets of Marxist philosophy had to be used and combined with the facts and conceptual schemes contained in various psychological theories. Accordingly, general propositions of dialectical and historical materialism (“psyche is a property of highly organised matter,” “matter is primary and consciousness secondary,” etc.) were combined with isolated ideas borrowed from behaviourism, reflexology, Freudianism, etc. The combinations of these two sets of elements were checked by formal logical criteria to ascertain that they were not contradictory and then proclaimed to be “Marxist psychology.” But before long it became apparent that such constructs had substantive, rather than for-

* Yaroshevsky’s “contribution” has been compiled from various sources, in particular, his article “L. S. Vygotsky: Researcher of the Methodology of Science”

mal logical flaws: the propositions of dialectical materialism and those of individual psychological theories existed independently of each other. No synthesis could be achieved by simply conjoining them. And yet psychologists did not see a more radical solution to the problem.

What was Vygotsky's contribution to the solution of this problem? His main premise as methodologist was that in any theory, one must first isolate an explanatory principle that delineates the theory's limits and structure. This general principle is distinct from the object under study and provides the unit of psychological analysis. Thus, researchers must find not a static, one-dimensional theory, but the dynamic relationship between "the explanatory principle and the object under study." According to Vygotsky, methodological analysis in psychology is a two-way street. First one must move from the existing conceptual apparatus, specifically from the units of analysis, to the isolation of the explanatory principle. And then back – checking the whole path whereby a philosophical concept becomes an explanatory principle in psychological theory and developing that theory on the basis of the given explanatory principle. Vygotsky called that method "logico-historical" as opposed to "formal-logical."

The constructive part of that method consisted in Vygotsky's demonstration of the need for a psychological system to be built in *several stages*, each stage being isolated and described in detail (including such stages as most contemporary psychologists simply did not notice at the time). The multistage concept was closely tied to the need for finding *mediating links* interconnected by complex relations, in particular, genetic ones. This general principle led to a series of important conclusions.

First, the path to the building of a Marxist psychology by combining isolated theses of dialectical materialism and concrete psychological theories was blocked. Vygotsky demonstrated that "intermediate links" were necessary for such a synthesis. Proceeding from the inherent logic of Marxist philosophy, one must construct a corresponding methodology for psychology and then, having isolated an explanatory principle, may develop concrete theories.

Second, this principle was spearheaded against the idea that the psyche had a concrete material seat in the body, for example, the brain. It stimulated the search for a special intermediate reality which existed between life and the human psyche. Only a concept expressing such a real-

ity could act as an explanatory principle within the categorical apparatus of a non-reductionist psychological theory.

Finally, Vygotsky's general principle here left an imprint on the question of units of analysis. In this connection, Vygotsky's statement to the effect that the chemical properties of water cannot be studied by further dividing it into indivisible components – hydrogen and oxygen atoms (analysis by elements) is often cited. Vygotsky insists that one must look for the minimal unit that preserves the properties of the whole – the molecule of water (i.e., unit analysis). This favourite simile of Vygotsky's is usually construed as an indication of his desire to give up elementary analysis and look for whole units.

However, within the context of his system of methodological views, Vygotsky's idea on the need for "unit analysis" appears in a different light. It is this idea that led him to abandon the famous behaviourist "stimulus-response" formula which presupposes a direct determination and look for a mediating link to lend methodological coherence to his theory. This gave rise to his three-part scheme with an intermediate link in the shape of the "psychological instrument," already mentioned here as his major discovery. Thus, as a logical result of sound methodological principles, he arrived at the idea of activity as the explanatory principle of psychological theory.

Psychology was dominated by formal logic before and after Vygotsky. This could be seen in everything – in the analogies with the natural sciences and the very approach to concrete psychological problems. The psychology of education was a vivid example. The idea that knowledge is acquired through generalisation from the concrete to the abstract is a typical example of the formal-logical and empirical approach in psychology. Vygotsky overturned that approach in the 1930s in his work on the formation of generalisations; he showed that this approach did not correspond to the actual psychological process of generalisations and suggested that dialectical logic offered a way out.

However, it was not until the sixties that this trend was really developed in psychology from the place where he left off and under the direct influence of his ideas. However, it was now done on the basis of an elaborate apparatus of dialectical logic given in the works of M. M. Rozental, B. M. Kedrov and especially E. V. Ilyenkov.

Many areas of science, notably general psychology and the methodology of psychology, are now where the psychology of education was in

the early sixties. This is precisely why the eighties could well witness a Vygotsky revival. Psychology as a whole, and especially the theory of activity propounded by Vygotsky, Leontyev and Luria, has reached a point when it could easily assimilate Vygotsky's urgently needed methodological theories and develop his concrete ideas on the basis of modern methodology and logic.

Psychology occupies a special place among the sciences: with a vast and instructive history behind it, it is living through a difficult period marked by a ceaseless search for its object and method. This is happening against the background of major scientific achievements accompanied by vast theoretical work. All this goes to show that psychology is entering a new stage in its development that could lead to important consequences for both human knowledge and social practice.

This "revolutionary" situation in psychology has been brought about, among other things, by the creative work of outstanding Soviet scientists – Vygotsky, Luria, Leontyev, Meshcheryakov, and other scientists of that school.

It is high time to take a look at their work which points to the future of this ancient science.

Chapter II. Alexei Leontyev. A Biographical Profile

All our life, work and behaviour lean heavily on the experience of preceding generations, something which is not passed on at birth... If I know the Sahara and Mars even though I have never left my country and have never looked through a telescope, it is obvious that this experience owes its origin to the experience of other people, who have gone to the Sahara and looked through telescopes.

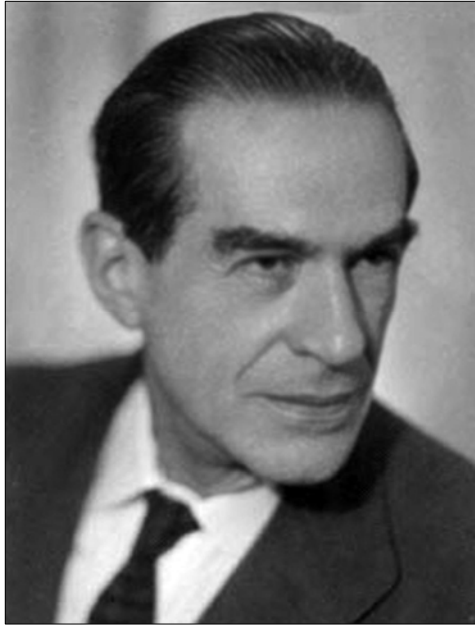
Lev Vygotsky

LEONTYEV, Alexei (1904-1979), Full Member of the USSR Academy of Pedagogy, Dr. Sc. (Psychology), Professor, Lenin Prize Winner. He won world-wide fame for his fundamental research in general, child, educational and engineering psychology as well as studies of the handicapped and rehabilitative therapy.

His scientific school, which goes back to the research begun by Vygotsky, played a major role in the development of Soviet psychology by promoting dialectical materialist teaching on human activity, consciousness, and the psychological features of personality.

After graduating from Moscow University in 1924, as a very young man, he became actively involved in the struggle being waged by a group of progressive scientists led by Kornilov to develop a psychology based on the philosophy of Marxism-Leninism. In his first experiments with affective reactions, carried out jointly with Luria, his prodigious gifts as an experimenter were revealed. But those were just the first steps. The main direction of his research emerged after he grew close to Vygotsky in the latter half of the 1920s and along with him and Luria set about developing a theory of the socio-historical origin in the higher, i.e., specifically human, functions. That period saw him conduct a study into voluntary memory for the Psychology Chair of the Krupskaya Academy of Communist Education the results of which were published in his book *The Development of Memory* in 1931. The study contained experimental proof of the thesis that the higher psychic functions of man have a mediated struc-

ture and develop by way of internalisation, by transforming the external forms of communication between the subject and the people into internal psychic processes.



Leontyev's next major contribution to Soviet psychology was made in the 1930s when he embarked on the study of the major problem in Marxist psychology, that of operational activity as the main source of the origin and development of the psychic processes and characteristics of man.

In the early thirties in Kharkov, Leontyev and a group of young scientists (the Kharkov psychological school) undertook a new series of theoretical and experimental studies at the

Ukrainian

Psychoneurological Academy and at the Chair of Psychology of the Kharkov Institute of Education. These investigations focused on the structure and origins of human activity, notably practical activity, and its role in the formation of various psychic processes at different stages of ontogenetic development.

They studied the dependence of the formation of thought processes and habits, and the development of perceptions and memory on the content and structure of the subject's activity pursued under various conditions.

In the late thirties, Leontyev, proceeding from the general conception of activity, tackled the problem of the origins of the psychic reflection of reality. He carried out, first in Kharkov and then at the Moscow Institute of Psychology, an experimental study of the conversion of unperceived stimuli into perceived ones. Drawing on the data obtained, Leontyev, for the first time in the history of psychology, attempted to define the objective criteria of elementary psychology and to identify its sources in the

interactions of living creatures with their environments. The general implications of these experiments were revealed in Leontyev's Doctoral dissertation (1940) which traced the dependence of qualitatively distinct stages in the development of psychic reflection in animals on changes in the content and structure of their life activity at various stages of phylogenesis. The concluding part of that work considers the origin and peculiarities of the human psyche and consciousness in connection with the transition from the biologically conditioned behaviour of animals to the social and labour activity of man.

During the Great Patriotic War (1941-1945) Leontyev and a group of associates at a special hospital organised a series of psychological and psychophysiological researches into the restoration of the motor functions of soldiers who had sustained injuries in the upper extremities. These investigations prompted important theoretical and practical conclusions. It was shown that the rehabilitation of lost movement essentially depends on the general character of the patient's activity and the motives, goals, and means of this activity. The research data thus obtained was used to develop new effective methods of labour therapy and therapeutic exercises which were widely used at military hospitals and played an essential role in restoring the combat and working ability of wounded soldiers.

After the war, Leontyev resumed his work on the problems of general and genetic psychology. He organised a Child Psychology Department at the Institute of Psychology of the RSFSR Academy of Pedagogy and presided over the research into the motives and laws of psychic development in preschool and school-age children. He also continued his pre-war investigations into the structure of activity, its course under different motivations, and its impact on the shaping of the mental processes of the child. Various types of activities were studied (play, study and work) with a view to assessing their specific role in the mental development of children.

Proceeding from the data obtained, Leontyev advanced the idea that at every age level, a certain type of activity becomes dominant and exerts the decisive impact on the child's mental development. This led to a new principle for dividing the ontogenesis of the human psyche into age groups.

Leontyev published his theoretical and experimental results on the origin and development of the psyche in a monograph, *Problems of Mental Development*, which was awarded the Lenin Prize in 1963.

He combined the study of the child's mental development with the study of the role of education and instruction in that development and the investigation of such key problems of educational psychology as the child's awareness of learning, the conditions and rules under which pre-school and school-age children assimilate new knowledge, develop the moral facets of the personality in the process of education, etc. Along with his research activity at the Institute of Psychology, Leontyev carried out extensive work as an administrator in the capacity of Secretary Academician and later Vice-President of the RSFSR Academy of Pedagogy.

He was an active participant in the creation of the Psychology Department at Moscow University. In 1966 Leontyev organised the University's Psychology Department, of which he was dean until his death. He and his colleagues carried out a series of theoretical and experimental projects, notably, studies into tactile, visual, and audial perception.

At that stage in his career, he passed from analysing the structure of the subject's external operational activity to the study of the structure of internal, psychic activity looking into its motives, goals, and specific means which are social in origin and determine the character of reality cognition. As a result of these investigations, Leontyev made an exceedingly important conclusion concerning the affinity between physical and mental activity and the genetic and functional interconnections between them, and concerning mutual dialectical transformations of one kind of activity into another.

Analysing the concept of meaning introduced by Vygotsky into Soviet psychology, Leontyev revealed essential differentiation within the substance of that notion. He singles out objective meaning (characterised by the system of the object's relations with other objects) and its individual meaning (which depends on the needs of the subject and his value orientations). The study of the motives, tasks and goals of the subject's activity led Leontyev to a deeper insight into the genesis and hierarchic structure of the human personality which takes shape in the process of intensive interaction with his social and natural environment as a social being and member of society.

Leontyev summed up the theoretical conclusions of these studies in a seminal book *Activity, Consciousness, Personality* (1975) for which he was awarded the Lomonosov Prize.

Leontyev did a great deal to apply Lenin's theory of reflection in concrete psychological studies and to explore the psychological mechanisms that give rise to the subjective image of the objective world. On the basis of his experiments in perception, he advanced his "hypothesis of assimilation" which represents the first attempt at a rigorously scientific explanation of how, in the process of the subject's perceptive actions aimed at investigating the object perceived, the image of that object is created. Leontyev tried to sum up the results of his theoretical and experimental studies in the generation of mental images during activity and the role of these images in the orientation and regulation of human behaviour in a fundamental philosophical and psychological monograph *The Image of the World* which, unfortunately, was never completed.

Leontyev was not only an important scientist: he was a talented teacher. He began his teaching career in 1927 at the Krupskaya Academy of Communist Education and continued working at institutions of higher education until his death. He taught at Moscow University for thirty-five years. His lectures, profound in content and brilliant in form, invariably attracted both students and scientists in various fields. Leontyev gave freely of his time to undergraduate, graduate students and young scientists alike. He initiated and organised summer and winter schools for psychology students who met professors and lecturers there to discuss current problems in diverse areas of psychology.

In addition to teaching at higher education establishments, Leontyev worked constantly and efficiently to disseminate knowledge of psychology. He often gave lectures on the most diverse themes for parents, teachers, engineers, writers, and artists. His public lectures touched upon the most vital problems of our time and invariably evoked lively interest among the audiences and brought them up to date on the latest achievements in psychology.

Leontyev began his scientific career by advocating a restructuring of psychology on the basis of dialectical and historical materialism, and throughout his life he attached the greatest importance to opposing idealism, vulgar materialism, positivism, biologising, and racism, coming out against all theories of the innate superiority of some people and inferiority of others, in particular against the use of aptitude tests in attempts to

justify these differences. In his work and public statements at home and abroad, he exposed pseudo-scientific psychological concepts with passion and conviction, elaborating and disseminating the dialectical materialist conception of the human psyche, its origins, and the motive forces in its evolution.

Leontyev felt a great sense of responsibility for the state of psychology in his country, its methodological level, its place within the system of sciences, and its relevance to socialist construction, in short, for the fate of psychology. He was the driving force behind the isolation of psychological knowledge into a special area; the organisation of the Psychology Department at Moscow University; the publication of the journals *Voprosy Psikhologii* (Questions of Psychology) and *Vestnik MGU. Psikhologia* (Moscow State University Bulletin. Psychology). He was president of the Society of Psychologists and did much to ensure it was admitted into the International Union of Psychological Science. Leontyev was one of the initiators of introducing psychology as one of the sciences studied by the USSR Academy of Sciences and of the creation of the Institute of Psychology under the USSR Academy of Sciences.

Leontyev had no use for a narrowly pragmatic, publicity-seeking approach in science. He constantly stressed the importance of profound theoretical work in charting an overall strategy for specific experimental investigations. However, he never withdrew into abstract theoretical reflections, actively seeking to link psychology with diverse concrete spheres. He made a valuable contribution to the study of the problems of instruction and education, of ergonomics, engineering psychology, and rehabilitative therapy.

Leontyev was a worthy ambassador of Soviet psychology abroad and did much to raise its international prestige. He headed the Soviet delegations to the 14th, 15th, 16th, and 17th international congresses of psychologists and presided over the 18th international congress. Between 1957 and 1976 he was elected to the Executive Committee of the International Union of Psychological Science and was its Vice-President. His major works were translated and published in many countries. It is a tribute to Leontyev's merits that he was elected an Honorary Doctor of the Paris and Budapest Universities, Honorary Member of the Hungarian Academy of Sciences and several psychological associations abroad.

It so happened that I was the last of the innumerable interviewers to whom Alexei Leontyev talked so often during his long life. He was convalescing after an illness, but he looked cheerful and energetic.

Little did I know that this interview would be his last...

In the summer of 1978 Professor Evald Ilyenkov and I visited him at his home. Leontyev, who had been told in advance about the aim of our visit, had not prepared any books, articles or interviews. His memory needed no props, because the turbulent history of the remote years when Soviet psychology was just emerging had remained fresh in his mind all those years, since he was constantly analysing and reinterpreting it.

“One is Not Born a Personality!” (An Interview with Alexei Leontyev)

Experience is not what
happens to you; it is what
you do with what happens
to you.

Aldous Huxley

Could you please give us an overview of the present state of psychology. And don't worry that your opinion might be partial or subjective, for even if it were, your opinion, the ideas of a person who had a hand in the creation of present-day psychology, would be far more valuable than a "balanced" judgment.

I think the most salient feature of psychology today is the gaping abyss between the mountains of facts accumulated daily at super-modern laboratories with up-to-the-minute equipment and the poor, I would say, puny state of the theoretical and methodological foundation of our science. While these words apply fully mainly to Western, notably, American psychology, the state of affairs in this country also leaves something to be desired. The paradox consists in the following: the need for psychological investigations is snow-balling. Firms, factories, the civil service and the army are all in a great hurry to set up their own psychological laboratories. Naturally, the number of publications is increasing. In the United States alone, there are about forty periodicals devoted exclusively to psychological problems. A good deal of ingenious, intelligent, and useful work is being done, and all this is happening against a background of an amazing neglect of methodology. Psychology today is in urgent and acute need of theoretical foundations, without which even the best empirical investigations are inevitably myopic, unconnected, and uncommitted to a single goal.

The crisis in theory is not recent: psychology has existed in this unnatural state for almost a century. The system of psychological knowledge has lived through a whole century of constant splits producing chasms into which the very object of the science disappears. Initially, the divisions were between humanitarian versus natural scientific, descriptive versus interpretative psychology. Then in West European and American science, we saw the sprouting of new trends that promised a long-awaited theoretical revolution in psychology. Behaviourism, which arose in America in the early twentieth century, proclaimed the motto: "The subject of

psychology is behaviour and not consciousness.” So great was the novelty and promise of this thesis that it was compared to the match that lit the powder keg: it seemed that old psychology was about to be blown to pieces. And indeed, the emergence of the new doctrine stimulated the destruction of the structuralist school (which regarded the experimental study of the structure of consciousness as the main task of psychology), the functionalists (who set themselves the goal of understanding how man adapted to the changing environment, and the psychic functions involved in the process) not to mention the Würzburg school (which shifted the accent from the subject’s behaviour to his actions), which had by then exhausted its potential. The schools fell apart but what happened next? The long-awaited theoretical revolution failed to materialise because behaviourism has never been able to unite the individual investigations. Gestalt psychology, born in Germany almost concurrently with American behaviourism, seemed to have at last discovered a general principle that could break the psychology out of its impasse. Its call to study the higher psychic processes as integral “structures” (Gestalts) not derivable from the basic primary elements was heeded by many psychologists who had despaired of building “a science of real human beings” from elementary “atomistic” analysis. But even Gestalt psychology failed to resolve the glaring contradiction between the vast amount of experimental material and its less than modest interpretations. This may be why so many psychological heads became intoxicated with Freudianism which promised a coveted point of reference – this time in the unconscious of the human psyche, which could hopefully revolutionise psychology and make it a living science. But there, too, disappointment was in store for psychologists.

Since then, we have seen the rise and fall of many other schools, major and minor, with less ambitious pretensions and longer “half lives.” Neglect of general psychology, scepticism with regard to philosophical interpretation of the accumulated materials, the aggressive, uninspiring slogan “Facts, only facts and nothing but the facts” discouraged even the finest minds from tackling the cardinal questions of psychology. Western psychologists had even come to be proud of their lack of theoretical bearings and incoherent premises. This gave rise to an amazing phenomenon: separate chapters in books on psychology expressed different positions while the editor became the author. American psychologists believe that this is the most fruitful approach. An amusing and revealing incident occurred recently. The editor of a book by a Soviet psychologist being published in the USA said a few warm words about the author in

the foreword, characterising him, among other things, as being “exceedingly eclectic” in his exposition. The author was greatly offended, and Alexander Luria and I had to console him by saying that the editors meant well, since to them “eclecticism” meant “broad horizons, an ability to assimilate several different theories at once” – in other words, they meant it as a compliment.

And yet one could well understand the Soviet author who is used to thinking that science must proceed from a single philosophical principle, while eclectics is but a mixture of concepts and approaches, evidence of immature thought.

You are right. Soviet psychology has rejected the path of methodological pluralism of which Western psychology is so proud. I think this is false pride, because the old adage, “many approaches mean no approach” has a lot of truth to it. Immediately after the October Revolution of 1917, an intensive search began for new paths in psychology, for solutions to its fundamental problems on unified, Marxist basis. Initially this was a very complex process. In prerevolutionary Russia, psychology had eked out a meagre existence. The modern reader will have difficulty imagining the situation in Russian psychology before and immediately after the October Revolution. Yet this must be constantly borne in mind when we review the development of Soviet psychology and assess the significance of its early formative years.

Although in prerevolutionary Russia there was a solid tradition of materialistic interpretation of the psyche laid down in the works of the Revolutionary Democrats, the ideas of Sechenov, the scientific contributions of Pavlov, Bekhterev, Ukhtomsky and other natural scientists and physicians, the official version of psychology taught to students at universities, gymnasiums, and religious schools was isolated from that tradition. The official psychology was dominated by idealism and extreme conservatism. Even in adducing experimental data, it remained, with rare exceptions, imitative, largely of the works of the German Kantian psychologist Wundt. Against the background of the worldwide revival of psychology at the beginning of the century, psychology in prerevolutionary Russia remained deeply parochial.

The opening of the Institute of Experimental Psychology at Moscow University before the Revolution brought few changes in the situation. The Institute was headed by the famous Professor Georgy Chelpanov, a convinced idealist who tried to “tame” experimental psychology (which was developing vigorously at the time), to keep it from going materialist.

Although the new institute was probably the best equipped in the world, its results were unimpressive because Chelpanov, in his own words, strove to prove that “experimental psychology does not lead to materialism.”

Chelpanov was an extremely learned man, the author of a popular textbook which was reprinted fifteen times (and, incidentally, awarded the prize of Metropolitan Macarius of Moscow) and which all educated Russian people used in the study of psychology. And his famous monograph *The Brain and the Soul* subtitled *Critique of Materialism: an Outline of Contemporary Teachings of the Soul* was a best-seller in its time. But the Institute he headed was backward in the main. In his time, Timiryazev did not mince words in expressing his opinion of the Institute. He wrote in one of his articles: “I come to the window thoughtfully. In front of it, a three-storey building has been standing for three years... And it seems to me that the science cultivated in that building under the ferrule of philosophy resembles a pitiful little dog, led on a leash by a theologian.”

Apart from the Moscow Institute, the beginning of the century saw the creation of psychological laboratories in St. Petersburg, Kazan, Yuriev and Kharkov. But the contribution of Russian psychology to world science was small. I can name only one work that was up to the world standards of the time. It was written by Nikolai Lange, a professor at Novorossiiskiy University in Odessa, and it was published in Russia and Germany. Yet even that was a modest study although devoted, one must admit, to an important subject, namely, the involuntary fluctuation of attention in visual and audial perception. The Russian scientists who took part in the First International Congress of Psychologists were almost all physiologists.

This was the general atmosphere in the official psychology cultivated in tsarist Russia. Although psychologists sometimes engaged in spirited polemics, they were united in their opposition to materialism. And in the prevailing conditions, no academic criticism, however severe, could bring about a drastic change in its ideological foundations. For that to happen, the political machine supporting it had to be smashed.

It is, perhaps, characteristic that for a while after the October Revolution, nothing changed in that remote province officially known as psychology. Few people could afford to give any thought to psychology in the early years after the Revolution. As before, Chelpanov presided over the university education of psychologists; his book *The Brain and the Soul*,

criticising materialism, had just been reprinted, and the fifteenth edition of his textbook had come out. And things remained as they had been in the chief psychological centre, the Moscow Institute of Psychology, still headed by Chelpanov. The Institute pursued the self-same investigations based on introspection, and all the experiments staged at its laboratories and all the hardware were only used to verify these introspective studies.

But it was in the bosom of that Institute that a movement to revolutionise psychology began. It was headed by one of Chelpanov's associates, Konstantin Kornilov. It all started with the publication of his book, *The Teaching of Human Reactions*, which reported the most ambitious experimental study carried out at the Institute. It was, in general, a rather ordinary investigation, but the author considered it the beginning of a new psychological trend – reactology. This provoked a conflict between Kornilov and Chelpanov.

What lay at the root of the conflict, however, was not a difference in interpreting the role and significance of studying reactions but a clash of opposing ideologies. Subjective idealistic views on psychology held sway at Chelpanov's Institute, and they were challenged by Kornilov who became aware of the need to eliminate idealism from the science of the human psyche. In advancing his propositions in reactology, he saw them as a road towards a Marxist psychology. His main service, however, consists in the fact that he turned his demand for a restructuring of psychology on the basis of Marxism into an objectively significant public action. He advanced this demand at the First and Second National Congresses on Psychoneurology in 1923 and 1924 where it enjoyed broad support not only from psychologists, but also from philosophers, sociologists and psychoneurologists – in short, people of various ages, professions and scientific backgrounds.

The idea of restructuring psychology along Marxist lines met with a very different reception at the Institute of Psychology and in the University circles connected with it. The Institute's large auditorium was the scene of continued debates in the course of which Chelpanov tried to "defend" psychology. Chelpanov's adherents fought every inch of the way and even switched their tactics from time to time. Initially Chelpanov declared that Marxism was dogma for which psychology had no use, but by the end of 1923 he had begun to assert that Marxism in psychology was precisely what his Institute was seeking. Neither he nor his supporters were able to steer the Institute along its former lines. The situation that emerged could not be tolerated for long, and soon an event which

symbolised and consolidated the turn in Soviet psychology occurred: the Institute of Psychology was reorganised with Kornilov as director and it was given the task of developing a Marxist psychology.

I would describe the situation that emerged by the beginning of 1924 as an urgent one. The former staff of the Institute receded into the background as it were. Some left the Institute in protest along with Chelpanov while others, without formally severing their ties with the Institute, took on work at other places. At the same time, new people came who were little known or totally unknown in psychology, among them a large group of young people just out of the University, appeared on the scene. A persistent search began for new paths, hypotheses, and methods in psychology. Kornilov's beliefs about reactology were just a symbol for most of us. The point at issue was not really reactology but the introduction of Marxist ideas in psychology.

The search continued in various directions: while some research was devoted to the study of reactions, work was also begun along behavioural lines and in the fields of psychoanalysis, social psychology, and psychotechnology. For all the diversity of these early searches, which might have given the impression of incoherence, there was something all the team members had in common. This something was the shared conviction that the only way to develop a genuine scientific psychology was to develop it as a consistently Marxist science dealing with the psyche. We were also aware that Marxist psychology was neither simply another trend or school in psychology nor a combination or unification of trends (a "synthesis," as Kornilov said) but a completely new stage in the history of psychology in which Soviet psychologists were, by force of circumstances, to be the trail-blazers.

I have said the new situation at our Institute led it to a state of emergency. This provides a powerful stimulus not only for psychology but for the development of all those involved in its construction. This is evidenced by the scientific careers of many Soviet psychologists who began their work in those years.

The slogan of building psychology on the basis of Marxism had been proclaimed. But the only member of the Institute with a solid Marxist background was Lev Vygotsky, who later became a major Soviet psychologist and founded a scientific school of his own. The new director, Kornilov, unfortunately, did not have a proper grasp of dialectical materialism, his knowledge was superficial, and he proposed a programme that

was wrong from the very start. His idea revolved around a synthesis of subjectively empirical and what he called “objective” psychology. The sense in which he used these words can be readily understood if one considers that in the preface to a book published at the time he wrote about the need to fuse the old psychology with behaviourism. Kornilov sincerely believed that this fusion would represent Marxism in our science. Clearly, the programme he put forward was sterile.

The search for an original approach began at the Institute in 1926 when attempts were made to combine Freud and Marx. They were initiated by the new members of the staff, the psychoanalysts including B. D. Fridman. The Institute had some sociologists, the most notable of whom was M. A. Reisner, author of a sensational book, *Ideology of the East*.

In general, a “desecration of the shrine” was taking place. The Institute’s corridors were swarming with unknown young men, and a young boy by the name of Luria who had come from Kazan ensconced himself in the study of Professor Gustav Shpet.

Most important of all, offices and corridors alike were the scene of a struggle between those who sought to create a new Marxist-based psychology – a truly Marxist psychology in fact and not in name only – and those who opposed or misunderstood them.

I am speaking of the events at the Moscow Institute of Psychology in such detail because those were the years when I made my first steps in science. In 1923 Chelpanov told me, still an undergraduate, that I would stay at the University for a graduate course (“to prepare for a professorship,” as they said at the time). I joined the Institute of Psychology as a part-time junior researcher. But I didn’t make enough money there to live on, so I worked in the Anti-Illiteracy Commission, too. I was in charge of anti-illiteracy work at the Mossukno (Moscow Tweed) Trust, inspected anti-illiteracy work in the Zamoskvoretsky District and did some library work. Then I managed to get a modest job as a lab. assistant at the Institute of Education, which, though ill-paid, allowed me to devote myself totally to science.

I crave your indulgence for another digression but I hope you will bear with me, because it has to do with little-known events.

After the change of leadership at the Institute, Chelpanov transferred to the State Academy of Art, the Moscow counterpart of the Petersburg Academy of Fine Arts which trained painters and graphic artists. Among its members were major art scholars and philosophers, and Chelpanov

was put in charge of the psychology department. One day he was visited by a messenger from Pavlov. The great “antipsychologist” offered him the chance to set up a psychology department at a place called Koltushi, near Leningrad, where his famous institute was to be accommodated. What is more, he wanted Chelpanov to head the department proceeding from his positions and platform. It so happened that Luria and I were sent to Leningrad to have a look at the work of Pavlov’s laboratories at the Institute of Experimental Medicine. When we arrived in Leningrad, Luria had to stay in bed because of food poisoning while I reported to the Institute. I was introduced to Pavlov by Dmitry Fursikov, Assistant Director for Science. Before that solemn moment, I had made a round of the laboratories and was amazed at the manner in which Pavlov treated his staff, at the way he gave advice to researchers, etc. In short, by the time Fursikov told Pavlov that a young colleague had come from Moscow for a short spell in residence with the Institute, I had had a look around. Pavlov mumbled something like “Yes, yes” by way of a greeting, shook hands with me and then sprang a question on me that took me completely by surprise: “How is Georgy Ivanovich [Chelpanov]?”

“Ivan Petrovich,” I said, baffled, “Georgy Ivanovich doesn’t work at our Institute any more, our director is now Konstantin Nikolayevich Kornilov. A lot has changed at our Institute; we are presently cultivating objective methods of psychological research, and that’s why they’ve sent me to you.” His reaction was immediate, even instantaneous. It was made more dramatic by the fact that we were standing close to each other: he abruptly turned his back on me and, with the words “I am sorry, young man, I am very sorry,” stalked out.

Looking back, I can understand a lot of things better: for example, Pavlov’s letter of good wishes to the Institute of Psychology on the day of its opening despite the fact that in those years he forbade his staff to use “psychological” words – “the dog thought,” “the dog guessed” and insisted that everything be explained in physiological terms (inhibition has occurred, nervous excitation has been induced).

But to get back to my story.

In those early years, Soviet psychology had turned over a new leaf: the methodological basis upon which that science could exist had been named although it had yet to be created. And although those early years when we were learning to interpret psychological facts in Marxist terms were difficult and errors sometimes crept in, the result of that work

brought about a dramatic renewal of psychology, within a brief period of time. By the postwar years one could not imagine international congresses or symposia of any significance without the participation of Soviet scientists. In the USA, for example, unabridged translations of Soviet authors in a special quarterly called *Soviet Psychology* have now been published for many years. Much of the material published consists of older works which the Americans had overlooked. They have discovered with some surprise that studies in early childhood, which American psychologists began fairly recently, were being conducted in the Soviet Union before the war.

Soviet psychology now enjoys a very high standing. For example, at Moscow University we launched a small journal called *Moscow State University Bulletin. Psychology*. And immediately Pergamon Press signed a contract for regular translations. The list of Soviet psychologists who have been elected honorary members of academies in different countries and honorary doctors of universities is quite impressive. The International Psychological Congress held in Moscow had the highest attendance ever, and only the huge Kremlin Palace of Congresses could accommodate our plenary meeting.

Do you believe that the situation in Soviet psychology does not need to undergo any serious changes and that we should merely pursue the present lines of research, in short, do you think that "all is quiet on the psychological front"?

I wish I could share the optimism of those who think so, but there are some circumstances that concern me very much. Of course, now there is a broader exchange of ideas and a rapid development of the emergent science on a Marxist basis, so we have chalked up some achievements. At the same time we have become rather forgetful of the early years of theoretical reform, what was being done in our science and why. Today psychologists continue positive research and engage in important concrete investigations. Nor can one say that interest in the philosophical aspects of psychology has declined: judging by the number of publications the reverse is true.

But the inner links have been upset between the philosophical problems of psychology tackled by the writers of lengthy volumes and monographs and concrete psychological research which stands in need of a scientific methodology. And for some reason nobody wants to work on methodology. We are in acute need of special psychological methodological research and I see no signs of any such research which comes up

to the calibre of the fundamental books by Vygotsky (*Thought and Speech*) and Sergei Rubinstein (*Fundamentals of General Psychology*), both of which were published long ago. I may sound rather severe but I don't mind, because I hope to evoke among our psychological community, especially the youth, a taste for interpretative methodological work, some of which has been lost since the early years when the foundations of the present successes of our science were laid.

The frequent attempts to create a basic theory, to devise a comprehensive system of science, and a language suitable for psychological, physiological or any other description of reality are sure to prove to be a passing fad; sooner or later scientists will drop often meaningless word combinations from their vocabulary such as "structural (or comprehensive, or systems) approach," "interdisciplinary research," "introduction of cybernetic models," "modelling of mental processes" and the like. I do not want to sound like a fretful old man pining for bygone days, and I have nothing against cybernetics, modelling, the systems approach and all these other good things. But I am worried by the methodological laxity I see in my branch of science.

I have seen repeatedly that my fears are shared by many of my colleagues, including some very young psychologists. So, I don't think it has anything to do with my age. However, my age makes it impossible for me to put off conversation about the aspects of my field that worry me. There are some people who are trying to contribute to the study of the human mind without becoming specialists in cybernetics, neurology, or logic, i.e., remaining psychologists, and then there are others who are carried away by reductionism of every sort, i.e., the idea of reducing psychology to elementary phenomena. To my mind, nothing could possibly be more dangerous for psychology. It means the death of psychology, for such research throws psychology overboard. Logical reductionism is concerned only with logical operations. There is cybernetic reductionism, physiological reductionism, semantic reductionism, you name it...

At the same time, many professional psychologists abandon the basic science by branching off into applied fields. There is growing demand for psychologists in every branch of the economy. Of the several thousand psychologists in this country, many now work in industry and in all manner of establishments dealing with sports, medicine, etc. A manager of a large plant hears about "psychological climate" and "psychological testing," so he immediately organises a psychological laboratory. But there

are not enough competent psychologists. People of our profession are in great demand.

That creates a kind of vacuum in psychology which is being filled by people and ideas that are alien to the field. So I think we should begin – “begin again” – by clearing the methodological decks of psychology of extraneous ideas and the abuses of rapid growth.

One should probably begin with the central psychological notions: restoring them to their proper places would make our advance easier. Could you name one of the most important single concepts of this sort and tell us about the difficulties and controversies in its interpretation today?

I think the problem of personality is central to psychology today. It provokes contradictory views, and the allegiance of a particular psychologist to a certain camp goes a long way in determining his theories. There are two basic lines of thought here. First of all one must determine the relationship between individual demands and the activity in which that individual is engaged. One can say that drives and demands dictate a person's acts; they are the prime movers in personality development and in achievement in a particular field of endeavour. The opposite view holds that the development of human activity, its motives and means, transforms the demands, generates new ones, changes the hierarchy of drives and wishes in such a way that the satisfaction of some of them becomes merely a necessary condition for the activity of the person, for his existence as an individual.

If one proceeds from the former point of view, the psychology of personality must be based on the primacy of consumption (“man works in order to eat”) while the latter theory bases the psychology of the individual on the primacy of activity through which man asserts himself as personality (“man eats in order to work”).

I would like to stress that the new anthropological, or naturalistic conception, looks quite convincing and illustrative. Its arguments have the appeal of being natural and simple. It requires a degree of sophistication and a philosophical background to see that the satisfaction of various needs, while a necessary condition for all human activity, is only the beginning of the psychological problem. The situation that interests the psychologist is this: once man's primary needs have been satisfied, how will he act, in what direction will he develop and, consequently, how his will needs change.

“Hunger can make an animal get up and can even lend its search a more or less passionate character, but it contains no elements that direct the animal’s movement in one way or another or change it according to the terrain or chance encounters,” as Sechenov wrote. He gave that illustration to show that a drive is merely a state of need in the organism which in itself cannot generate a purposive activity, its function being confined to general excitation of the motive sphere, provoking restlessness and search. But hunger in man can generate new needs, not by itself but because our imaginary hungry man lives not in a social vacuum but in society with its cultural and other norms, customs, and instruments. “Hunger,” writes Marx, “is hunger, but hunger satiated with cooked meat consumed with the aid of a knife and a fork is a different kind of hunger than that which makes one gorge raw meat with one’s hands, nails and teeth.”

The other extreme in the psychological view of the nature of personality neglects any attempt to explain personality in terms of corporeal properties – genetics, heredity, and constitution – in determining psychological type and similar “physical” or “biological” traits. If one recalls the well-known Marxist thesis that personality is a special *quality* which a natural individual, i.e., simply man in nature, acquires in the system of social relations, then, just as in the case of demands and activity, the problem is reversed: the genetic and physical, in short, anthropological qualities of man, become neither the determiners of his personality, nor even the constituent elements of its structure but merely given conditions under which a personality is formed. Thus, they determine not the psychological traits of a person, but the forms and manner of their manifestation.

So, one is not born a personality, one becomes a personality by socialisation and enculturation, by acquiring the habits, skills, and methods of handling tools. Personality is a product of social activity and its traits can be explained only in these terms. Such a personality trait as aggressiveness offers a classic example. It is, of course, manifested differently in a choleric person than in a phlegmatic one, but attributing aggressiveness to the qualities of temperament is no more scientific than attributing the causes of wars to people’s propensity to fight.

We see that the Marxist approach to the psychology of personality does overturn the traditional system of views. The problems of the qualities of neural activity, temperaments, etc., are not expelled from personality theory, but they are considered in a non-traditional way – they now

interest us because we want to know how a personality uses its innate aptitudes and qualities and how it realises the individual traits given it by nature.

The views you have just expressed are sure to be opposed by many scientists, who in the recent rambling discussions on the correlation of the social and the biological, the inborn and the learnt in the personality, are known to adhere to different views from yours, although they are sometimes also at odds with one another.

Yes, that is so. Modern psychological theories of personality are mutually irreconcilable and numerous. Some of them, however, share their adherence to the so-called “theory of two factors,” typical of pre-Marxian and non-Marxian psychology. On the one hand, that theory attributes any individual trait to the genetically inherited instincts, aptitudes and drives and on the other, to language, culture and the environment. This seems to be the only explanation from the common sense point of view. But Engels remarked that common sense, a respectable companion in everyday life, undergoes the most amazing adventures as soon as it emerges into the open air of scientific inquiry.

And indeed, all arguments are encompassed within the theory of two factors whereby “on the one hand it is so, but on the other hand, it is not so.” The discussion revolves around the significance of each of the factors, with some insisting that heredity is more important, while others derive individual traits mainly from the environment, from “socio-cultural matrices.” Sometimes instead of seeking the proportion of biological and social in the structure of the personality, they look for the proportions of the conscious and the unconscious. That is either Freudianism in its pure form or neo-Freudianism, derived from theories such as those of Adler.

But to me the most odious idea is that of trying to reduce personality to the sum total of the “roles” which it plays. That ingenuous thought has become almost central in the social psychology of the personality. A “role” is a programme of expected behaviour, i.e., a set of acts which one must perform as a member of a certain social group. According to that theory, man does little else than assimilate (social psychologists prefer the word “internalise”) various “roles,” as, for example, those of son, husband, father, doctor, passenger, law breaker, an accused, a prisoner, etc., and this continues throughout the person’s life. A child, for example, learns how it should behave towards its mother: it obeys her. On this basis it is asserted, that it is “playing the role” of son or daughter.

Granted, each of us play roles at one time or another, but we take it for what it is – a role. A role is not a personality but an *image* behind which personality hides itself. The very idea linking personality with programmed behaviour, even if the programme allows for self-modification, and the development of new programmes and sub-programmes, is absurd and unscientific. The English scholar Keith Gunderson writes in his article “Robots, Consciousness, and Programmed Behaviour”: “What would you have said if you had been told that ‘She’s only pretending?’” That is an emotional rather than a scientific argument against the theory of roles but it can tell a lot to a thinking person.

The theory of roles must also bow to the two factors theory if it is to salvage the psychological in personality: it invokes the aptitudes and temperaments, i.e., the inherited qualities, and the argument returns to the self-same question – what is the decisive factor in determining personality, the inherited qualities or interaction with the social environment? Many scholars, in fact, deem it necessary to warn of the danger of any one-sidedness in resolving that problem, recommending a “reasonable balance.”

The whole methodological trick is reduced to a formula of vulgar eclecticism: “both this and that.” But recognising man as *both* a natural *and* a social creature does not get us anywhere. It is an indisputable proposition, but it says absolutely nothing about the essence of personality or the causes generating it. And this is precisely the task of our science – we are to understand personality as a psychological entity formed in the process of man’s relations with other humans, as a result of his activity. But to do that, one must reject outright the notion that personality results from the combined action of different forces one of which is hidden below the surface (and the content imputed to it is unimportant), and the other of which is in the environment (no matter what terms are used to describe it – “the effect of stimulating situations” or “cultural matrices”). No development can be deduced from what merely constitutes its necessary *prerequisites*, no matter how detailed the description thereof might be. But this is nothing new. One has merely to go back to the principle of Marxist dialectics which requires that development should be studied as a process of “self-movement,” as something which spurs on the need to study its internal driving relations, contradictions and mutual transformations. I repeat that this is not a new approach. It was assimilated by our psychology back in the 1920s when the science was being formed. Moreover, it is the only approach which leads one to the socio–historical es-

sence of personality. In other words, personality appears in society; man enters history (and the child enters life) endowed with certain qualities and aptitudes, but personality only emerges after the human being has entered into social relations with other people. Thus, personality cannot precede human activity; personality is engendered, like consciousness, by man's activity in the midst of other members of society. The study of *that* process is the key to a genuinely scientific understanding of personality.

I hope I have managed to show by this particular example the urgent need for a solid methodological and philosophical basis in psychology and its importance in fundamental research.

Chapter III. Alexander Luria.

A Biographical Profile

The world pours, through a large funnel as it were, in thousands of stimuli, drives and callings; inside the funnel are constant struggles and clashes; all the excitations issue from the narrow end as response reactions of the organism in greatly reduced quantity. The actualised behaviour is but an infinitesimal part of the possible behaviour. Man is full of unrealised opportunities at any given moment. These unrealised opportunities for behaviour, the disparity between the broad and narrow ends of the funnel is an indisputable reality, just as real as the reactions which have prevailed.

Lev Vygotsky

LURIA, Alexander (1902-1977), Full Member of the USSR Academy of Pedagogy, Dr. Sc. (Psychology and Medicine), Professor, one of the most prominent Soviet psychologists, widely known in the USSR and abroad as the founder of a new field of psychology – neuropsychology, which has been burgeoning in the last few decades.

During his fruitful scientific career, which spanned more than fifty years, Luria made an exceedingly valuable contribution to the development of various fields of Soviet psychology. One of his early works, devoted to affective states and involving the use of the “conjugate motor and verbal response method” he himself devised, began a whole series of studies into these states both at home and abroad. Almost concurrently, in the 1920s, Luria, in close collaboration with Vygotsky and Leontyev, developed the theory of the cultural-historical development of the psychic processes which subsequently became widely known and was adopted by many psychologists. In the 1930s, while studying genetic psychology, notably, the role of genetic and social factors in the mental development of twins, Luria demonstrated the importance of speech in organising the various mental processes of children, in particular in organising the voluntary movements and behaviour.

In 1940, Luria embarked on his studies of the cerebral mechanisms of mental processes that earned him world-wide recognition. As a result of many years of investigations into various mental disorders involving

local brain damage, he created a neuropsychological trend in Soviet psychology which is of great theoretical and practical significance. He made a valuable contribution to the development of the theory of dynamic systems localisation of higher psychic functions, has conducted extensive studies into various kinds of aphasia, created new classifications for aphasic disturbances, described new forms of speech disorders previously unknown in neurology, and proposed a neurolinguistic approach to the treatment of aphasia.



Luria and his colleagues have produced useful multifaceted analyses of the role of the frontal lobes of the brain in regulating mental processes.

Great credit is due Luria for his studies of the memory processes in the course of treating local brain damage. He described various forms of mnemonic disorders due to injuries of deep brain structures and the cortex.

Proceeding from systematic investigations of the brain correlates of higher psychic functions, Luria proposed valuable methods of neuropsychological diagnosis of localised brain damage and formulated basic principles for the restoration of disturbed psychic processes now successfully used in this country and abroad.

Luria did much fruitful work in the field of studies of the handicapped. He presided over the study of the higher neural activity of handicapped children and proposed new objective methods of testing and selecting children for special schools. On many occasions, he represented Soviet study of the handicapped abroad and did much to raise its international prestige.

Luria left us an amazingly large legacy. He published over 300 scientific works, including a number of fundamental monographs published here and in translation abroad (in the USA, Britain, some Latin American

countries, the GDR, Poland, Denmark and Yugoslavia). His largest body of works deals with neuropsychology (*Traumatic Aphasia, Restoration of Brain Functions After War Injuries, Higher Cerebral Cortical Functions of Man, Man's Brain and Mental Processes, Neuropsychology of Memory, A Little Book About a Big Memory, A World Lost and Regained, Basic Problems of Neurolinguistics*). His book *Thought and Speech* was published posthumously.

Luria was the editor of several collections: *Problems of Higher Neural Activity in Normal and Handicapped Children, The Frontal Lobes and Regulation of Mental Processes*; since 1968 there have been annual publications of a collection of monographs on neuropsychology under the heading *Neuropsychological Investigations*.

In 1967, Luria was awarded the Lomonosov Prize for his work in neuropsychology.

Beginning in 1923 Luria taught extensively and successfully in various higher educational institutions of the USSR. For several years he taught at the Krupskaya Academy of Communist Education and the Moscow Institute for the Study of the Handicapped, and from 1945 until his death was a full professor at Moscow University and read general psychology and neuropsychology. In 1973 a special course on general psychology for university-level teachers (at the refresher department) was added to his teaching load. In 1975, his four-volume manual on general psychology was published.

Luria was a member of the editorial board of *Voprosy Psikhologii* journal since its founding and of the editorial boards of some scholarly journals abroad. He was a member of the Executive Committee of the International Union of Psychological Science for several years and then became its Vice-President. He took part in many international and national congresses, conferences and symposia where his reports and lectures invariably enjoyed success. Luria was very active in the administrative field. As a member of the Central Council of the Psychological Society of the USSR, he attended all its congresses.

Luria enjoyed high international standing. He was a member of the National Academy of Sciences of the USA, the American Academy of Arts and Sciences, the American Academy of Pedagogy, an honorary member of many psychological societies abroad (the British, French, Swiss, Spanish, etc.), and held honorary doctorates from the universities of Leicester (Britain), Neumetry (Holland), Lublin (Poland), Tampere (Finland) and Brussels (Belgium).

In the middle of May 1978, I received a letter in Russian from the Rockefeller University in which Professor Michael Cole, Director of the Laboratory of Comparative Study of Human Cognition, informed me that he and his wife Sheila, a journalist, were in the process of editing the autobiography of Alexander Luria and that they hoped to finish the work in two or three months and would then send the text to Moscow for Soviet psychologists to make the necessary corrections. "I would be very pleased," wrote Professor Cole, "if you, too, could find time to read the manuscript. In the course of your numerous talks with Luria you must have gotten a good idea about his work and your remarks could help make the story more accurate."

Now that Americans can read this book, in which one of the major Soviet psychologists looks back on his scientific career spanning more than half a century, (it is entitled *The Making of Mind* and has been published by Harvard University Press), I want to tell you about this unusual man and quote some of what, with his characteristic modesty, he did not include in his autobiography.

Several years ago, Michael Cole himself interviewed the man who had guided him during his training at Moscow University and whom he had since visited more than once to seek advice and assistance and to discuss his scientific papers. His first question to Professor Luria was this, "Of all contemporary Soviet psychologists, you are perhaps the best known in the United States. How did this come about?" Later *Amerika* magazine (No. 1, 1977) carried a feature on the mechanisms of the brain which opened with the words: "The past century has produced a galaxy of geniuses who studied the brain. The best known of them are I. P. Pavlov, Sir Charles Sherrington, Sir John Eccles, A. R. Luria, Wilder Penfield, and Karl Pribram." Luria shunned publicity, and he avoided answering Cole's question, later complaining to me over the telephone that his name had been ranked with those of the great scientists Pavlov and Sherrington. Be that as it may, his works are required reading for brain specialists. "He has managed to accomplish what very few have accomplished – to create, consolidate and disseminate a whole new scientific definition, a new branch of knowledge, neuropsychology." These were the words with which Professor Leontyev concluded his preface to the reminiscences of Luria published in the Moscow magazine *Znaniyesila* (Knowledge Is Power).

I was fortunate enough to have known Luria rather intimately for several years. This little documentary story is about him and his work.

The Detective

Is it worth while losing your own
soul and damning everybody else's
to find out something about a dog's spittle?

George Bernard Shaw,
"The Adventures of the Black Girl in Her Search for
God"

From Professor Luria's Lecture

"About twenty years ago a tenth grader I knew, when asked to write an essay on the subject 'The Brain and the Psyche', began it with the words: 'In this country the brain is considered to be the organ of the psyche.'

"Few people would contest that statement. It is true. But it is empty. What is worse, until some three or four decades ago, specialists faced with the need to study the basis of mental activity did not know much more than this boy. They were aware that the brain was the material seat of the psyche, that the mental activities were based on certain conditional reflexes and had some very general idea about the possible mechanisms of memory. And that was about all. Things have changed drastically in the past forty years. A new branch of psychology has emerged which combines the neurologist's study of the brain with the psychologist's efforts in the same area.

"How did this come about?

"Psychologists found it impossible and disgraceful to remain in the position of the schoolboy. In science, however, even if new ideas are in the air, it takes an impulse – the emergence of some urgent need – for them to see the light of day. The development of surgery gave rise to neurosurgery and operations on the brain, and that required a quick and accurate answer to the question in which particular point of the patient's brain is surgery to be applied in each concrete case. If the hand of the surgeon is directed precisely and in good time, the patient can be saved. If your diagnosis is delayed or if you miss the exact place by one or two centimetres, the patient will die. This, then, was the practical task: early and precise location of brain disorders – inflammations, tumours, aneurisms, or even traumas invisible to the doctor."

...Luria was not lecturing in the conventional sense, he was just thinking aloud while talking for the umpteenth time about things that were

evident to him. He attacked the theme again and again from different angles, and I could afford the luxury of not following his reasoning closely; I could rather observe him, listen to his voice, and note his characteristic gestures. I had an edge over the students because I had already mastered the ABC's which they were yet to learn. The tape-recorder, my loyal helpmate, was busy reeling off the tape, and I relaxed a little.

...Indeed, how *does* one guess what is wrong with the brain mechanism which is hidden from us, especially in the so-called "mute" sections that produce no symptoms, either sensory or motor? And these happen to be the precisely human accretions of the brain, not found even in apes, let alone in cats or rats.

In the process of evolution, secondary and tertiary zones developed above the primary zones. These integrate vision, hearing and touch, process the information coming from various sense organs, assimilate all this material, relate signals from various analysers and create schemes into which all these data are fitted. The frontal lobes play the same function, they receive impulses from all the areas of the cortex, from the reticular area and from the subcortical nodes. They account for some thirty per cent of the volume of the cerebral hemispheres, but they perform no sensory or motor functions, and hence the neuropathologist "does not feel them." For a long time they were considered superfluous. But actually they are very important sections of the brain: they make it possible to integrate the impulses from different analysers and thus enable a person to plan his actions and create complex programmes.

To find out what is wrong in these areas one must study not reflexes but conscious behaviour, the complex organisation of the human activity, which is beyond the physiologist's competence. Only psychology with its refined and sophisticated methods and exceptional perspicacity could hope to develop ways of detecting abnormalities in the once "mute" areas of the cortex by studying changes in the patient's behaviour. If that were achieved, a new science would be born – neuropsychology, to assist neurology and neurosurgery, a science capable of exactly locating the affected areas of the brain. By the same token, localised damage could provide material with the help of which the newborn science could hope to discover the meaning of the schoolboy's formula Luria recalled in his lecture.

These hopes have to a large extent come true, and the lecture of Luria was partly proof of that. But only part, for neuropsychological re-

search is going on the world over, so there are fewer and fewer blank spots in the cerebral cortex. One might say that today there are no “mute zones,” but there are some doctors who do not hear their voices. The case histories at leading clinics, such as the Burdenko Institute of Neurosurgery, have a special entry entitled “Neuropsychological Examination.” This is not a fad. Neurosurgeons and neuropathologists have had hundreds of occasions to see for themselves that the data obtained by the neuropsychologist can tell the doctor much about what is wrong with the patient’s brain.

An hour passed. Luria dismissed his students for a fifteen-minute break, and we were left alone.

“To whom would you liken a neuropsychologist – to a doctor, a researcher, an experimenter, an armchair theoretician, or all of them combined?” I asked.

“To a detective,” said Luria without a moment’s hesitation.

...The bell rang and the students came back. And again they were presented with vivid and eloquent images of the past, future and present which Luria arranged in a strict sequence, depending on their meaning and implications. What he was presenting to the Moscow University students was not an introduction to neuropsychology but a mode of thinking, priceless experience accumulated over the years, his own special vision of the world...

Images etched themselves on memory. Humanity’s infancy, antiquity. The ancients argued about the location of man’s capacity for perceiving, thinking, remembering and reasoning. Some thought that the heart governed everything (that’s why it beats), others believed the diaphragm to be the seat of reason (it heaved rhythmically in time with the thoughts). In the Middle Ages scientists thought everything was focused in the three ventricles of the brain: the first perceives, the second thinks and the third remembers. That was only natural: nature abhors a vacuum, and since the ventricles were empty they must be the repositories of the “thinking substance.” The idea that it could penetrate the dense matter of the brain seemed heretical to medieval anatomists and philosophers. This only became acceptable to scientists two hundred years ago.

...The nature of the imagery changes. Now it is not the visages of the ancient philosophers, beautiful in their serene quest for truth, nor the faces of medieval scholastics distorted by fear and hatred of these quests, but maps of an uncharted continent drawn with meticulous detail. Made

a century and a half ago by Franz Joseph Gall, a doctor who lived in Vienna and later in Paris, they had an appealing simplicity and naive elegance about them. Gall was the first to describe the gray and white matter of the big hemispheres, and he was intent on localising the brain centres which controlled a person's aptitudes and qualities. Using his powers of imagination, he gave birth to the ill-famed phrenology which claimed that because a special section of the brain is in charge of everything – intelligence, temperament, tenderness and even love of one's country – then an increase in that section adds to the corresponding talent and the skull develops a lump in the corresponding place. If this lump is missing, then the person has not been endowed with a particular talent. It was a very handy method: you touch the skull with your hand and – presto! – you know the person like the palm of your hand.

One could, of course, laugh at Gall's craniology, but what did science offer as an alternative? Maps of the brain followed one another, a kaleidoscope of names flashed by; a hundred years after Gall, an outstanding German psychiatrist, Karl Kleist, produced his "functional map of the brain" based not on hunches and suppositions but on extensive observation of head wounds during the First World War. And yet, while his method of obtaining data on the functioning of the brain was new, his interpretations were the same as before: if a wound of the left temporal lobe disrupts understanding of speech and damage of the frontal lobes changes active behaviour, then the temple is the centre of speech understanding in the brain and the frontal lobes are the seat of the "social ego." There was not a shadow of a doubt about all of this: after all, it was known that tactile perceptions are localised in one area, another controlled movement and a nearby section was in charge of vision. Every analyser, whether motor or tactile, visual or auditory, was assigned a special centre in the cerebral cortex. It would seem natural to conclude that complex mental processes had the same apparatus. Perhaps there were centres in charge, of speech, writing, reading, counting, etc., not just of sensory perceptions or movement. In short, perhaps complex mental processes were localised in the brain just like the most elementary processes.

Psychologists today find it strange that such ideas could have been entertained by serious scientists. But many physiologists and doctors still hold similar views. They are undeterred by the complexity of the notions designated by the words "counting" or "speech," and they do not find it

strange that a single section of the brain could direct such enormous tasks.

Even so, the localisation approach is supported by some evidence. A patient with an abscess on his foot was brought to a Paris clinic. He died, and during the autopsy the young anatomist, Paul Broca discovered a softening of the posterior third of the lower frontal convolution of the left hemisphere. Broca had an inspired hunch: perhaps this brain damage was linked to the mental disorder. The patient had been brought from a mental asylum where he had spent more than twenty years, replying “ta-ta-ta” to all questions. Broca suggested that Mr. Tata (as the doctors called the patient among themselves) did not speak because the centre of speech in his brain had been impaired. Broca checked out his hypothesis on several similarly afflicted patients and proclaimed that he had localised the centre of speech. When it is damaged, a person can control the muscles of the lips and tongue, but “forgets the motor images of words.” This is what Broca said in the report he gave in 1861. Twelve years later, German psychiatrist Carl Wernicke made another observation. With his patients, the damaged area was also located in the posterior third, but on the upper temporal convolution of the same left hemisphere. And the picture was the reverse – they could speak, in fact they were very voluble in a helpless sort of way, but they could not comprehend what was said to them. Wernicke concluded that he had discovered the “centre of verbal comprehension.”

The late decades of the last century saw a spate of amazing discoveries. The Vasco da Gamas of psychology mapped the centres of writing, counting, reading and spatial orientation. Each higher form of mental activity was assigned to a particular area of the brain. The idea of narrow localisation captured everyone’s imagination. Since then, excellent detailed maps have been compiled based on extensive observations of various brain injuries, especially after the First World War, which unfortunately provided an abundance of material.

At the same time the localisation concept received what appeared to be potent confirmation at the level of the neuron. In the early 1960s, German neurophysiologists Hubel and Wiesel managed to obtain signals from individual neurons by implanting microscopic electrodes into them. An amazing picture was revealed. It turned out that there are highly specialised neurons. Some react only to the movement of a dot from the periphery to the centre, some are activated only if the dot moves from the centre to the periphery, some respond only to straight and others only to

curved lines; some react to low and some to high frequencies and so on. And each such neuron is located in a definite section of the brain. These experiments changed our fundamental ideas of the mechanism by which we perceive the world. Now it appeared that man divides the world into an enormous number of component elements and thousands of properties – lines, angles, directions – and then reintegrates them. Since the neurons were so highly specialised, there was all the more reason to suppose that there was localisation in the cerebral cortex.

Luria told me about a major argument he had a few years before with Professor Jerzy Konorski, a noted Polish physiologist and a former associate of Pavlov. They both attended the Gagra conference, and Luria was surprised to find that even such an outstanding specialist as his Polish colleague held a rather odd idea of the functional organisation of neurons. In his book, recently translated into Russian, he reasoned like this: every person has neurons reacting to large sets of properties, such as the concepts of “cat,” “dog,” “a blonde,” “a brunette.” By old age, all these neurons are occupied, and there is no room for new concepts, which is why old people are such poor learners.

Luria tried to dissuade his colleague of such views. “If I perceive you, that doesn’t mean that there is a ready image in a certain neuron in my head,” he argued. “You are short, fat, bald and wear no spectacles. Next to you stands another professor, also a psychologist, but he is tall, bald and wears glasses. Are you suggesting that I have a separate neuron for each of you? Of course not! All these highly-specialised neurons select qualities – baldness, fatness, height, with or without spectacles, and then synthesise one or another of my colleagues from these properties.” Even that metaphor, however, failed to convince his opponent...

Facts, however, can be even more stubborn than the scientists who refuse to admit them. And the fact is that there are no neurons that carry the notions of a cat or a rat, but there are neurons which specialise in certain properties, the rest is a matter of synthesis, of creating an image from these properties. This renders meaningless any attempts to use the experiments of Hubel and Wiesel to make the transition to narrow localisationism. The high degree of specialisation of the neurons they discovered proves only one thing: these neurons can react selectively to certain qualities, but it does not follow from this that whole images are localised in particular neurons or sections of the brain.

After what seemed to reliably corroborate the localisation theory, proved, upon closer examination, to be an argument against it, many called into question the interpretation earlier given to thousands of case histories. Yes, damage to certain parts of the brain is always accompanied by speech disorders, but then speech disorders also afflict patients whose brains are damaged in entirely different places. The same is true of writing, counting and memory. Each of the higher mental functions presupposes that not one but a multitude of sections of the brain must be intact. After the same material that was used by the advocates of localisation approach had been reinterpreted, researchers swung to the other extreme and put forward the opposite point of view. "The brain works as a single whole," they proclaimed.

But that concept proved as unsatisfactory as the first. Of course the brain works as a single whole. But does it mean that it works as an *amorphous* whole, as a uniform entity?

The new element brought in by neuropsychology is an approach to the brain as a complex functional system equally opposed to narrow localisationism and to "globalism," i.e., the view of the brain as a homogeneous whole.

Pavlov once said that at first, the respiratory centre appeared to be the size of a pinhead but then it sprawled all over the brain so that no one could accurately define its limits. Today the validity of that statement is evident. Not just respiration or digestion, but everything an organism does involves large, ramified systems. This is even more applicable to complex mental processes. No function of the mind is confined to a particular group of brain cells. The psyche should therefore be approached in terms of the distribution of various functional systems throughout the brain.

Take for instance Pavlov's example of respiration. Its purpose is to bring air to the alveoli of the lungs. But would it be true to say that it is effected by a fixed reflexive arc: the signal of the need for oxygen commands the intercostal muscles to expand the chest; the air is let in and oxygen taken to the alveoli? No, because if the nerves of the intercostal muscles are anaesthetised by a novocaine injection, the person does not die of asphyxiation, because the diaphragm steps in and expands the chest. And if the diaphragm is immobilised, the person will gulp air.

Thus the same task of supplying air to the alveoli can be performed by alternative mechanisms. This is the basic structure of any action, and

of course, of any of the higher mental functions: they invariably involve not only one particular cortical area but a ramified system of areas, each vitally important. And there, it seems, nature has set a trap for us. If, say, comprehension of speech or counting are lost as soon as any one of the links involved in brain activity is disrupted, how does one establish from the symptoms which areas of the brain are damaged? Any mental disorder puts dozens of brain sections under suspicion. This would seem to mean that the new approach to the functioning of the brain has taken us even farther away from early, accurate location of the damage than the notorious phrenological maps of Franz Joseph Gall.

Fortunately, this is not the case. Every area of the cortex makes its own distinct contribution. And if any of them is knocked out, several functional systems of which that area is an essential part are shattered, and in a different way each time. Being aware of that, the neuropsychologist never says simply that a particular function has been damaged; he makes a point of specifying *how* it has been damaged and what else has gone wrong in the organism, as well as what malfunctions have occurred in all the other mental processes. He studies not symptoms but syndromes, i.e., the combination of all the disorders observed. After all the behavioural acts are divided into elementary units, it is clear how any action is synthesised from these units. Thus by defining what a patient is unable to do, it is possible to find out which units have been damaged and which sections of the brain have been put out of operation.

This is the essence of the idea of three chief functional blocks of the brain underlying neuropsychology. And this explains why Luria compared a neuropsychologist to a detective. He was neither joking nor trying to dodge my questions by giving me a riddle to solve during the short break, he was not even thinking of his work in the prosecutor's office. He simply offered me a clear, graphic image, a precise, revealing simile: just as a skilful detective pieces the evidence together, so a neuropsychologist accumulates the symptoms of brain malfunctions. Criminologists have a reason for keeping drawers full of cards for an unusual game of patience – all possible types of foreheads, lips, noses, eyebrows and whiskers, all conceivable kinds of ears and eyes – all these carefully studied and classified details make up the infinite variety of faces around us. And in the same way, by dividing the higher mental functions of the brain into their elementary components, the neuropsychologist can make combination after combination until he hits upon the one that tallies exactly with the set of symptoms observed in the patient.

...And yet I had a nagging doubt. It all seemed a bit too neat, and the theory of the brain that emerged was much too precise. It seemed like some kind of atomic psychology, Mendeleev's Periodic Table: two atoms of attention, one atom of comprehension and zing! We have a molecule of thought. But how could we be certain that all the units of behaviour have been taken into account, that some "rare earths" or elusive "inert gases" have not slipped past us unnoticed? How could we vouchsafe that a certain behavioural act was "chemically pure," with no admixtures of other "elements"? And what are the smallest units into which our acts and impulses must be divided to prepare a "slide" for our newest psychological microscope?

There was something else about the theory that disturbed me. I mulled over it alone beforehand in preparation for a meeting with Luria in the evening.

“Always a Meaningful Pattern”

If the same mental function can be constructed from different elements, or “bricks,” by assembling different chains, one could try to build detours to bypass the damaged sections. If I had understood Luria correctly, neuropsychology not only provides the surgeon with a timely, precise diagnosis but can also help a person rehabilitate some faculties without resorting to the scalpel.

I told Luria of my thoughts. He looked at me with the barest flicker of a smile, then turned his back to me and shuffled through some papers. He did not reveal either by gesture or ironic smile how naive my “great” discovery sounded in his study. When he began to talk, his voice was as gentle and serious as ever.

“Of course, you’re right. We don’t just make diagnoses. We restore speech in people who have lost it due to trauma, tumour or some other brain damage. We have a laboratory at the Nervous Disease Clinic at the First Medical Institute. It is headed by my pupil, Lyubov Tsvetkova, a Doctor of Psychology, who specialises in the treatment of aphasia, or speech disorders. The whole idea of the treatment is to find a bypass using the undamaged brain mechanisms.

“Let me give you an example from the work my teacher, Vygotsky, carried out back in the twenties. At that time we had frequent cases of epidemic encephalitis which damages the subcortical nodes, which in turn leads to Parkinson’s disease, i.e., tremors and muscular rigidity. Vygotsky made a special study of the behaviour of people suffering from Parkinson’s disease, and it yielded some startling results. In its advanced form, Parkinson’s disease leads to major disorders of the automatic motions. A person can walk two or three steps and then his muscles grow rigid, the characteristic trembling sets in and movement becomes impossible. But observations have shown that this same patient has no difficulty climbing stairs. If paper cards are placed on the floor, the patient can easily move about the room over these imitation stairs. What does that suggest? The automatic subcortical mechanisms enable the healthy person to walk without thinking. But if the automatic subcortical mechanisms have been disrupted, they can be replaced by a series of isolated motions ‘forged’ at the cortical, conscious level – the stairs or cards placed on the floor. The same motive act is then performed on a different basis. The whole functional system that controls walking is rearranged to bypass the damaged area of the subcortex.

“That early work inspired many other studies, and we now have a number of proven methods for laying new ‘tracks’ in the brain, i.e., for restoring the shattered functional systems by using the means still at the patient’s disposal.

“Here, if you like, is an elementary example. In some patients, the mechanism for distinguishing voiced and voiceless consonants is impaired. To them ‘baba’ and ‘papa’ sound the same. Imagine that you are suffering from this affliction. Now put a palm of your hand to your lips and say energetically ‘b’ and then ‘p’. Do you feel the difference? Thus we use the tactile analyser, the ability to feel vibration and other opportunities at our disposal to replace the damaged area of the brain which conveys information.”

Luria paused. He probably did not relish the prospect of giving another lecture the same day. It was far more pleasant just to talk, and he was giving me a chance to join in as an equal partner. But I could think of nothing clever to say and what was worse, I was more and more certain the most important point had escaped me. I found the idea of building detours in the brain very appealing, especially when I had hit upon it by myself, but now, after Luria’s explanation, I found my enthusiasm subsiding. Before cutting clearings in the wood, laying the roadbed and pouring the asphalt, it is a good idea to know the starting point, the destination, and the necessary route. In other words, one should first identify the bricks that make up the mental functions and only then assemble detours in the brain from these components.

After I told him about my doubts, Luria looked at me differently. He shifted in his chair to make himself more comfortable. I was torn between two hypotheses: either he understood that he would have after all to give me a lecture and felt relieved because the inner struggle was resolved, or he suddenly saw me, for the first time, as an interlocutor of sorts.

“You want to know how we divide the higher mental functions into simple behavioural acts?” he said, and his voice assumed a professorial tone that asserted rather than asked. “Since you are a journalist, let us use writing as our example. If we had met a hundred years ago, I would immediately have shown you the Exner centre on the map of the brain – it’s in the middle of the left premotor zone. I would have told you that this area of the brain was responsible for writing. What would have been the logic behind that assertion? A very simple and convincing argument. To

write means to perform carefully calculated movements with one's hand. And the hand centre in right-handed people is situated here in the middle section of the premotor zone. Incidentally, this is what a modern textbook will tell you. The delicate movements are linked with the secondary, more developed sections of the motor zone of the hand. That's how we arrive at the centre of writing – the Exner centre.”

Here it would be worth our while to step back and check out the logic of these theories and question their basic premise: that writing is simply a delicate hand movement. Perhaps writing involves some other operations, in which case one brain centre alone would be unable to control it. The question must then be asked, what other areas of the brain are involved in writing? And what does each of them contribute to the common activity?

The task that arises is a little surprising: it is not an easy thing to analyse such a complex mental function as writing and to determine its components. For this, Luria has a professorial and clear-cut definition, “This is called ‘psychological qualification’, or ‘qualitative analysis’.”

...What does it take to write a word? Even if you are writing on your own and not taking dictation, you must hear that the first sound is ‘s’ and not ‘z’, and the second is “I” and not ‘r’, the third is ‘o’ and not ‘a’. It's not the question of having good hearing. Julie, my Irish setter, has much better hearing than I, but she is unable to tell ‘b’ from ‘p’ and ‘d’ from ‘t’. My son has taught her to lie down and rest her head between her paws at the command “Bobchi!” a meaningless combination of sounds. Once I gave her the command “Popchi!” an equally meaningless sound cluster and our faithful canine friend stretched out at my feet in the usual pose of obedience. She has a fine ear but cannot distinguish the sounds of human speech. And that is the difference between the best of dogs and the most worthless of humans. Hearing in *homo sapiens* is organised by a language system, with its complex phonematic apparatus, while the dog's hearing is naive and chaotic. I hazard a conclusion: animals can distinguish sounds that are biologically important to them, while man looks for components linked with the phonematic system of a particular language. In Russian, the vowels carry a lot of weight in distinguishing words: *mul*, *mol*, *mal*, *mil*, *mel*, *myl*, *myol*, *myal* are all different words. But in the Turkic languages, for example, the vowel has no distinctive function. Thus *man*, *min* and *men* all have the same meaning, “I.” While to a Russian, vowel length has no phonematic relevance, it is crucial to the English. By varying the pitch a Vietnamese gives the word ‘ba’ six different meanings, but

a European would be hard put to tell one from another. The openness of the vowel in French, consonantal aspiration in Georgian, and many other qualities organise a person's hearing in the language system in which the person has been brought up.

All these are commonly known facts, and Luria was not the first to tell me about them. But my knowledge was sketchy and unsystematic, while a psychologist concerned with writing must have all the phonematic niceties at his finger tips, because in writing the first step is to hear not just sounds, but the sounds of a particular language, i.e., to pass them through the prism of a phonematic system and identify them as belonging to a certain category of phonemes.

...Even then it is still a little early for the hand to go into action, and the Exner centre in the left premotor zone can rest for a while longer. Before that, the sounds must be analysed and this is done by the temporal lobe which directs hearing, and its secondary, "finer" areas. If these areas are damaged, a person can hear but is unable to identify the sounds and refer them to a particular category. The clatter of spoons in the dining-room conveys a clear message to him, the scratching of a mouse he can also understand, but he can no more tell the difference between 'p' and 'b' than my dog Julie: he has lost his phonematic hearing. Such a patient has the hardest time with phonemes that differ in a single respect, for example, voiced and voiceless ones: he is not deaf, and he can still tell "b" from "r", but the finer differences escape him.

...I remember the first time I saw such a patient at the clinic and Luria told me about the nature of his illness. I took his usually convincing and incontrovertible words with a grain of salt: I thought his assertions were ungrounded. The patient pronounced "cot" when asked to say "got." But what did that prove? And where did phonematic analysis enter into it? Perhaps the patient simply could not pronounce the word properly; maybe he could tell the difference when he heard the words but could not say them himself.

Luria smiled encouragingly.

"Of course you are right," he said. "You are absolutely right. That evidence is not sufficient. But we check all our conclusions in many ways. I ask the patient to raise his right hand if I say the sound 'k' and to remain still for 'g', and this simple experiment shows clearly that it is the patient's phonematic hearing and not the motor aspects of speech that have been damaged. And I make a mental note to check it out with doz-

ens of other tests to confirm my suspicion that there is something wrong in the secondary section of the left temporal lobe.”

Luria’s Words as I Recall Them

“This then is the first contribution the brain makes to writing: the role of its temporal lobe in phonematic analysis of sounds.

“Let us suppose that these parts of the brain are unimpaired. Does this mean that the person can write well? We can’t say at this stage, because there is only one prerequisite for that. But there is another, equally necessary prerequisite. When a child is learning to speak or an adult is learning a foreign language, both of them must ‘feel’ all the speech sounds with their tongue, lips, teeth and palate. If you visit a first-grade class where the pupils are learning to write, you will hear a constant buzz as the children say what they are writing, sound after sound. Some teachers are irritated by the noise in the class. But the wiser ones say that if the children are doing so, they must have a need to do it, and let them go on whispering. We devised an experiment to solve this problem. We divided the class into two groups, in one of which the children were allowed to whisper while they wrote, and in the other, they were told to hold the tip of the tongue between their teeth. The ‘mutes’ made six times more mistakes. The elimination of sound impeded writing.

“I can easily imagine someone challenging us on the purity of our experiment: what if we had just created an additional centre of excitation and distracted our poor children by making them bite their own tongues? We *can* check that out, too. We tell the child, ‘Clench your left fist and write.’ The child writes without mistakes. It does well with clenched teeth also because it can articulate with clenched teeth. But as soon as the tongue is arrested, it makes lots of mistakes in writing.

“Tongue movement is involved in the kinesthetic analysis of sounds, and in the absence of this analysis writing becomes much more difficult. But how does one tell what is impaired in the patient, the power of phonematic or kinesthetic analysis? That’s quite simple. A look at the character of the mistakes reveals some curious things. I had a patient who wrote *kbadat* instead of *khalat*. Why? Another patient wrote *slon* when I dictated the word *stol*. I couldn’t understand the reason for these errors until I discerned the pattern behind them. Will you please say aloud ‘l’, ‘n’, ‘d’. You feel that they sound different but the tongue movement is the same in Russian. All these are palatal sounds, and to articulate them you have to touch the front part of the palate with the tip of your tongue. The differ-

ence in the sound is created by the direction of the air stream. There are many such sounds, for example, 'b' and 'm'. To distinguish between them, one must feel the 'articulemes', which involves a kinesthetic analysis of speech. The lower regions of the post-central area is the exact place that makes such an analysis possible.

"Do you see what an exact science psychology is? A good experiment can explain things that mystified us at first.

"Now we know of two contributions the different brain areas – the temporal and parietal – make to the organisation of writing.

"But this is still not enough to isolate a sound and analyse it kinesthetically. Now we must translate a phoneme or articuleme into a grapheme, or letter. The translation of a sound into a letter involves other sections of the cortex, the parietal-occipital. You see, the occipital lobe includes the cortical end of the visual analyser and the parietal lobes introduce the component of spatial analysis. If that area is damaged, the patient can hear and articulate well but he cannot orient himself spatially: he cannot tell right from left or up from down, like Zasetzky of whom you know. Such a person is bound to have difficulty writing. He can write the letter 'o', but he does not know how to write 'p' or 'q', 'b' or 'd'. His writing is impaired because his spatial organisation is impaired.

"But that is not all. Once we are past the initial stages, we seldom have to print individual letters, we usually write in cursive. If you have to write 'cat', you write the first letter, then you pass on to the second and then to the third, i.e., in a certain organised sequence. The function of switching from one action to another is controlled by the premotor zones of the cortex. If it is damaged, hearing, kinesthetics and spatial analysis are unimpaired but the motor habits are lost. If a typist suddenly begins to make pauses between letters or a pianist plays every piece staccato, the chances are there is something wrong with their premotor zone. When asked to write the word 'nanny' such a patient would come up with something like this, 'nnnnn'. He understands he must write other letters after 'n', but he just cannot manage it.

"Now we come to the final stage. We write not separate words but phrases and more or less meaningful texts. This means our writing is programmed. That function belongs to the frontal lobes. If they are impaired, a person cannot plan his activity. Nikolai Burdenko had a female patient with severely damaged frontal lobes. She could hear, move and understand, but she never had a plan for her actions. She wrote letters to

Burdenko which went like this, 'Dear Professor, I want to tell you that I want to tell you that I want to tell you', and so on for four pages. So there is another writing disorder for you that is connected with yet another section of the brain.

"Thus all higher neural activity is divided into component parts. This process of division is very difficult work; it takes years and decades. But it was worth the effort, since today we can tell which section of the brain is damaged from the way in which a patient's writing is impaired."

My association with Luria gave me the chance to become acquainted with even headier hypotheses. Luria had a visit from Professor Alexander Marshak, an American archaeologist. He came to Moscow at the invitation of the USSR Academy of Sciences and Luria introduced me to him. Marshak had travelled all over the Americas and Europe and had worked at all the major museums of the Old and New worlds, trying not to miss a single Stone Age object in his search for drawings or notches made by the people who lived at that time.

He had embarked on the titanic task of investigating all the available artefacts of those remote times under a microscope. And a whole world opened up before him in remarkably complex compositions, undoubtedly full of deep meaning, and in the series of notches of various forms and types arranged in different sequences, and grouped in a strict order. His professional skill with the camera and the brilliant idea of using ultraviolet and infrared light enabled him to establish that the drawings and notches were made at different times, some of them spaced out over a period of years. Apparently our remote ancestors were writing something down to be remembered. But how could these writings be decoded? This was the task that caught Marshak's imagination. To solve it, he turned to Luria's works.

I asked Professor Marshak how he had been able to benefit from the neuropsychological approach.

"The method Professor Luria uses to study the brain was a real blessing to me," he said. "In fact it was only after studying his works that I was able to formulate the goal of my own research. Neuropsychology deals with the problems of language, memory, writing and counting, relating any manifestation of the human intellect to the work of particular sections of the brain. What we come up with is the result of brain activity, and the question being asked is this: is everything all right inside this brain, and, if not, what has been impaired? I too had before me the prod-

ucts of brain activity – drawings, notches, and ornaments, and I had to find out how developed that brain was, what it could do, and what knowledge it possessed. It didn't matter that in one case the object was the brain of a patient being examined by his doctor and in the other, a Cro-Magnon man who died 25,000 years ago. The important thing was to find a reliable and precise method. I used Luria's lessons to come to the conclusion that the Stone Age man had exactly the same type of brain as we have today; otherwise he could not have created such an advanced culture; he would have lacked many of the layers that ensure the fluidness of the tongue, the capacity for abstract thinking and for precise and delicate movements of the hand. The intellectual world of those remote times was just as sophisticated as it is at present: economically, of course, the Cro-Magnon led a miserable existence, but biologically, as a thinking creature, he was not at all inferior to you or me."

I was not particularly interested in the archaeological aspects of Professor Marshak's work. But I was aware that the powerful neuropsychological tree had yet another offshoot – a methodology that could study the minds of people who lived thousands of years ago was emerging. Whether it was called neuropsych archaeology or paleoneuropsychology was of no importance to me.

We sat in Lyubov Tsvetkova's office in the Nervous Disease Clinic on Rossolimo Street. Luria and Zasetzky were sitting at the table, and next to them was a prominent specialist in structural linguistics. Everyone else was some distance away, and in the corner sat an elderly Englishwoman, a neuropsychologist from Cambridge.

"Father's brother," repeated Zasetzky, smiling rather helplessly. "Father's brother. Here is brother, and here is father. Whose father? No, whose brother? Whose brother is he? No, I can't understand it."

Luria exchanged glances with the linguist, said a few words in English to the Englishwoman, and again bent over a sheet of paper, pencil in hand. There were little human figures, arrows and expressive symbols which Zasetzky surely understood. Luria had another go at it.

"Father's brother, how many people are there?" asked Luria inviting Zasetzky to look at the sheet of paper where he had made some sketches. "This is father, this is brother, who is father's brother?"

"This one ... he is brother ... there are just two of them," replies Zasetzky.

“For those of us, who have mastered the logical patterns of language and rely on centuries of culture, the deciphering of such a structure does not present any particular difficulty. But fifteenth- and sixteenth-century chronicles don’t say ‘the children of the *boyars*’. The chroniclers used a simpler form, ‘boyars-children’, but instead of ‘Prokopy’s lands’ they invariably used a longer, clumsier form ‘this Prokopy – his lands’. The complex speech structures we use without noticing their complexity are codes developed over the centuries, and we have no difficulty in using them because we have mastered the complex orchestration of language. Case endings, prepositions and conjunctions – all these highly complex language codes have become delicate and reliable instruments of thought. What does a person need to be able to use them successfully? Basically, he must have the ability to keep them in mind and to survey quickly and simultaneously all the relations they involve and the images they bring to mind. All this at once! And precisely that was what our hero could not manage – grasping complex systems (either a spatial arrangement of objects or a mental juxtaposition of elements) – for the damaged sections of his brain were precisely those needed for comprehending what he saw,” as Luria pointed out in his book.

“A cross under a circle,” whispers Zasetsky. “Under, under, that means that the circle is above and the cross is below, right?”

“Quite right,” says Luria. “And now look here, I’m drawing the sun and the earth. Can you say at once, what is below, the cross or the circle?”

“The cross is down here, on the earth,” says Zasetsky almost without hesitation.

The people who have come to the clinic specially to watch the experiment, so simple at first sight, follow it with bated breath.

“Language makes use of very complex and heterogeneous systems of codes. These codes have recently been studied successfully by structural linguists, and Soviet scholars have contributed to these studies. However, the inner mechanisms behind these codes were difficult to get at. For instance, it was hard to say why one particular code was perceived with more difficulty than another. Observing patients with localised brain damage can be very revealing. In such cases, various factors and links that make up the language codes are eliminated and the inner structure of these codes stands out more clearly. The basic differences between the structures ensuring fluent speech and those concerned with shaping the

system of logical relations were determined; neuropsychologists clearly saw that in one kind of localised brain damage, the former are impaired and the latter remain intact, while brain damage located in a different area results in the opposite. This makes it possible to introduce into linguistics new objective methods and processes of analysis which formerly seemed to defy comprehension. ‘The pathological often reveals to us, by decomposition and simplification, what is obscured by unity and complexity in the physiological norm.’ These famous words of Pavlov are fully applicable to our attempts to use methods of neuropsychological analysis in the study of complex language phenomena.”

The above is from an article by Luria which, in a sense, summarises his early work in the twenties which was the subject of his talk to his fellow psychologists. This article was later developed into a book, *Basic Problems of Neurolinguistics*. Let us hope that the birth of this new branch of science will not pass unnoticed...

I wanted to find out more about the man who created a new field and how it all started. I made discreet inquiries, talked with his associates, collected eyewitness accounts, and made notes of Luria’s publications. I was acting very much like a detective, but what I really needed was Luria’s own confession, a frank and straightforward account of how it all began. But I noticed that the name of Vygotsky invariably cropped up in my conversations with Luria. At first I attributed that to his excessive modesty. But gradually I understood that Luria indeed believed that his scientific career began when he met Vygotsky.

New ideas, like any innovation, have to fight their way to recognition. Yet Luria thought – and I am convinced he sincerely believed this – that only in his old age was he beginning to fathom the depth of Vygotsky’s thought after half a century of a long, and not always smooth, scientific career. Half a century of work...

From “A History of Psychology in Autobiography”

“These notes were preceded and indeed prompted by an interesting correspondence. Professor Edwin Boring wrote to me [Luria – Tr.], to contribute to a volume that was to be entitled: *History of Psychology in Autobiography*.

“When I objected that only my autobiography was scheduled for publication, since Soviet psychology should be represented by at least several figures, Professor Boring suggested that I and the other scientists mentioned all send in their autobiographical sketches to be published in the future. ‘If you survive until then,’ wrote Professor Boring, ‘your material will be included in the next volume of *A History of Psychology in Autobiography*. If not, it could be printed as an auto-obituary.’

“I found Professor Boring’s proposal appealing. A retrospective analysis of one’s career is always useful. I took the suggestion seriously and prepared this material for Professor Boring to be used in one of the two forms he suggested.

“A life spent in scientific inquiry is very short, and every scientist who has had a long career must inevitably end a review of his work by outlining avenues that should be pursued in the future after he is gone. I began my remarks with the statement that while people come and go, their work remains, and the contribution of a particular researcher continues to develop according to its own logic. Hopefully, the same will take place in my case.”

The line of dots which I inserted in the middle of this remarkable document, stands for some sixty odd pages which gave me the long-awaited opportunity to cast a glance, however cursory, at a scientific career that spanned half a century. I was not prompted by idle curiosity: I wanted to connect the loose ends of the threads that I held in my hands. If I could keep them all and manage to weave a canvas from the elusive yarn of memories, and reflections, then I could hope to see in it the traces of past revelations and discoveries, the death of old notions and the birth of new ones. “...An enchanted loom where millions of flashing shuttles weave a dissolving pattern, always a meaningful pattern though never an abiding one,” Charles Sherrington, the great physiologist, said of the brain. And these words could well be applied to the lives of those who try to fathom its depths...

“Always a meaningful pattern.” The most striking word here is “always”: yesterday, today, tomorrow. All that is being done is meaningful for some remote goal which is at first vague and elusive but becomes clearer with every passing year and decade. Looking back on his path in science and probably foreseeing its future, Luria once remarked that it had been a long series of investigations that went on uninterrupted for more than half a century; although he sometimes digressed into related areas, he retained a single purpose and perspective. Perhaps this singleness of purpose is the secret of his success.

This is probably true, but it offers no explanation, because the singleness of purpose is in itself a secret of the human personality. One can take Luria at his word and accept that Vygotsky gave impulse and direction to all his work: that may well be the reason why it was all part of a single whole. In order to “develop the basic areas of content in psychology,” it was logical to study successively perception, memory, speech, writing and counting... In that sense, even such special studies as the one he carried out jointly with Karl Pribram and Yevgenia Khomskaya to determine the role of the frontal lobes in man’s programming of his actions and movements can be considered an elaboration of Vygotsky’s ideas.

But what of Luria’s own ideas and plans about which he told his colleagues in the Psychological Society? They were conceived long before his meeting with the Master, and yet these ideas were also consummated and his old plans realised many decades later: the conflict between “nomothetic” and “ideographic” psychology which interested the Kazan University student was eventually resolved. With the passage of time, that conflict, far from losing its meaning, became even more significant. The advent of mathematical methods, especially computers, gradually forced traditional forms of medical cognition into the background: today doctors have at their disposal a whole array of modern laboratory equipment, and thus tend to disregard clinical reality while direct observation of patients is often replaced by dozens of laboratory tests.

The doctor of the past – the Great Observer and Thinker – is a vanishing species. The gap is widening between the medical theory which describes man as a single whole, and medical practice which needs a detailed insight into a concrete case. Luria offered the following solution to the dilemma: a doctor should select one patient and observe the person over a period of many years from various angles and, taking into account his or her individual traits, write a book about that patient, combining description and interpretation. Luria put these ideas into prac-

tice by writing *A Little Book About Big Memory* and *The World Lost and Regained*. In both-books he dealt with a single person, trying to analyse his personality based on his chief trait to derive the pattern of that person's consciousness from it and thus eliminate the conflict between "idio-graphic" description and "nomothetic" interpretation which appeared insoluble to him fifty years before.

Since it is impossible to give a synthetic description of a personality by taking a person at random and superficially considering his individual acts, Luria chose two people who had the same distinguishing trait, except that it was overdeveloped in one and pathologically impaired in the other. The hero of the first book, Solomon Shereshevsky, had an eidetic memory. He could reproduce whole pages of a text in a language he did not know or columns of figures he had seen many years before. This trait dominated his personality. The secret of his amazing memory lay in his ability to think in complex, synthetic images. He was one of the rare people who, like Scriabin, had an integrated sensibility, where sound brings an immediate experience of colour and light, and even of taste and touch. Shereshevsky thought in such complex images, so visual, auditory, gustatory and tactile sensations merged for him into a single whole: he "heard" colour and "saw" sound, and "tasted" a word or a paint.

Luria recalls how he and Shereshevsky paid a visit to the laboratory of the famous physiologist Orbeli. "Will you remember the way?' I asked Shereshevsky, forgetting that he never forgets anything. 'Of course I will', he replied. 'How could I forget this green fence, it's so salty'. 'You have such a yellow crumbly voice', he used to tell Vygotsky. Shereshevsky told me that one day he wanted an ice-cream; but the woman vendor asked him in such an unpleasant voice, 'Do you want a chocolate one?' that her voice came hit him in black flakes, spoiling the taste of the ice-cream for him to such an extent that he could not even bring himself to try it."

But this description of Shereshevsky would have been inadequate if Luria had confined it to his memory. The main thing in the analysis was to trace how that remarkable memory influenced Shereshevsky's thinking, behaviour and personality as a whole. Luria saw both the strong and the weak points of his intellectual activity flowing from the peculiarity of his memory.

On the one hand, Shereshevsky could voluntarily change the temperature of his skin, his heart-beat, and do many of the things the Yogi do. The vividness of his perceptions was crucial here: it was enough for

him to imagine that he was holding a piece of ice in one hand and a hot object in the other for the temperature in one hand to drop and in the other to rise. If he imagined he was running, his heart-beat quickened. But his sensitivity had its reverse side too. "Once I was to speak in a court of law and I had prepared a speech; I saw myself standing on the left and the judge sitting to my right. But when I entered the courtroom it turned out that the judge was sitting on the left and I had to stand to the right of him. I became so confused that all my logic flew out the window, and the case was lost."

The whole personality of that remarkable man was determined by his fantastic memory, and that prompted the idea of analysing the structure of his personality as a manifestation of this primary factor. And there, description merged with interpretation; the limitations of descriptive psychology were overcome, and the way was opening for the synthesis of "ideographic" and "nomothetic" sciences. The same applies to the other book, *The World Lost and Regained*, although its hero, Lev Zasetky, does not have a prodigious memory, but on the contrary, his life is a tragedy of a shattered memory.

Indeed, nothing in Luria's life was lost, not even the youthful plans. The long scientific career of Alexander Luria was ruled by some inner logic which led him to freely choose his own paths. Otherwise what could have led him, a professor at an institute of education to take up graduate studies at a medical institute and, upon completing them, to work for many years with Burdenko as an intern at the Institute of Neurosurgery and defend another Candidate's and a second Doctoral dissertation, this time in medicine. If Luria had not decided to follow a regular medical career from struggling intern to distinguished professor, and if that path had not merged with a similar path in the field of psychology, the odds are that the two wonderful books would never have appeared and the conflict between the opposing branches of psychology would still be unresolved.

But yet, what is the secret of his success? I do not think I can answer that question. But I found a hint in one of Luria's works, which I would like to bring to your attention: time rather than people was responsible for it. This idea is so characteristic of Luria that I cannot refrain from quoting it, all the more so since it is only a few typewritten pages that have never been published before:

“I began my work in the early years after the Great October Revolution, and this had a decisive influence on the work my friends and I did. If you compare the lives of Western psychologists, for example, Americans, published in the series *A History of Psychology in Autobiography* with my own life and work, the difference is striking. Many Western psychologists were gifted and their achievements were outstanding, but they lived in relatively calm, slowly changing circumstances. They were influenced by their parents, their families, and their immediate social environment. Having started their work as researchers, they gradually expanded their observations, from time to time changing from one university to another. Sometimes they investigated new areas, experiencing the joy of fresh discovery or suffering the anguish of defeat. But they certainly lacked the pervasive stimulating atmosphere generated by the Revolution throughout our nation which was surging ahead to traverse centuries of progress in a short time.

“The atmosphere of my early career differed greatly from that of the Western scientists. Every one of us was aware that he was but a small part of a unique movement of great historical significance, and that he had to find his own place in the major historical events. Such was the spirit of the years following the Revolution, the common destiny of the generation born at the beginning of the century.

“I had no chance to complete my secondary education: instead of the normal eight years at a classical gymnasium, I studied six years, and in 1913 graduated by doing a crash course, as did many of my friends. Then I was unable to get a systematic university education: the older generation of prerevolutionary professors was bewildered by the new social situation which was felt especially keenly in the humanities departments. The younger generation – the students – were too preoccupied with revising old approaches and charting their own paths. That left little time for systematic studies, since most of our time was taken up by new forms of activities – student circles, meetings, student scientific associations and endless debates on every conceivable problem. So I must confess that I was not able to enjoy the benefits of sound academic training.

“In spite of all this, the whole post-revolutionary atmosphere had such a beneficent influence on me and all the young people of my time that we managed to chalk up some achievements to our credit. The times we lived in were remarkable...”

And the present time is also remarkable in its own way. The year 1977 witnessed an event that climaxed an intense and heroic effort by many people, in the first place, Alexander Meshcheryakov, a pupil of Luria's who died an untimely death. Four blind and deaf students graduated from the psychology department at Moscow University – all of whom had been deprived of sight and hearing from birth. “The remarkable thing about this experiment is that it creates conditions which make *visible* – almost tangible and extended in time like a slow-motion film footage – the key stages in the formation of personality, the emergence (just imagine!) of human consciousness: conditions opening the window, as it were, into the innermost depths of consciousness,” said Alexei Leontyev, Dean of the Psychology Department.

The auditorium of the Psychology Department was packed, a camera was rolling and a lot of people had their tape-recorders turned on. We were present at the filial papers defence by students on the age-old argument about the nature of the human soul, or, to use modern language, the human psyche. Are characteristics, inclinations, aptitudes, talents and temperament predetermined and innate, or are they acquired in the course of assimilating human culture? Are individual traits, emotional make-up and moral ideals innate or acquired?

According to Vygotsky – and this is perhaps the idea central to all his work – man is not born a Robinson Crusoe on a desert island, but immediately enters the existing social world, dealing every second of his life with objects created by social history, and this alone makes him a human being. Our psyche is entirely social – this is the conclusion of his psychology described variously as “historical,” “instrumental” or “cultural.” “To understand the human soul, one must go beyond the human organism.” Luria not only followed this idea of his teacher Vygotsky, but had passed it on to his own pupils, among them Alexander Meshcheryakov.

They worked together at the Institute of Neurosurgery and later at the Institute for the Studies of the Handicapped. After defending a Candidate's thesis on the role of the frontal lobes of the brain, Meshcheryakov began work in an entirely new area with Ivan Sokolyansky, founder of the Soviet school of educating people who are deaf, dumb, and blind. In this new field, he used the method of psychological investigation taught to him by Luria. And it was this that enabled him to accomplish the work the results of which we were shown in 1977.

These results had relevance not only for education and studies of the handicapped. The prominent Soviet philosopher, Professor Evald Ilyenkov, said:

“The problems of educating people who are deaf, dumb, and blind are epistemological. A neuropsychologist deciphering the mechanism of the brain inaccessible for direct observation, an astronomer describing distant galaxies, or a physicist studying invisible particles – all of them are, in the final analysis, exploring worlds beyond our sense organs. Who knows, perhaps they will all benefit from new methods in the theory of cognition and be enriched by what we have learned and are yet to learn from working with these unusual students.”

As I listened to the four students who took turns defending their papers and applauded with the others when the examination board gave them top marks, I thought: “It’s remarkable how even the most far-flung ‘digressions into related problems’ contained in Luria’s works tend to converge toward a single focal point, how many branches have grown on the tree which was planted in the thirties by Vygotsky, nurtured by Luria and is now in the care of his pupils.”

For the first time I was walking along the familiar corridors alone, and not as a member of some professor’s retinue. I could afford to walk slowly, without stopping to talk to anyone. It was a mental journey: I was winding through the maze of corridors in my memory, little wards with their noiseless nurses.

Or was it that I simply could not hear them? It was as if a skilful film editor in my brain had brought together my own and other people’s thoughts, the pages I had read and the arguments I had heard. All the time I returned to the same old questions. I wonder if I have managed to describe Zasetzky’s treatment well – how and when he had his lost world restored to him and by whom.

The reader already knows when the process started: in 1943 and it continues up to the present day. Where? First in a hospital at Kisigach in the Urals and then in Moscow, at the Burdenko Institute of Neurosurgery, and more recently at the Nervous Diseases Clinic of the First Medical Institute. Who did all this? Alexander Luria, Lyubov Tsvetkova and their associates. As for the details, they are not really important. After all the reader is unlikely to become a specialist in the field, and I have given a general idea...

That is what Lyubov Tsvetkova said when I pestered her with similar questions.

“Man is above all a personality. A speech disorder signals a disorder of the personality – his perception and understanding of the world and of himself in that world, all his faculties and distinctive traits. So what we try to do is to restore not speech but the personality of the patient. We take great pains to find out what is left in his mind, even if it is only two or three words, the names of relatives, something connected with his favourite activities, some expletives, even swear words – for some reason they are most deeply rooted in the mind and are best retained by memory. Then we use these remnants to find a functional alternative to the damaged brain region. It sometimes happens that a patient cannot utter a single word but, after listening to some songs, suddenly recites a whole line from a poem because of its rhythmic structure. A patient who cannot write a single letter may easily sign his name because his hand is guided by the kinetic melody of muscle movements retained in his memory. We think up many different activities involving pictures, jigsaw puzzles, erector sets and blocks, tape-recorders and film projectors. We draw up diagrams of routes for people who have lost their spatial orientation and try our best to make them as vivid and close to real life as possible. We try to use every healthy element in the mind of a patient to build a bridge across the damaged brain area. Even daily handshakes with patients who, like Zasetky, have sustained damage to the tertiary sections of the second block, proved to be very helpful. And we make a point of using all our ‘discoveries’ to improve the spatial orientation of such patients. We search everywhere – and that is how our rehabilitation techniques are created.”

That is what Lyubov Tsvetkova told me. Later I visited Luria at his summer house in Svistukha near Moscow. During his vacation, he was working on the notebooks Zasetky had sent him from Kimovsk. A remarkable thing transpired: Zasetky had found a cure himself. Within a year, he had managed to write more than a thousand pages because he took to writing in rhythmic prose, sometimes partially rhyming his reminiscences. The melody of these verses in prose guided his hand and he was able to remember forgotten words, the rhythms sounding in his head awakening his damaged memory. Listen to him.

“I’ve called this phenomenon briefly ‘confusion of body’. It bothers me less than all of the other affairs or the other diseases...”

“See, if I just touch my hair – I feel pain, irritation, especially whenever I touch my head... The buzz in my legs and my arms and the pain in them also are clearly all due to my nerves.”

Or here’s a quite different musical mode:

“And as before I’m in confusion, I’ve muddled up these things again... Oh yes, I’m weak at them, that’s certain, there’s something wrong inside my brain. Oh yes, my tongue is locked up tight, and you won’t quickly find the key that will set free the word at once – so useless is my memory.” And one more: “Only wait, for the time isn’t ripe, it’s too early to die for no reason, in vain; you’ll perhaps soon be back in the line. And truly, I dream very often of being the person I was before I was wounded... But now I love dreams: for they bear me away from all sorrow; in dreams I can get peace of mind.”

“*Field of Vision Tests at Associate Professor Snyakin’s*. He brought the apparatus closer to my eyes, I looked and saw and did not see... And then instead of the red circle, I saw a sickle, pouring out light. And I can’t see, and the light flows somewhere. In the place where there isn’t any colour in the light – you follow me? – the cause of that colourlessness is only just clear: there are many millions of blind spots in space just on the left, in that very field of vision in which my eye once saw everything!”

My account of the scientific triumph of Alexander Luria is drawing to a close. I have told the reader about the books I’ve read, their authors and heroes, and about my experiences connected with reading them. I hope my task is fulfilled and the reader will want to read the books for himself and find answers for his questions. By way of a farewell, let me read another quotation: “Perhaps some people versed in serious thought will understand my injury and my condition and sort out what is happening in my head and memory, in my organism.” What if Zasetky is addressing you, my reader, and you become a person “versed in serious thought”?

Chapter IV. Alexander Meshcheryakov. A Biographical Profile

Reflex, the way we use it, reminds me very much of the story of Kanetverstaan, the name a poor foreigner heard in Holland every time he asked a question: Whose funeral is that? Whose house is this? Who just drove by? and so on. In the simplicity of his heart, he concluded that everything in that country was done by a certain Kanetverstaan, whereas in fact, the word meant that the Dutchmen had not understood his questions.

The “reflex of goal” or “reflex of freedom” could easily attest to a lack of understanding of the phenomena being studied. It is clear that it is not a reflex in the conventional sense – such as the salivary reflex – but a mechanism of behaviour differing from it in structure. Only if one brings everything to a common denominator can one say that this is the same: it is a reflex, just like Kanetverstaan. The word reflex loses any meaning in such an approach.

Lev Vygotsky

Meshcheryakov, A. I. (1923-1974), Dr. Sc. (Psychology), prominent Soviet specialist in the education of the deaf, dumb, and blind.

Meshcheryakov was born into a peasant family in the village of Gumenki in the Ryazan Region. After finishing secondary school in 1941 he went straight to the Soviet Army and throughout the war was an infantry soldier in an armoured corps. He was heavily wounded in 1943 fighting for the liberation of Byelorussia.

In 1945 he entered the Psychological Sector of the Philosophy Department at Moscow University and went on to graduate studies there.

He began his scientific work at the Burdenko Institute of Neurosurgery under the guidance of Professor Luria. His speciality was localisation of psychic functions in the brain.



In 1952 he joined the Institute for the Study of the Handicapped, first studying, under Professor Luria's guidance, the problem of oligophrenia, and beginning in 1955, the theoretical basis of the education of the deaf, dumb, and blind under Professor Sokolyansky. After Sokolyansky's death, Meshcheryakov succeeded him as head of research work in the field, becoming head of the laboratory for the study and training of deaf, dumb, and blind children.

The theoretical conclusions of Meshcheryakov's many years of experiments were successfully realised in the country's only school for deaf, dumb, and blind children in Zagorsk, set up in 1963. In 1971 he defended a Doctoral dissertation on "Deaf, Dumb, and Blind Children."

Meshcheryakov's work proved that intellectual development of children deprived of sight and hearing can be brought to a very high level. Under his supervision, four graduates of the Zagorsk school for the deaf, dumb, and blind graduated from the Psychology Department at Moscow University.

Meshcheryakov wrote more than eighty scientific papers and one monograph, *Deaf, Dumb, and Blind Children*, 1974 (also available in an English edition reprinted by Erythrós Press in 2009, further cited as *Awakening to Life*).

There was a good reason why Lev Vygotsky devoted so much attention to the psychology of the handicapped, wrote so many papers about it, and even founded a special Institute for the Study of the Handicapped. The study of the damaged human brain can be a short-cut to the secrets of the normal, undamaged brain – provided, of course, that one moves in the right direction and proceeds from valid theories.

Work on the training and education of deaf, dumb, and blind children probably offers the soundest proof of the correctness of historical-genetic psychology. The spectacularly successful method of "divided operational action," developed by Meshcheryakov, is as follows: at the first stage, the teacher carries out all the actions himself, holding the deaf, dumb, and blind child's hands in his own and directing them, and at the final stage it is enough to give a signal – a special kind of touch with the hand – for the child to perform all the learned operations itself. The principle is, in effect, a realisation of Vygotsky's idea that the psyche is

formed under the influence of society through tools, speech, and rules of behaviour.

Meshcheryakov's friend and constant assistant in the matter of training deaf, dumb, and blind children, Doctor of Philosophy Dyenkov, wrote in his booklet *Learn to Think from Youth*:

"When Meshcheryakov's four pupils kept a packed audience of hundreds of students and teachers enthralled for three hours, one of the many notes from the audience read, 'Doesn't your experiment refute the old truth of materialism whereby there is nothing in the mind that was not first in the sensations? They don't see or hear anything, but they understand everything better than we do.'

"I conveyed that question, letter by letter, through the finger (dactile) alphabet to Sasha Suvorov. I was sure he could answer it better than me. And indeed, Sasha replied promptly and clearly, speaking into the microphone:

"'Who told you that we don't see or hear anything? We see and hear with the eyes and ears of all our friends, all people, the whole human race.'

"It was an intelligent and pointed answer by a Marxist psychologist, and it was not lost on the audience, which broke into stormy applause. Sasha had a moral and scientific justification for replying thus to the question: succinctly, accurately and convincingly, with complete grasp of the matter."

And this from Meshcheryakov, writing in the concluding part of *Awakening to Life*:

"When a child is brought into this world, it finds itself in a humanised environment. The space around it is filled with man-made objects: the house in which it was born and lives, the bed in which at first it spends most of the time, its clothes and all the numerous objects of attending to the baby, the household utensils and work tools to which humans have attached functions and modes of action – all that, in Marx's expression, represents objectivised human capacities. And they create the human space around the child. Over the course of history human capacities, have objectivised themselves not only in material objects but also in the development of codes of behaviour and the ordering of life. Thus, apart from the humanised environment, there is equally objective, humanised time, which exists independently of the child – the regime in the broad sense of the word, the order of life telling the child what it should

do and when. Humanised space and humanised time – the whole humanised environment – are initially realised for the child in certain actions of other people catering to its needs... Even such an organic need as the need to breathe is objectivised in actions as, for example, in airing the room, i.e. in specific human behaviour.”

During the many years of our acquaintance, I never asked Alexander Meshcheryakov whether he considered himself a follower of Vygotsky. There was no need to do that, for his work provided an eloquent answer to the question.

Even so, I would like to cite an article by Evald Ilyenkov which shows that the Sokolyansky-Meshcheryakov school is directly descended from the Vygotsky school, including its attitude toward a broad interpretation of the concept of “reflex”:

“The initial condition is what has been given by nature, by biology. It is infinitesimal, including only the simplest organic needs for food, water and a limited range of physiological factors. But no more. There exist no mythical reflexes such as ‘goal orientation’, ‘freedom’, ‘collecting’ or the ‘search and orientation reflex’ which many physiologists still regard as ‘unconditioned’, i.e., hereditary. Even the need for a certain amount of movement is lacking. Even if there is an instinct that makes the infant crawl, it quickly disappears, when it is discouraged by negative sensations.

“As a result, a person does not even possess the lowest level of the psyche which is the subject of zoology. The nucleus of that psychology is the activity of search and orientation. Any animal looks for – and finds – its way to food and water by actively relating its own trajectory with the shapes and position of external bodies, with the ‘geometry’ of the environment. A person born deaf, dumb, and blind cannot even do that. He has to be taught to do it (which is true, however, of the normal people as well, only in the latter case, we do it unwittingly and later come to think that this search and orientation capacity has appeared ‘by itself’ ...

“The underlying educational strategy and tactics of Sokolyansky and Meshcheryakov were as follows. The animal adapts actively to the natural environment, getting its bearings in the process of satisfying its innate biological needs. Its psychic activity appears and develops as a function of this mode of life activity. And that is its limit. With man, everything is turned upside down. He begins actively to adapt nature to himself and his needs and requirements. At first the needs that impel him to work are not much different from the needs of his closest animal ancestors. But in

time, these needs become increasingly differentiated and specifically human. And this is due to labour, which transforms not only the external nature but also the organic nature of man himself.

“These new needs, unknown to the animal, become more complex and diverse from century to century. They become historically developing needs. And they arise not within the organism of the individual but in the organism of the ‘human race’, i.e., in the organism of social production of *specifically human* life, amidst ‘the totality of social relations’ arising between people in the process of production, in the process of joint and specified activity of individuals creating the material body of human culture.”

It is amazing how complete the continuity of scientific thought can be...

The Best Path To Man

A Report from a Children's

Home*

Higgins. The hardest job I ever tackled: make no mistake about that, ...
But you have no idea how frightfully interesting it is to take a human
being and change her into a quite different human being by creating a
new speech for her....

George Bernard Shaw, *Pygmalion*.

1

To the left of me was sitting Father Alexander, a teacher of the language of divine services; opposite me was Father John, august member of the academic temple; and to the right, Alan Heis, an Englishman, a former director of a school for the blind and the deaf, but now, because of his age, simply a teacher in the school. (In England one may not occupy administrative posts after a certain age.) The official toasts had already been drunk, and anyone could now propose a toast for whatever he wished. Up until now Heis had not uttered a word; he had gazed about distractedly as they showed us around the monastery; even when we went into the splendid museum of the intellectual academy, opened only for such rather special delegations as Heis and I had fallen into by pure chance, he seemed to remain indifferent. But suddenly he came to life and even stood up, glass in hand: "There are many paths to God; and one of them – at this point I shall not say that it is the best path – is the one that people in the house where we have been this morning with you have chosen. My toast is to the teachers of the Zagorsk School."

We toasted, and tasted a monastery fish. Heis returned to his thoughts. The fathers were very pleasant, very educated and intelligent young people (with four years of seminary, four years of academy, and three years' practical work behind them): they nodded their heads, framed

* Russian text published in 1975 by "Znanie" Publishers. Karl Levitin, *Vse, naverna, proshche* [Everything, of course is simpler], Moscow: "Znanie," 1975. Pp. 85-143; Source: *Soviet Psychology*, Volume 18, 1979, pp. 3-66.

in their high black cowls, in agreement. Yes, the important guest from England was right, there are many paths to God.

2

There are indeed many paths in life in general, and one cannot tell straightaway which is the best. For example, it is not very sensible to go to Moscow from Dubna by way of Zagorsk – you lose time going from the Dmitrov highway to the Yaroslavl highway. But even when I was in a hurry, I always made this detour. After stimulating conversations and impressions, I wanted at least to catch a glimpse of the cupolas of the Troitse Sergevskaya monastery. What is a dozen kilometres or so when a simple automobile can be transformed into a time machine. I would, of course, not suggest that this route was the most direct one. At the time I knew nothing about the Zagorsk School for blind and deaf children, although it was much closer to Moscow than the renowned Dubna Institute.

For some reason Heis had come out of the school totally dumbfounded, so the entire trip to the monastery passed for him completely unnoticed – this much I understood. One thing was not clear to me: How could he, who in his lifetime had taught so many blind people to read and so many deaf people to speak, never have heard or even read about what was done here? But then again – I know not why – nothing had ever been written about it, so there was nothing for him to read. Indeed, he had heard his fill about the Dubna accelerator ... And how could he know what El'konin, our well-known psychologist, had said à propos of the defence of Meshcheryakov's doctoral dissertation? His words for the first time linked together two synchrotrons – the physical and the psychological.

3

No one looked out the window when the large luxurious limousine that had brought us entered the courtyard of the school. Fifty children – but not one was drawn by the sound of the horn or the gleam of the chrome.

They were deaf and blind. They were immersed in an eternal, soundless night. Only a few of them were able to discriminate a bright light or a loud sound. Theirs was a terrible, immeasurable misfortune. All our world, full of colours and music, was as inaccessible to them as a far-off planet. How could one explain to such a child what a father, a mother,

the earth, or the sky is? Or that there is such a thing as human speech, consisting of words and letters with which we can write these words down? And how to explain to such a child that pangs of hunger can be quelled if he strains his larynx, places his mouth and teeth in a certain way, and emits sounds, inaudible to the child himself, that someone invisible to him will hear and give him food, or something to drink, cover him up, or give him a bath? Or that the raised bumps on a paper are not simply rough spots, but indeed are the very bridge between despair and happiness? How can one explain all this to a creature who not only has no thoughts but even no conscious desires, and who would simply cease to exist if one did not continuously stuff food into him? Indeed, a child deaf and blind from birth does not even know how to chew. It may sound like sacrilege to say such a thing with regard to a creature who outwardly is indistinguishable from a human being, but the fact is, this is not even an animal – it is a plant, a reed bending before any wind.

4

“Last spring we had a chance to accept in our faculty many young people who could neither see nor hear. Understanding how important this was for teaching method, science, and philosophy, the Ministry of Higher Education permitted us to accept them without competition, although with the mandatory examinations. They all passed the examinations and were accepted. Their first semester of instruction with us is completed, and we can now assess some of the results. But the main thing is clear, and that, of course, is that this is a case far beyond the ordinary.”

With these words Alexei Nikolaevich Leontyev opened the meeting of the Scientific Council of the Psychological Faculty of the Moscow State University; the discussion of business matters proceeded: how someone had done in anthropology and logic, how they were learning history and biology, what the difficulties were, and what help was necessary. But I could not hear very well. “To sum up, we can say that blind and deaf students do not learn any more poorly than others. And in terms of their sense of commitment, and purpose, they are far ahead of others.” These words stuck in my mind. To be able to study at Moscow University no more poorly than others without being able to see or hear. To pursue resolutely one’s goal, far ahead of students who could see and hear, when one’s entire life, it would seem, was purposeless, without light and without sound. “A mere reed, but a reed that thinks.” For the hun-

dred and first time I recalled Pascal's words, in my opinion the most accurate definition of a human being.

5

But right there lay the crux of the matter. What is a human being? A chosen child of God, endowed from birth with a divine soul, which need only be awakened? Or does a child enter our world completely "empty" both outside and in, and what we later come to call his soul perhaps not be born with him, but emerge only as he comes into contact with the life we ourselves have created? The debate is far from being abstract, and not at all theological. Indeed, it is beyond Father Alexander and Father John, despite their learnedness. No, the problem has to be solved by proximity to the Zagorsk synchrotron.

Nonetheless, it was not until quite recently that the holy fathers finally gave up in their attempts to demonstrate empirically and thus tangibly the divine essence of a human being. And children, already immeasurably unhappy anyway, would end up in the monastery, where they would be mercilessly trained, forced to do their genuflections and utter their prayers. The techniques of instruction were carefully kept secret; but on the other hand, the results were touted unrestrainedly. Intellectually enlightened feelings, inspired by divine paradise, feelings required by the shepherds, were instilled in the flock. To awake in a deaf, dumb, and blind son of God the image of his Heavenly Father that was all that had to be done. The rest would come of itself: the immortal soul, forever languishing in the body, as in a dungeon, would develop as soon as it was given the first impulse. Many pedagogues and defectologists are still guided by this idea. In 1948 in France, the book by Leroux *Souls in a dungeon* was printed in its 36th edition. The objective of teaching the deaf, dumb, and blind, claimed that illustrious professor, was to awake in them the idea of the Supreme Being. And to do this one had to teach them verbal speech, because "it is impossible to express the abstract idea of God by gestures."

In Moscow, William Gibson's play *The miracle worker* was performed quite recently. This play dramatizes the history of the education of the most famous deaf, dumb, and blind person, Helen Keller. To the very last days of her life (she died in 1968), her name was surrounded by the aura of a person marked out by heaven. Her photo appeared with those of film stars; she had been received by presidents and kings; and the religious and philosophical books she wrote were regarded as revelations

from on high.* But she would write what she read, and not such a bad ideological credo emerged: through the lips of the unfortunate creature to whom He had given reason, the Lord God would prophesy the very same thing as all the countless preachers and philosophers around Helen Keller. Indeed, it could hardly have pleased the Lord God that a self-developed soul, with no help from outside, should come to the same eternal truths as bourgeois moralists and ideologues.

Thus the entire play, as we see, is built around one central idea. The director of the illustrious Perkins School for blind and deaf children, Michael Anagnos, sends a teacher to young Helen Keller with the parting words that the deaf, dumb, and blind child was to be compared to a safe for which it was necessary to find the key. If one succeeded, a treasure, a spiritual one, of course, would be unlocked. The task of the young teacher, Anne Sullivan, was thus not to fill the safe with the treasures of the human mind; on the contrary, she had only to open a way out of the mind for them. In the play, Anne Sullivan found the key. It turned out to be a word, the word “water,” which Helen uttered when they were playing at a water pump together. The curtain falls at this point in the play; but the spectator should have grasped that the most important event in Helen Keller’s life had occurred, that now her soul, finally awakened, would develop of itself, and that other words would follow the first word “water,” falling in torrents, one after the other from her lips.

6

“A careful scrutiny of the records of the education and life of Helen Keller and an analysis of other statements and descriptions of her education by Anne Sullivan do not bear out such a conception of the development of the mind of the deaf, dumb, and blind child, namely, that it is anything even vaguely resembling this sudden awakening of consciousness. In fact, Helen Keller’s mental development was quite different; and the idea of a ‘sudden awakening’ was no more than a tribute paid to the view prevailing in the psychology and pedagogy of the time.”

This quotation is from the doctoral dissertation of Alexander Ivanovich Meshcheryakov.

* The author repeats Meshcheryakov’s opinion which oddly overlooks the fact that Helen Keller belonged to the I.W.W., publicly defended the Soviet Union, advocated for Women’s Suffrage and published a eulogy of Lenin, accumulating a large F.B.I. file along the way, facts which tend to contradict his characterisation of Keller.— *Ed.*

7

“There she was, before me; built up, as it were, in a marble cell, impervious to any ray of light, or particle of sound; with her poor white hand peeping through a chink in the wall, beckoning to some good man for help, that an Immortal soul might be awakened.”

Thus wrote Charles Dickens in his *American notes* when in 1842 he saw Laura Bridgman, the first deaf, dumb, and blind person in history to acquire human speech. Her teacher was the once-famous, but now totally forgotten, physician Samuel Gridley Howe, the founder of the famous Perkins School in Watertown, near Boston, from which Helen Keller received assistance. This extraordinary person was a follower of Garibaldi in Europe, and in America a fighter against slavery, and always and everywhere strove to diminish human suffering.

In his *American notes* Dickens recorded fragments from the history of Laura Bridgman’s illness as handwritten by Doctor Howe:

She was born in Hanover, New Hampshire, on the twenty-first of December, 1829.

... no mother’s smile called forth her answering smile, no father’s voice taught her to imitate his sounds: – they, brothers and sisters, were but forms of matter which resisted her touch, but which differed not from the furniture of the house, save in warmth, and in the power of locomotion; and not even in these respects from the dog and the cat.

But the immortal spirit which had been implanted within her could not die, nor be maimed nor mutilated...

The first experiments were made by taking articles in common use, such as knives, forks, spoons, keys, &c., and pasting upon them labels with their names printed in raised letters. These she felt very carefully, and soon, of course, distinguished that the crooked lines spoon, differed as much from the crooked lines key, as the spoon differed from the key in form.

Then small detached labels, with the same words printed upon them, were put into her hands; and she soon observed that they were similar to the ones pasted on the articles...

After a while, instead of labels. the individual letters were given to her on detached bits of paper: they were arranged side by side so as to spell book, key, &c.; then they were

mixed up in a heap and a sign was made for her to arrange them herself so as to express the words book, key, &c.; and she did so.

Hitherto, the process had been mechanical, and the success about as great as teaching a very knowing dog a variety of tricks. The poor child had sat in mute amazement, and patiently imitated everything her teacher did; but now the truth began to flash upon her: her intellect began to work: she perceived that here was a way by which she could herself make up a sign of anything that was in her own mind, and show it to another mind; and at once her countenance lighted up with a human expression: it was no longer a dog, or parrot: it was an immortal spirit, eagerly seizing upon a new link of union with other spirits! I could almost fix upon the moment when this truth dawned upon her mind, and spread its light to her countenance; I saw that the great obstacle was overcome; and that henceforward nothing but patient and persevering, but plain and straightforward, efforts were to be used.

8

“Can we say that Anne Sullivan, Samuel Howe, and Helen Keller herself were in the end deceiving us? And James, and Lenderinck, and Rieman, and all the others whom you have recommended I read – that all were wrong? And that you are right and can say that there was not a kind of dawning, that there was nothing that had been slumbering earlier in the souls of these deaf, dumb, and blind people that had now been awakened? Is that the case, Alexander Ivanovich?”

“Yes. That is – of course no one consciously deceived anyone – they piously believed in an unexpected enlightenment, but they were wrong.”

“And what about your students, the four who are studying at Moscow State University? All right, you taught them a language without the help of some light from outside. But from whence comes this thirst for knowledge? ‘Purpose,’ your colleague calls it. Look at them, they’re studying as though possessed, without a minute of rest; and their goal is only to know more and more. You can’t teach them that; it comes from within. What drives them to study, psychology and physiology? What is it if it is not the self-development of a soul, the immortal human striving for knowledge?”

“Psychology and physiology were simple, if you will. What was difficult was teaching them how to use a spoon.”

“Alexander Ivanovich, why these paradoxes? What is there in a spoon? So they could eat with their hands; but they studied Pavlov and Sechenov day and night. Is this strange? But a human being begins with a spoon, not with a tie and a hat.”

“With a spoon, with a fork, with a table, with a night basin, with a plate, a chair, a shirt, a bed, a wall, and a ceiling! Man is not born a human being: he becomes one. He has in him as much of the human being as he has assimilated of what is human, as much as he has seen, heard, and smelled around him, as much as things made by social labor have come into his hands and into his language. To grasp that some unnecessary and inconvenient gland must intervene between your mouth and the taste of food already means that one has come half the way on the road to becoming human! But there are no paradoxes here? Excuse me, I got off the subject ...”

9

Man’s thought is irresistibly drawn to paradoxes. I am surely not the only one who in his youth gave his heart to Bernard Shaw; but now, as I leaf through *Pygmalion* once more, Professor Higgins, my former idol, no longer seems as profound; his friend Colonel Pickering no longer seems the pinnacle of humanity; and even all the efforts with Eliza Doolittle seem to me quite trivial. Both these gentlemen have been replaced in my thoughts by new acquaintances: Meshcheryakov and Ilyenkov, his long-time friend, also a doctor, but of philosophy, not of psychology...

But nonetheless, like a tribute from an old and true love that is, at the same time, an acknowledgment of something new, let me present a few lines from *Pygmalion*:

Mrs. Pearce. ...We shall have to be very particular with this girl as to personal cleanliness.

Higgins. Certainly. Quite right. Most important.

Mrs. Pearce. I mean not to be slovenly about her dress or untidy in leaving things about.

Higgins (going to her solemnly). Just so. I intended to call your attention to that. (He passes on to Pickering, who is enjoying the conversation immensely.) It is these little things that matter, Pickering. Take care of the pence and the pounds

will take care of themselves is as true of personal habits as of money.

Meshcheryakov and Ilyenkov, who have replaced Higgins and Pickering in my heart, have also made the words and deeds of these two gentlemen more understandable to me. Of course, Professor Higgins could allow himself, to Mrs. Pearce's annoyance, to throw his things about everywhere – this was a device permitting Bernard Shaw to take up the theme of houseslippers. The same Higgins understood, however, that a street urchin with dreams of becoming a countess could not permit herself this carelessness. For a deaf, dumb, and blind child, unorganised behaviour is just as ruinous – he or she simply would not be able to become a human being. This is the important conclusion to which Alexander Ivanovich Meshcheryakov came.

10

Evald Vasilyevich Ilyenkov was also speaking worriedly, and his conversation gave me tremendous satisfaction, but for completely different reasons than Higgins' conversation had pleased Pickering. All three of us were together at the Ilyenkovs' house.

For Alexander Ivanovich, the conversation was evidently trivial; but I found in it a confirmation of the thoughts that had occurred to me after I had read the two big volumes of Meshcheryakov's dissertation and the books and articles he advised me to look through. I was juggling this vast supply of scholarly information against the observations I had made in recent months. Evald Vasilyevich was ruminating.

– “What is thought?” – Philosophy has been concerned with this question for at least two and a half thousand years; and there, alas, seems to be no end in sight to the disputes. It may even turn out that no answer to the question is possible, only hypotheses, all equally incapable of proof, or equally irrefutable. Nevertheless, this is the main question, the main problem of my science. In this connection I consider my meeting with Alexander Ivanovich a piece of extremely good luck. We had not seen each other for a long time, not since we finished Moscow State University. We studied together in the philosophy faculty, except that he specialized in psychology – at that time there was not yet a separate faculty for psychology. When he told about his work with deaf, dumb, and blind children, I did not immediately realise what good fortune had befallen me. That happened later. Every philosopher probably dreams of observing the process of thought from its very beginnings, in the same pure

form in which a chemist sees his reactions in a test tube or a sterile retort. But for those who work at Zagorsk, this is not a dream, but a daily duty. And what was most important of all, they could perform this duty only by having a clear and true model of what thought is, and what the human mind is in general. With vague, to say nothing of erroneous, ideas, you cannot cultivate or create a thinking being: you get only a cripple, a monster. Or you get nothing at all. Zagorsk provides a real experimentum crucis for theoretical ideas about what thought is, about what a thinking being is, and about what the human mind consists in general.

A child deprived of any means of obtaining information about the external world – this is the raw stuff that has the possibility of becoming a human being. To what extent this process is successful depends on the joint activity of teacher and child. Together they must resolve an almost irresolvable problem, namely, to create a human personality. Nothing interferes with the teacher in this work, but nothing helps him or her either. If the teacher doesn't think something through, omits some detail, it immediately becomes apparent. Even the simplest and most ordinary thing that it would never occur to us to teach our children – a smile, facial expressions of joy, rage, agreement, protest – hundreds of different feelings and states of mind none of these things does a blind and deaf child have. When he or she is happy, the child suddenly distorts the features of his or her face into a grimace similar to our expression of pain. Professor Sokolyansky ordered many masks to be made, which the children could feel with their fingers and thus learn the language of universal human facial expressions. It was even necessary to give them special instruction in pantomime. Do you remember, Sasha [nickname for Alexander – Ed.] , you were saying how when you shaved your beard you were surprised for several days about how inexpressive the lower part of your face was? Do you remember how you had to relearn facial expressions, to restore the forgotten language of your chin? A trivial episode, but also very informative.

And then there was a case that explained even more to me. In Zagorsk there was a very difficult little boy: when they brought him in, he would lie in a corner and react to nothing at all; he just ate and slept. Years went by before they were successful in teaching him how to dress himself, take care of his personal needs, before he even began to talk. But it occurred to no one to suggest to the boy that cruelty existed in this world. But then he became part of a group of his peers; and they began to tease him. For example, they would tap something out to him on his

hand, i.e., they would speak to him with a special alphabet consisting of different combinations of fingers – dactylology, it is called – and get him to crawl into the cupboard or take off his shoes in the middle of a lesson. He carried out all their commands faultlessly, and could not imagine that those around him could be capable of such a mean trick. But then suddenly he understood: the world was not at all as it had seemed to him previously: people, he discovered, could speak untruths. His nerves could not withstand this, and for a long time it was impossible to bring the boy out of his deep shock.

They had perhaps omitted a very important thing in education, something that comes to the normal child of itself, and this was the unexpected result. Daniil Borisovich El'konin was totally correct when at Meshcheryakov's defence of his doctoral dissertation he compared the Zagorsk School with a "psychological synchrotron." "The Zagorsk children's home is for psychologists and teachers what a synchrotron is for physicists," he said. What he meant was that in observing the blind and deaf children, one could study the most subtle nuances in the development of the human mind. Am I right, Sasha?

– You're right, Evald. Only that's not the most important thing. When a person already understands some language, when you can say something to him, in gestures, in words, then everything becomes simple, although in another sense, it is more difficult. Take the boy about whom you were just speaking; that case was a really sad one; we are correcting our pedagogical error. But when they bring us a child who is blind and deaf to everything in the world, without desires, without even the least thought, how can we establish contact with him? He is interested in nothing, and any object that we put in his hand immediately drops.

Earlier we were all absolutely sure that every human being is born with a so-called investigatory-orienting reflex, and that this reflex is the germ out of which grows the desire to know the world around us. But then, time after time, we found that it was impossible to detect this reflex in our blind and deaf children.

A normal child, as soon as it comes into the world, immediately enters some specific environment; and that environment brings the infant good or bad, light, heat, a mother's smile, the sound of her voice – all these things penetrate his brain, and there connections are formed. They are formed very quickly; this is an extremely important business for the organism, and only one or two reinforcements are sufficient for such

connections to be established: the infant begins quite soon to seek something, to explore something, to reach out for something. The impression is that he was even born with this.

But no medium or environment acts on the deaf, dumb, and blind child. He or she has no impulses toward orienting activity. It is not easy to go against circumstances, but it is completely impossible to go against the facts: they force us to doubt the existence, in the blind and deaf child, of an unconditional reflex out of which curiosity and the desire to investigate the external world could grow. We found that the reflex the textbooks write about does not exist in blind and deaf children. There is nothing to induce the child to acquire an interest in any object we might give him or her if that object does not satisfy one of the child's needs.

What remained? How to get through to the brain, which was still only a clockwork mechanism intended for thought, but in which it was necessary to combine a multitude of different parts in order for it to begin to process the raw material sent to it, i.e., the signals from the surrounding world?

There remain only those inalienable needs of a living organism – the needs for food, for drink, and for warmth. Utilizing them we must form conditional reflexes to bring the deaf, dumb, and blind child out of his state of complete indifference to life.

We have to extract the maximum possible from one known fact: although such a child drops or tosses a pencil, a matchbox or a key with dull indifference, if we thrust a nipple at him or her, the child begins to grasp it.

And if after an educator's long and persistent labor a blind and deaf child begins to reach out toward a spoon when he or she wants to eat, that child has taken the first step on the path toward becoming human. And then when, again, the child acquires an interest in hundreds or thousands of other objects of our daily life, when he or she learns not to run naked, which seems natural, but puts on clothes and shoes in order not to be cold; and when the child learns not to throw things around everywhere, which is easy and simple, but places them in a box so that he or she can always find them there; when the order instituted in human society and the objective, practical culture of everyday life that people have created become necessary to the child and therefore intelligible – then, and only then, does it become possible to teach such a child a language, i.e., then transformation into a human being can be completed.

11

Alexander Ivanovich looked at his watch and became silent. It was, in fact, not early. And although both Ilyenkov and his wife – who is also, we should mention, a doctor of sciences – had become quite accustomed to such night-time conversations, Meshcheryakov and I drank our tea and took our leave.

“You know,” he said to me suddenly on the staircase, “Charles Darwin wrote a special work entitled ‘On the expression of emotions’, in which he demonstrates that a smile is innate to humans. One of his arguments was that Laura Bridgman always smiled when she conversed – do you remember the other Charles – Dickens? Now that seems somewhat strange to us: such a great scientist as Darwin did not know the facts; he did not find that facial expressions had to be learned, that this was not a simple business. Evald was talking today about Sokolyansky’s masks. Strange. To gather such an immense amount of material on the origin of the species on earth, to study carefully a mountain of data, put them all together in a meaningful way, and then to err. And you know how argumentative this authority Darwin was. Well, so long for now, I guess we have to part here.”

There is something else that’s strange, if I may say so, I thought to myself, riding home along the Rubrevskii Chaussee, where Meshcheryakov lives: Every word, even wrong words, uttered by a great scientist is cast in marble, as it were. That is understandable. But nonetheless, people find in themselves the courage to go against the authorities – which is truly surprising! It is easy to say that there is no investigative-orienting reflex? Indeed, one would have to consider and rethink everything a hundred and one times before one ventured to state such a view publicly.

But on the other hand, why is it so important for this reflex to be unconditional? Why should evolution have supplied us with it from birth? Perhaps it, too, is like Darwin’s smile? Then there is the cardinal postulate of Darwin himself – that only what is necessary and expedient survives, and the rest is filtered out by evolution. Why should our brain bear within it the program “Seek, examine, study”? Why?

“The brain is not an organ of thought, but an organ of survival.” This sentence, from a book I was studying at the time, spun around in my head. An organ not of thought, but of survival... The meaning of these words that suddenly surged up in my memory impressed me so much that I stopped the car and opened up my briefcase. Here it was, this

book, *Principles of self-organisation*, a collection of lectures by major experts who had met in the USA not far from Illinois University at Allerton House. Now where was that passage? Not this one, not this one – there: George Zpof, the famous American cyberneticist, says:

Sometimes it seems to me that we are overlooking one important fact when we so zealously try to draw all the sweets out of a sack containing biological goodies. The fact of the matter is that this is not at all Santa Claus's pack. All the objects in it are interrelated, and any attempt to seize on only one brilliant generalisation, and you will just pull out the tail of many contradictions. As you see, many of us believe that we can model "higher intellectual functions" without taking into account the lower intellectual functions and, especially, the "nonintellectual functions" of whatever level. We persist in ignoring the fact that the major part of the nervous system is intended not for delights of pure thought about random problems, but rather for circumscribed, dirty, everyday work – the maintenance and coordination of a few boring and unnotable, trivial constants. You can give strong arguments in favor of the view that the "higher" mental functions in a certain sense subserve these lower processes. This viewpoint is spelled out in the words of Albert St. Dierdy, "The brain is not an organ of thought, but an organ of survival, like claws or a beak..." [Retranslation from the Russian.]

Anyway, I had put a place-marker in the book. So that's the way it is. Since our brain was not formed to give man the advantage in the evolutionary race for survival, then everything in it – its higher sections, the entire complex structure, the hierarchy of levels – is only for absorbing, and adapting to, the environment. And we survive because our brain is a distinct, flexible device for seizing the most elusive information and elaborating the best strategy for survival in the most complicated and most variable environment. But then it can happen that the preprogram of the brain's activity can hamstring it when suddenly it comes up against a new, unfamiliar environment. It must be able to survive in any circumstances. Of course, it is good to possess right away, from birth, a reflex that induces the individual to investigate the surrounding world; but this is only in our everyday, customary circumstances. Wouldn't it have been better for evolution to have shaped the human brain in such a way that a

reflex would form only when it was advantageous, i.e., when the environment required it?

William Ross Ashby, an expert on artificial brains and one of the greatest contemporary cyberneticists, thought that not one property of the brain could be considered good or bad in itself: all depended on the environment. His talk at the Allerton Conference was in the same book. Here's what he said:

There is no brain (either natural or man-made) which is good in any absolute sense – everything depends on circumstances and needs. Any capacity demonstrated by the brain is “good” only contingently. Curiosity is a good thing, but many antelopes have died because they tarried to look at the hunter's hat. Whether the organisation of the antelope's brain has been such as to lead (or not lead) to a state of temporary immobility obviously depends on how numerous are hunters with guns in the environment. Monkeys on whom a brain operation had been performed scored higher in some tests than normal monkeys; the former were more patient and sedulous, whereas the normal animals were too restless and were always getting distracted...

Do you still find this position debatable? Then I am ready to insist that man possesses not even one mental ability that is good in the absolute sense. I am convinced that there is not one property or capacity of the brain that is ordinarily considered desirable that would not become undesirable in another kind of environment. Let me give a few examples.

Is it good or bad that the brain has memory? It is good only if the external environment is structured in such a way that the future often repeats the past; if events of the future were often the opposite, memory would be useless. This is the situation when a rat living in the sewer pipes encounters an environment called a “prebaiting system.” An ordinary rat is very suspicious and takes an unfamiliar food only in small portions. However, if a tasty bit of food appears in the same place three days in succession, the rat learns and on the fourth day is poisoned and dies.

A rat without memory, on the other hand, would be just as suspicious on the fourth day as on the first, and would

survive. Thus, under the particular conditions, memory is clearly an encumbrance. A protracted existence in such an environment would, all other conditions being equal, result in the evolution of a smaller memory span. [Retranslation from the Russian.]

Stop. One's enough. No further persuasion needed. Indeed, why should nature not turn out to be even more cunning than we think; why shouldn't it have prepared our brain for any unexpected event by depriving it, not endowing it, with each and every innate aptitude and talent over the course of its evolution? An absolutely perfect mechanism, prepared to meet any requirement of the environment: if memory is necessary, then let there be memory; if it is not necessary, then away with it; if an orienting reflex should prove useful, let it be developed very quickly; if it is harmful, then let the brain not be programmed to respond invariably with a reflex.

Something interesting has happened here, I thought, as I put the book back in my briefcase and turned the ignition key. But before the motor even got started, I understood that my home-grown hypothesis would hardly hold up under discussion at the Academy of Sciences.

12

Meshcheryakov's report to the meeting of the presidium of the Academy of Sciences was introduced by Academician Semenov. Nikolai Nikolaevich Semenov described the work of the Sokolyansky-Meshcheryakov school as by no means having received the recognition it deserved and, moreover, an unspoiled treasure trove of science. "I hope," he said, "that this matter will attract more serious attention than has been the case up to now."

The great scientist was able to see the real significance of work with blind, deaf, and dumb children, although psychology is far removed from the sciences that interest him. What Alexander Ivanovich had been able to do brought an old debate to a head. Everyone who has ever written about teaching the deaf, dumb, and blind – and there are many dozens of them not only teachers and physicians but also historians, literati, social workers, and, of course, theologians, has believed that the capacity for communication and speech was already "given" in a human being. It was necessary only to arouse it. It literally never occurred to them that a child, blind and deaf and hence, of course, also dumb from birth, not only does not know what words designating objects are but does not even have any

idea of the existence of objects or of the external world. If such a child just cannot learn any speech at all, he is declared feeble-minded, an idiot; and if, which is extremely rare, they are successful in teaching such a child to speak, that child is considered a phenomenon, a supergenius, a boundless intellect. At first there must be language, any kind of language, and then you can suggest any idea, or tell a child about any object. The word had once been ascribed the magical, mystical property of being able to act directly on the "immortal soul," or, in the latest terminology, on the mind. On a mind that does not yet exist, that must first be created.

This viewpoint has so possessed our thinking that contradictory facts have simply been disregarded. No one has attempted to analyze the history of Helen Keller, although she herself wrote it, and it has been published many times over.

The little girl saw or heard nothing; she was afraid to tear herself away from her mother's apron – Kate Keller was even happy about this: though her daughter was a nuisance, still she had her in sight at all times. Helen was drawn to every object that her mother picked up, and she learned how to handle many of them correctly. She knew how to cut bread, how to break up sugar in a cup, and how to pour water into a teakettle. The imitation of these simple acts became her first gestures, to which, to be sure, no one ascribed much importance – they even irritated the family of the retired captain Arthur Keller: instead of words intelligible to all, the child would make some sort of clumsy signs. But these signs, which were born in discourse, in practical communication with objects, were the germs of language. They would not have developed, however, if there had not been another person, only three years older than Helen, who was also living in the house.

In those days a little coloured girl, Martha Washington, the child of our cook, and Belle, an old setter, and a great hunter in her day, were my constant companions. – I tried hard to teach her [Belle] my sign language, but she was dull and inattentive.... Belle would get up, stretch herself lazily, give one or two contemptuous sniffs, go to the opposite side of the hearth and lie down again, and I, wearied and disappointed, went off in search of Martha.

It was not by coincidence that the gifted memory of Helen Keller preserved the names of these two creatures that had played such a tremendous role in her life. The faithful dog was unable to learn what Helen Keller called “my signs”; but the black girl grasped their meaning instantly; and an important thought emerged in the flickering consciousness of the blind child: people are, after all, different from dogs and cats, although both have warmth and the ability to move around. Doctor Howe would not have been able to say on her account those horrible things that he had written in his story of the illness of Laura Bridgman.

... Martha Washington understood my signs, and I seldom had any difficulty in making her do just as I wished. It pleased me to domineer over her, and she generally submitted to my tyranny rather than risk a hand-to-hand encounter. I was strong, active, indifferent to consequences. I knew my own mind well enough and always had my own way, even if I had to fight tooth and nail for it. We spent a great deal of time in the kitchen, kneading dough balls, helping make ice-cream, grinding coffee, quarrelling over the cake-bowl, and feeding the hens and turkeys that swarmed about the kitchen steps....

Yes, the kitchen steps. Every day something occurred that would bring the deaf, dumb, and blind child closer to the world of objects. The tremendous patience and goodwill of the little black girl, with the name of Washington, sustained the despairing attempts of Helen Keller to transform the copying of acts with these objects into gestures intelligible to at least one other person in the world around her.

And only much later, her mother, reading Dickens’s *American notes*, wrote to Doctor Howe in Perkins, near Boston, a letter with a tearful plea for help. Samuel Howe at that time had already been dead for four years, but the new director of the school, Michael Anagnos, responded to the desperate call and sent a teacher, the 22-year-old Anne Sullivan, to the Keller household. Anne herself was a blind girl who had just finished the Perkins School. Anne had lived for six years at Perkins with the notable Laura Bridgman; and when physicians had been able to restore partial vision to her, she studied the writings of the deceased Doctor Howe patiently and carefully for a half year. But that was the limit of her knowledge of how to teach the deaf, dumb, and blind. Nonetheless, there was no science at that time of any kind; and one could say with confidence that if a more abandoned child had fallen into her hands, Anne

Sullivan, all her pedagogical talent and self-assurance notwithstanding, would hardly have been able to do anything.

“So there is some basis for saying that the first teacher of Helen Keller was a little Negro girl, Martha Washington.” The prudent tone of this sentence is due to the fact that it is taken from the doctoral dissertation defended by Alexander Ivanovich Meshcheryakov.

13

Alan Heis left the Zagorsk School carrying a puppy, probably also a setter, in his arms; in any event, to myself I called him Belle. He was long-eared, with bright eyes, so alive – not the kind you buy in the stores. He was made by the hands of children who could neither see nor hear. They also made clothes for the children, made furniture, and prepared buns. A hammer, a screwdriver, plane, a sewing machine, an iron – all these things in their hands performed no worse than in the hands of ordinary children in an ordinary school. But the workshops were not simply a place where they had lessons in practical arts. Here, human personalities were formed. A nail and a saw, a needle and scissors, just like a spoon and a fork, and other ingenious inventions made by people, and shaping them in turn, transformed the deaf, dumb, and blind child into a human being. A famous teacher, Heis had traversed a long path shaped by mankind in his development, and had acquired all that universal human talent concentrated in the objects of everyday life and in the tools of labour. Having learned how to hold a comb and a chisel in his hands, he learned human conduct; and in the process, his mind took shape.

The boarding school, now the only one of its kind in the country, was founded just in 1963. Before this time the parents of deaf, dumb, and blind children had to turn to the Institute of Defectology for help, to the laboratory where Meshcheryakov is now the director and where formerly his teacher, the founder of Soviet pedagogy for the deaf, dumb, and blind, Professor Ivan Afanasevich Sokolyansky, had founded Soviet pedagogy for the deaf, dumb, and blind. There was no hospital at the laboratory, and parents received only consultation, that is, systematic technical advice on how to bring up their children. But most important, they were told, was to teach the child how to take care of himself or herself: to eat, to drink, to get dressed, and to put everything in place, to set the table, and a number of other things necessary for daily life. The unfortunate mothers and fathers, ready for any sacrifice only to be able to see their children become thinking creatures, usually received this advice

with bewilderment. “Yes, we can take care of them and feed them and dress them. They are ours; they don’t belong to others. But tell us how to teach them to talk, tell us what to do so that they will be able to understand even just one human word.” It was not at all easy to persuade them that without these elementary habits there was not even the slightest possibility of teaching the children to think; they could get no ideas of objects. If it is not an urgent necessity, a deaf, dumb, and blind child will not bother with any object: he or she shows an interest only in those things that are linked to his or her most essential needs.

14

Alvin Valentinovich Apraushev, the director of the Zagorsk children’s home, uttered a surprising statement in the course of our conversation: “It is more difficult to teach language to a deaf child who can see than to a blind and deaf child.”

Had I heard wrong? No; Heis, after listening to my literal translation, nodded his head in agreement. This was not the place to ask for clarifications, but the first question back in Moscow was about this strange statement: “There is nothing strange in it,” answered Evald Vasilyevich [Ilyenkov]. “A deaf person with vision as a rule not only cannot acquire oral speech but even the written word remains inaccessible to him. They can become splendid toolmakers and lathe operators, but they are unable to write an application for a job. And why? Simply because there is no hard necessity compelling them to. Why should they learn words and grammar if they can explain themselves with gestures without difficulty? Of course, in the school, the teacher requires them to learn a finger alphabet, and even tries to force them to speak vocally. But as soon as the teacher turns away, they can speak with their friends in their simple and easy way, namely, with their gestures.

“Why should this surprise you? Each individual repeats the history of mankind in his own development. Why should our forefathers have climbed down from the trees and begun to walk on their hind legs? Necessity forced them to. Around them were enemies; there was no food; something had to be devised. How did fire, the axe, the bow and arrow appear? Life took things in hand.”

Necessity, as before, dictates our behaviour; and once having realised this, the teachers of the deaf, dumb, and blind deliberately make use of it in their work with these children. Necessity became part of the equipment, the same sort of device as, for example, a teletactor.

15

The teletactor is an apparatus enabling an ordinary person to converse with the blind and deaf. But it is not merely a device; it does not allow a normal person to remain blind and deaf to human misfortune and human heroism.

When for a few seconds the sound is turned off and on the screen you see only an immobile face, the effect is horrible; and movie directors make use of such heavy-handed techniques very seldom. But life is much more horrible. It can turn off not only sound but also the picture. Fortunately, there is usually not an epidemic of such horrible diseases, for example, measles; nature makes use of this criminal power no more frequently than in one of a hundred thousand scenarios. But here is this nightmarish film incessantly before the eyes of three boys and one little girl. Before me were their faces, by no means immobile but, on the contrary, expressive, animated, intelligent. I listened to their voices: the pure, absolutely perfect pronunciation of Sasha, the very quiet and high-pitched voice of Natasha, the deep voice of Yura, not yet quite accustomed to speech, and the quite extraordinary melodiousness with which Sergei uttered his words. He spoke almost without any intonation. I was sitting at an ordinary typewriter, and each of my interlocutors was holding his or her index fingers on a little plastic circle from which six little dowels were protruding three in two vertical columns each. Each letter, figure, or punctuation mark had its own combination of six points – this was the Braille alphabet, in which books are written for the blind.

The typewriter was my work instrument, and it did not seem strange to me to converse with its help. But it was extremely odd to know that by typing on its keyboard little metal dowels were brought into contact with flesh and blood. This sensation of a direct physical contact with one's interlocutor made such an impression on me that I was unable to say what I wanted to. "No, it's not very difficult to study in the psychology faculty." "Yes, of course, now that we're in class, we've got to make a little effort." "Well, of course, because you indulge yourself a little bit: you've got to work the entire semester on the curriculum, but your willpower doesn't hold out. You take some book instead of a textbook, and you read it the whole day through."

"Yes, each time it is different; now, for example, none of us can tear ourselves away from I'm responsible for everything, by Yuri German."

That's the way the conversation went.

But at this point Ilyenkov came in. They greeted him like one of their own and literally dragged him to the teletactor: they were starved for a good conversation. “Evald Vasilyevich,” said Sasha, typing out the words, “Tell us something philosophical, for example about phenomena and essence.”

They spoke a bit on this topic, but without any enthusiasm. “I’d like to know your opinion about something,” said Natasha suddenly. “Can a beautiful, heroic death compensate for an aimlessly lived life?” As she said this she pressed the keys (there were six, of course) of her Braille typewriter at her desk, so that Sasha, Serezha, and Yura could “hear” her. “No,” said Yura at once, without taking his finger away from the dowels popping up under it. “No, it’s better to live well than to die well.” “And if you understood German’s book differently, you were wrong,” said Sasha, in support of him.

16

No, Holy Fathers. I should like to say that the architecture of the Sergiev Trinity Church is splendid, and your museum is nice. But excuse me, my soul is not with you. And if you think otherwise, you’re wrong. Indeed, in those innumerable and rather convincing conversations about the religious spirit that purportedly descended upon Helen Keller there was even less truth than in the story of the sudden dawning near the water pump. Even when she was ten, they were trying to get Helen Keller to believe in God. We know about this from the letters of her teacher Anne Sullivan:

... At that time, a dear relative who was also an earnest Christian, tried to tell her about God but, as this lady did not use words suited to the comprehension of the child, they made little impression upon Helen’s mind. When I subsequently talked with her, she said: “I have something very funny to tell you. A. says God made me and every one out of sand; but it must be a joke. I am made of flesh and blood and bone, am I not?” Here she examined her arm with evident satisfaction, laughing heartily to herself. After a moment she went on: “A. says God is everywhere, and that He is all love; but I do not think a person can be made out of love. Love is only something in our hearts. Then A. said another very comical thing. She says He (meaning God) is my dear father.

It made me laugh quite hard, for I know my father is Arthur Keller.”

“Who made God? What did God make the world out of? Where did he get the earth, the water, the seeds, and the first animals? How do you know about bliss beyond the grave – you’ve never died? These are just a few of the questions of the deaf and blind, written down by various people, questions that from an as yet unperplexed soul used to fight off the church mysticism. Even if something just got worked out in her head, such as this purely rationalistic approach to the world, it is a natural process for an intelligent human creature to try independently to come to grips with life without the deadening effect of established doctrines. But the forces were too unequally matched. The Bishop of Boston himself, His Grace Philip Brooks, took on the education of Helen Keller. The budding consciousness of a child could not hold out against his authority and eloquence.

“It is better to live well than to die well.” This sentence sounded so natural that I began to think: Now, Your Reverence, try to darken the mind of Yuri Lerner or one of his comrades. And how totally inappropriate the words of Lemoine, the famous French psychologist, a scientist of our century, now seemed to me:

Reason and judgment, feelings, the will, and the imagination are deeply damaged in them. The imagination is reduced to a minimum and exists only within the framework of tactile impressions. The will is uncontrolled; interests are limited. Such an unhappy child, who lacks both the higher senses, soon begins to appear stupid and inaccessible to outside impressions. The fear of the unknown, the dark, the inability to communicate forces such a child to lose all sense of proportion.

17

The light went out in the hall, and it became quiet. Alexander Ivanovich Meshcheryakov was showing a film about how his pupils were wrested from the darkness and silence, how reason and judgment, feelings, will, and imagination were created in them. Everything was so simple, as if they had purposely made an antifilm hit. Here they were, getting a 5-year-old mite to eat with a spoon. There she is learning how to dress herself. The teacher’s hands hold her little hands as she draws her socks onto her feet. Once, twice, three times, a hundred times. And now it is

already enough to bring the girl's hands into contact with the sock, and she will begin herself to put it on. The beginning of the act has been simply transformed into a signal for its execution.

Any movie, however, even a down-to-earth one, is nonetheless a skillful fabrication compared with life: it condenses time and creates its own film truth. Actually, the command "Put on your sock" is remembered and carried out with much trouble. The child begins to draw on her sock, but at first cannot bring this act to completion. As they say, it does not receive reinforcement – and the result of the work is nil. Any psychologist knows that in such a situation it is impossible to teach anyone anything. But even if the child is continually helped in such simple operations, there is still little benefit: he or she is unable to link in consciousness the result with the actions. An educator is able to teach a child to do something independently only by carefully administering his or her own participation in the pupil's acts and labours in small, careful doses. The psychological "synchrotron" requires a watchmaker's precision.

The projector rattles on, condensing years into minutes. The adult pupils and teachers are continually starting conversations with the children, giving them a chance to observe "conversations" and "disputes." The children begin to "babble" with gestures, just as a normal child does. They are continually depicting something with their hands, imitating the adults. After a little while longer, the meaning of these movements become apparent to them. They learn their first language – the language of gestures.

And again, such a precision tool as the human brain requires an ultra-precision attitude toward itself. To tie together the knots of communication in it, to weave this invisible fabric who knows how?

If an object is new and unknown, a child will discard it. But then, change the shape of his customary spoon slightly, and the deaf, dumb, and blind child, 5 years old, will not let it out of his or her hands. That is how a narrow path is built to the child's consciousness.

Soon the road widens out. Now knowing that a child's interest is at its peak when a slightly changed but familiar object is encountered, the teacher traces out a dotted line linking a long series of different things, each of which is slightly different from the other in some feature. The child develops a new need, the need to examine the surrounding world. What had seemed innate in the child had actually been created by the painstaking efforts of teachers. Now, though deprived of seeing and hear-

ing, the child is in no way inferior to a normal child in his insatiable gravitation toward new objects and impressions.

There are many things, and there are many gestures designating them. Somewhere at the heart of this primitive gestural thinking (no, this is not a stipulation: it is a basic idea – thinking is there, but a verbal language does not yet exist) the need to express oneself in a different, and more complete, way is beginning to form. In what microscope can one see this atom of consciousness? The Zagorsk architects of the soul guess from the unmistakable signs noted down and studied by them over long years of work that the moment has arrived. Now in place of the familiar gestures, the child will be given words to name them with. Of course, he or she will not understand that the new gesture – and can conceive of the shifting combinations of fingers only as a gesture – consists of letters. But the child has already learned how to name a dozen objects with new names, and cannot help but notice that the same combination of fingers always recurs. The idea of an elementary particle of speech, a letter, takes root in the child's head – not of itself, not as some dawning from above, but through the deliberate, methodical, strenuous, and indefatigable work of the teacher.

... A boy, already quite grown up, looks at us from a screen.

With rapid, almost unnoticed touches of the fingers, in different combinations, he speaks to the hand of his classmate, saying something very pleasant and – judging from the expression on his face – personal. The fingers flit swiftly over the Braille book. The child is learning to establish connections between the combinations of letters and the combinations of bumps that correspond to the same letter. This is no longer at all difficult.

The blind and deaf girl's lips mutter without a sound. But this is because it is a silent film. The children at Zagorsk learn how to pronounce all the letters, copying the positions of the teeth, lips, and tongue of the teacher. They remember each new sound in all the complexity and precision of its phonetics for a long time the child must hold his/her hand on the throat, tongue, the lips and the larynx of the teacher. The child senses the tension on the vocal chords, and the scarcely perceptible stream of air forming the vowels and consonants of our language. And then sound is added to sound to make a word, and words are combined into sentences. Again, endless work to achieve phonetic purity, a new burden on the memory, new exertions, and work, work, work. But even this long and

relatively complicated process no longer seems so improbable. If the film had been an artistic film rather than an educational one, it would have won first prize. The little girl with difficulty draws a spoon of porridge to her mouth...

18

Life in general loves circles. Much returns in cycles. Doctor Howe, a pioneer in the teaching of the deaf, dumb, and blind, and Laura Bridgman's teacher, chose the most natural way, as it were: he concentrated on the sense of touch, which the girl possessed to perfection. But his successors, even those at the Perkins School, upheld another viewpoint. They thought the most important thing was to teach verbal speech; and when the child had mastered that, he or she would be able to pronounce sounds and words, and then it would be incomparably simpler to work with him or her. "In the beginning was the word." This wise biblical saying was making a weighty point.

Inez Hall, the first director of the department for deaf, dumb, and blind children, practiced this doctrine fanatically. Children who attempted to use gestures were punished; and if they were unable to learn to speak within a given time, they were simply counted out. From morning to night, from sunup to sundown, Inez Hall worked with a boy named Leonard Dowdy, with no holidays and no days off. He was brought to the school in a terrible condition: he even ran on all fours, backward, because it hurt to bump his head. At Perkins, Dowdy not only learned how to speak fluently, but even became a quite educated person, capable of leading a life of his own and working. But Inez Hall was forced to renounce any personal life of her own completely for the sake of this child. And she demanded the same self denial from the other teachers. This order of things was maintained at Perkins for more than twenty years, up to 1951, when Edward Waterhouse became director of the school. He found the most difficult department of his school in a critical situation: there were only four children in it, but there was no one to teach them – there were no teachers for them throughout the whole of America.

Dr. Edward Waterhouse travelled to Moscow on important international business, but he never got to sit down at the conference table – on the very first day Meshcheryakov took him away from the Executive Committee of the International Council for the Welfare of the Blind. Waterhouse did not even resist for appearance's sake – he was already too taken by the desire to see with his own eyes what Alexander Ivano-

vich had told him about at the time of their meeting in England, at a seminar on teaching the blind and deaf.

He, of course, came to Zagorsk and met the four students, speaking with them for several hours with the aid of the teletactor. Meshcheryakov showed him his laboratory at the Institute of Defectology (named in honour of Professor I. A. Sokolyansky), Then there was also a quite “nonscientific” meeting at the apartment of Olga Ivanova Skorokhodova, the blind and deaf worker at the laboratory, pupil of Sokolyansky, author of scientific books and verses, and Candidate of Sciences. It so happened that I didn’t miss a word of all of these long conversations and talks: Alexander Ivanovich asked me to be his translator. So I was able to get a clearer idea of the meaning of what Sokolyansky, Meshcheryakov, and many other people working with them had accomplished.

It was not very easy, not very easy at all, for Waterhouse to return to the original idea of his school, namely, to teach the children by beginning with gestures, to bet on the act rather than the word. But when he was able nonetheless to achieve his purpose, success was not long in coming: now there are 70 children in the section for the deaf and blind at Perkins, the teaching staff is full, and they are not forced to forgo a normal human life. The heroic, but fundamentally flawed, method of Inez Hall has given way to a “simple, ordinary effort,” as Howe would have said. In England, at the Candover School, where Meshcheryakov and Waterhouse met, they are still using the oral method. But this is official. Actually, even in this school they are obliged to teach the children with a finger alphabet, and only later to teach them how to pronounce the sounds. Waterhouse heard Myers, the director of Candover, say distraughtly: “I don’t know how far we can go with our policy of oral speech at any price.”

The path chosen by Professor Sokolyansky back in the ’30s, when he set up the little school and clinic in Khar’kov, turned out to be the only correct one, although the teaching profession around the world did not recognise this until quite recently.

19

What does “recognition” mean in the scientific world? In any event, it does not mean the sound of drums or the raising of a triumphant cry on high.

We often and quite rightly complain that in our academy there is little fundamental psychological and pedagogical research

done that would help to solve the cardinal problems of these sciences. But for some reason we don't give sufficient attention to work that has been going on quite a long time and, in my view, has a completely unique and extremely important value. I am referring to the work of Alexander Ivanovich Meshcheryakov and his coworkers. It is difficult to imagine any other experiment purporting to answer the most important questions the motor forces and laws of intellectual development that would equal his in its purity, its soundness, and its persuasiveness.

I heard these words at a meeting of the presidium of the Academy of Pedagogical Sciences in February 1973. Alexander Vladimirovich Zaporozhets, member of this academy and director of the Scientific Research Institute for Preschool Education, spoke them. On this day, in a private house in Bolshaya Polyanka, Alexander Ivanovich was giving a talk about his work. And then, one after another, the venerable scientists, famous pedagogues and psychologists, took turns stating what in Meshcheryakov's work seemed to them to be most important.

More than anyone else, Zaporozhets was attracted by the prospects of following the development of a child's mind in a pure form, undisturbed by influences from without.

"It is uncommonly difficult to study these important things in the normal child, if it is possible at all," he said. "No matter how carefully developed and well thought out a system for influencing the child may be, it is constantly subject to the influence of a tremendous number of uncontrollable factors, which occur spontaneously and at times go unnoticed by the teacher. There is never a clean slate."

"But with blind and deaf children, because of this tragic misfortune, you have a normal human brain with all its positive potential for development that, however, is not realised because the usual forms by which society acts on the child – through the family, the peer group, or simply on the streets – all these means for shaping human consciousness are switched off, as it were, because of the absence of sight and hearing, the two chief remote analyzers, the main channels of communication. And the child will not develop unless a special pedagogical system is devised. Thus, each step along the child's path toward becoming a human being is laid bare before the eyes of the psychologist and teacher."

I remember that day when Ivan Afanasevich Sokolyansky for the first time showed Alexei Nikolaevich Leontyev and me a deaf, dumb, and blind child who had just been brought to the laboratory. It was simply terrible to look at her – there was nothing human; not only were there no facial expressions but the child did not even walk upright in a normal fashion. And then quite rapidly, within a year or two, this tremendous miracle took place before our very eyes. Suddenly (of course, I don't mean all at once, but as a result of their pedagogical exploit) the researchers were able to break through the darkness, the dead silence, and begin to give the child human experience; and from this child gradually emerged a human personality. It was that girl, and three other youths who are now studying at the university. I don't know where I could find a more convincing argument to support Marx's remarkable postulate that the ideal is the material transplanted into the human head, where it is re-fashioned.

Because of the works of Meshcheryakov and his colleagues, we are now able to observe the process of this transplantation. Of course, the research goes far beyond the bounds of defectology – it is very important for all of psychology, for pedagogy, and as far as I can judge, for philosophy as well.

Daniil Borisovich El'konin, corresponding member of the Academy, the same person who invented the catchy phrase about the two synchrotrons when Meshcheryakov was defending his doctoral dissertation, also spoke before the presidium. He, too, like Alexander Ivanovich, had known Professor Sokolyansky: he had worked under his guidance at Khar'kov at a camp for juvenile delinquents (Ivan Afanasevich was at that time director of the Centre of Social Education of the Ukrainian Narkompros) and, since the '20s, had followed with interest the work Sokolyansky was doing with blind and deaf children at his Khar'kov school and clinic.

“I don't think that I'm exaggerating at all in saying that Meshcheryakov's work has given us a model of psychological development extended over time as in a slow-motion film,” said El'konin.

With this model we are able to analyze many of the most complex phenomena in detail. For example, at our Institute of General and Educational Psychology, we are working on the problem of the interaction of a child with adults, and are challenging Piaget's concept that the entire process of

development of a child is determined and explained by the child's encounter with the external world, without any adults. This concept, in our view, is methodologically wrong. And now we have empirical material to demonstrate that we are right. In the behaviour of an ordinary normal child we are able to examine those phases of development that are so clearly visible in blind and deaf children, e.g., separate action with objects, when an adult begins doing something and the child learns to finish it, the development of speech in all its specific stages – all these things we have observed in ordinary children thanks to the clear, detailed picture sketched out for us by Alexander Ivanovich Meshcheryakov in his studies of blind and deaf children.

Other speeches were made before the presidium of the Academy; and the president, Vsevolod Nikolaevich Stoletov, summed them all up in a statement I immediately took to my account. The names Laura Bridgman and Helen Keller are known to millions of people; books and plays have been written about them, and even movies have been made about them. But Olga Ivanovna Skorokhodova, the students at Moscow State University, and the Work of Sokolyansky and Meshcheryakov are practically unknown. "This situation must be rectified without delay," said the president. "We must use broad channels of information to tell people about things that are uncommonly important for all. It is all the more necessary to do this because there are several different approaches to study of the human mind in the scientific world. But we are convinced that the way taken by Meshcheryakov in his studies is the correct way."

20

"He who goes slowly but along the correct path will reach his goal more quickly than he who goes quickly along a wrong path." This ancient Confucian saying is only half true. The person who is going along the correct path is also important. When the Scientific Council of the Psychological Faculty was discussing the difficulties caused by the experiment with the four unusual students, someone proposed that the fifth-year students should be given the compulsory task, as a kind of practice, of helping to translate lectures for them into Braille and to do other necessary work. "By no means," Leontyev, the rector and professor almost shouted, he who knew better than anyone else how acutely extra hands in this business were needed. "When you have before you people whose

misfortune is beyond measure and who nonetheless have found in themselves the strength to overcome it, any added burden is intolerable. Let them go themselves through the compulsory practical period on questionnaires or the use of computers. And people – well, let us say some special people – must also work with these four heroes, who are indeed heroes in the full sense of the word.”

It was already ten o'clock in the evening, and Ilyenkov was still sitting in the corridor with Sasha, conversing about something. Alexander Ivanovich also looked tired, but the three other children had accumulated a thousand questions over the day for him. No one would tell me what they were talking about, and I could not even ask. “Meshcheryakov came in and there was Yura Lerner, already waiting for him,” Ilyenkov told me. ‘Alexander Ivanovich,’ asked Yura, ‘do you think I can be happy?’ Alexander Ivanovich was a bit confounded, but nonetheless he was a teacher. He said carefully: ‘What do you think?’ Yura answered: ‘I am happy, in the most direct, precise meaning of the word. Unhappiness means to have something and lose it. But I never had anything, and each day I acquire something.’ You see, he himself had arrived at Spinoza’s philosophy. Discussing with them ... is ... well ... it’s beyond words.”

I looked at them, all six, really happy, and the consciousness of my own nonparticipation and superfluosity became even stronger than usual. I thought: Waterhouse was saying how much the play by William Gibson had meant to him, although he had been wrong with regard to the enlightenment of Helen Keller. *The miracle worker* is known in America by every schoolchild; there is a special interest in the deaf, dumb, and blind in that country. (At present, especially since the epidemic of measles the country suffered a few years ago, thousands of blind and deaf children are being born. There is even a special law now providing for the creation of centres for the deaf, dumb, and blind throughout the country, and all are maintained by the government.) Mark Twain, when asked to name two outstanding people, said Napoleon and Helen Keller. It is perhaps necessary only to write a good book, and our schoolchildren will begin to regard Olga Ivanova Skorokhodova as an example to admire? She does not simply write books as Keller did but is also a scientist and, on top of that, a poetess. And that is not all. Many talented programmers in America are blind; and one very well-known one, John Bloch, is blind and deaf. Maybe we should think about why this is, why it is easier for them to work with computers, which are also blind and deaf? If two or

three famous mathematicians and a psychologist, of course, were to focus on this question, they might get to the very roots of thought.

It had already become quite dark. No one was preventing me, standing there in the corridor, from letting my imagination roam.

21

Evald Vasilyevich Ilyenkov was sitting on the steps of the staircase with a deaf and blind boy. They were speaking, and something of extreme value to both of them was flowing back and forth between them from hand to hand. Meshcheryakov had not found an orienting reflex in blind and deaf children, and that is a very important fact for his science. But these children, deprived of sight and hearing, enabled Ilyenkov as well to solve for himself an ancient philosophical dispute between Diderot and Helvetius, and between Spinoza and Descartes, concerning what man's soul is when it is created. Is it surprising that Evald Vasilyevich spent every spare minute with his "kids," as he called the four students? Never before, perhaps, has there been a philosopher who has been able to refer to his own experimental work to resolve a scientific dispute.

"A mass of valuable, empirically pure material came out of working with deaf, dumb, and blind children with regard to such a problem as how an image of the external world is formed," he wrote in one of his studies; and that word "empirical" is found more than once in his work.

The problem is of prime importance, not only for a general theory of psychology and a theory of cognition but also for epistemology, for Logic (written with a capital letter) and the theory of reflection. It is no accident that facts bearing on the unique features of the way people born blind perceive the world have come to be a focal point for the most bitter discussions in philosophy of the last three centuries. Suffice it to point out that in the debates on how to understand these facts or, more accurately, on their general philosophical significance, such thinkers as Berkeley, Locke, Lemaitre, and Condillac, Diderot, and Feuerbach crossed swords.

Evald Vasilyevich also entered into the dispute, and not with empty hands. He had something very weighty to say, and he was able to place new empirical data on scales that had been tipping one way or another for more than a century. He wrote:

The development of the deaf, dumb, and blind child presents the investigator with extremely rich material for dealing with concrete psychological and philosophical epistemological problems, demonstrating as if under pure laboratory conditions (they may be quite rigorously set) all the key points in the development of the human mind, the moments at which such phenomena as self-awareness, reflection, imagination (intuition), thought (in the theoretical meaning of the word), a moral sense, a sense of beauty, etc., emerge..., the process of shaping the human mind in all its specificity is here extended in time, especially in the first, and most crucial, stages, and hence may be viewed through the “magnifying glass of time,” as if in a slow-motion film.

Sight and hearing are the two most important remote-acting analyzers of reality; and they alone, it seems, are responsible for the formation in man of the images of the objects in the world about him. If it were not for these receptors, these organs that receive light and sound, there would be no ideas about that corner of the universe in which we live and which we know. observations of people, both children and adults, with and without talent, have confirmed this. But the “normal” person is too complex an object for study, even with the means and tools of ultramodern science. It is “only by studying the deaf, dumb, and blind that we come upon not an exception, but an exceptionally convenient case for the observation and analysis of the development of the normal human mind. The very fact that the higher mental functions can develop even without the existence of sight and hearing shows that they are independent of their analyzers and, on the contrary, are dependent on other, genuine conditions and factors with respect to which vision and hearing play merely the role of mediators.”

22

Mustering the scientific courage to tackle the question of how our minds are formed, Evald Vasilyevich Ilyenkov, as we see, did not hesitate to throw himself into the unfinished dispute in which Berkeley, Diderot, and many other figures of the past have participated. By this time the dispute was by no means a private one, but touched essentially on the very foundations of philosophy – which also accounts for the heat it generates.

The celebrated Bishop George Berkeley, who managed to attack almost all the contemporaneous advanced scientific currents, published his essay entitled “An essay on a new theory of vision” at the beginning of the 18th century. In this essay he proposes a debate to all those willing to participate on an old problem.... Outwardly, this problem was formulated innocently enough: If a person who was born blind suddenly acquired sight, would he or she recognise the objects with which he or she was quite familiar? Would this person be able to distinguish a circle from a square? Berkeley said that “an object of touch” and an “object of vision” were two totally unrelated things, and were brought together into a single complex only through misunderstanding and even habit. Hence, according to his philosophy, a blind person suddenly acquiring vision would be unable to distinguish objects visually even though he or she was thoroughly acquainted with them tactilely. And then an operation to remove cataracts almost irrefutably – since it was empirical – confirmed the correctness of Berkeley’s views.

But from these views it followed that the concept of an image was a fiction and that our sense organs in no way reflected the interrelationships among things. It was difficult for a materialist to reconcile himself to this grave loss; and forty years after Berkeley’s paper was published, Denis Diderot attempted to rescue the concept of an image. In his “Letter on the blind for the education of the seeing,” he introduced an additional condition into the problem, with the result that it altered the solution provided by Berkeley. If the blind person acquiring vision was a mathematician, demonstrated Diderot, he or she would be able to recognise objects known to him or her through his or her tactile sense and would be able to distinguish a circle from a square, since a mathematician is capable of discerning those general and invariant relationships in which one and the same object is represented both visually and tactilely. Thus, the image was restored to its rightful status, but at the price of complex geometric inferences and logical operations. Hence Berkeley’s “simple” visual ideas were destined to vex philosophers for yet a long time.

“The insidiousness of Berkeley’s argument, which has caused so much trouble to materialist philosophy and psychology, lies in the fact that the psychological and epistemological problem of an image was replaced by an essentially purely physiological problem,” wrote Ilyenkov in his article “The human mind under the magnifying glass of time.” He continues:

If, on the other hand, we look at the development of the mind of the deaf, dumb, and blind from a perspective that takes into account a broader range of factors than physiology does, then the purport of that development will be to confirm *empirically* the materialist concept of an image, the same confirmation to which Diderot alluded in his argument with Berkeley, namely, that developed deaf, dumb, and blind people have absolutely the same, fully identical, and adequate image of external (even though very complex) objects as people who perceive this external world mainly through vision. It is sufficient to note the striking precision with which the deaf, dumb, and blind Yula Vinogradova reproduces with modelling clay the shape and proportions of an object she has perceived tactilely, indeed, even such a complex object as a wooden hut with all of its accoutrements, or the contours of a ravine in which she strolled...

Evald Vasilyevich did not consider it necessary to underscore the word “*empirically*” in his article; I have done so with his agreement.

23

“... the parts containing the main material of the study read like a gripping novel, which you peruse with a growing interest that is suddenly cut short by annoyance that the narrative has finished so soon. The reason for this impression of a gripping story is twofold: the process of the formation and development of the mind of a child from an initial, for the most part very sad and, indeed, quite terrible, inhuman state to its transformation into a touching human being, bursting with eagerness for knowledge of the world, for useful work within her or his capacities, and for a decent relationship with other people – all this is described by means of examples of the education of particular children, quite different from one another, and is presented to us as the biographies, compiled with deep sympathy, of specific individuals gravely damaged by blind events and saved by the self-sacrificing humanity of their educators; as for the language of the exposition: I would not say that Meshcheryakov’s work is distinguished by its literary refinement or by any special style at all, but this expansive work was written in such natural language that you simply do not notice it. You enter into the discussion of the views presented and the questions being analyzed, and into the course of the

events described, and you experience them and forget that these are not the events themselves, but only an account of them.

“But, of course, the most important thing is the content. This is a description of how a child’s mind, reduced beyond nothing, even to some negligible, even clearly negative, factor by a great, sometimes compound misfortune, is slowly and almost unbelievably revived, and then flourishes under the painstaking and benevolent care of confident hands (and we mean hands in the literal sense of the word) of their educators. This slow-motion film of the regeneration of mental life from the ashes of catastrophe makes an extremely strong impression. Indeed, a demonstration of how this takes place is surely of the most general and fundamental psychological and even philosophical importance for anyone who has thought at all about the mental life of a human being.”

The above quotation is from Petr Yakovlevich Gal’perin, Doctor of Pedagogical Sciences, professor at Moscow State University. In the briefcase, an ordinary office briefcase that I finally got from Meshcheryakov, was a whole pile of typewritten pages, five or six pieces clipped together. They all began about the same way, so I went right to the end; and in each case I saw the signature of an outstanding expert, a scientist with an internationally known name, whose works in past years I had read and reread, sometimes not being able immediately to break through the obstacles created by the extremely dry, extremely clipped, academic style. What sort of miracle had Alexander Ivanovich created with his work, so that even in reviews of it, in the ordinary commentary on a doctoral dissertation such as are written by the tens and even hundreds, poetic notes suddenly ring out?

“I have read Meshcheryakov’s dissertation on the topic ‘Blind and deaf children (psychological development in the process of learning)’ – 593 typewritten pages plus 235 pages of appendices – which he wrote and presented for his doctoral degree. I did not just read it: I was literally shaken by the content of this dissertation. This is a genuinely outstanding scientific discovery, a vast and profound general theory, establishing the foundations for a new direction not only in education and psychology but also in philosophy (including the theory of knowledge and logic).

“The vast amount of material accumulated by Meshcheryakov during his many years of educational activity with blind and deaf children and adolescents is itself enough to stimulate theoretical deliberations; but subjected to the comprehensive analysis of the writer, this material assumes

an especially important value. Essentially, in my view, it is an attempt to study a problem that is extremely complicated and practically unique, in which such factors such as intuition, discovery, and in fact the very essence of the creative thought process are presented in a child and adolescent in their purest (barest) form, since in these children nature herself would seem to have set up insurmountable barriers along the way toward acquiring knowledge of the objective world. The skill demonstrated by Meshcheryakov as teacher, his inventiveness in overcoming barriers in his pupils, would already be sufficient to earn for him his doctoral degree. Meshcheryakov, however, does not stop merely with a description and systematisation of the experience collected and shaped by him: he also poses for himself the problem of providing a theoretical framework for this extremely rich (and extremely humane) experience and endeavours to lay out its foundations within the context of general principles of psychology and, let me stress, philosophy. It is here that I see the special importance of Meshcheryakov's work, which provides us with a new and unexpected approach to the study of such an extremely complex domain of human intelligence, so elusive of study by ordinary techniques and means, as the domain of man's intellectual (scientific), technological, and artistic creativity. I shall not dwell on specific concrete postulates of this dissertation, since I intend to be at its defence and speak out personally; but in case I have to leave Moscow, I have written this review, which I ask you to mention at the defence, in order to express my profound conviction that the scientific council of the institute where this defence will take place should support the proposal to award Meshcheryakov his doctoral degree for his tremendous intellectual and meritorious work, of which any scientist could be proud." And below was the signature: Academician B. M. Kedrov, May 17, 1971.

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I leafed through one review after the other, and glimpsed some familiar names: Alexei Nikolaevich Leontyev, Head of the Psychological Faculty of Moscow State University, Professor, Member of the Academy of Pedagogical Sciences, for example; and then there were other names; but I was looking for one little note, pencilled by hand on a piece of paper, but could not find it.

The official reviews came to an end, and presentations in defence of the dissertation began – not all, of course, but only those that Meshcheryakov's co-workers were able to record on a tape-recorder, decipher, and

place in this folder. There were serious talks and talks in a jocular vein; but all were succinct, some no more than a few sentences in length. Indeed, I was already coming closer to the object of my quest.

What is this? Why, here was really an unexpected surprise: however many times I had asked Ilyenkov what he had said in defence of Alexander Ivanovich's dissertation, Evald Vasilyevich would always comment how long ago it was, although barely a year had passed since that time. But as it happened, the tape had preserved his speech for posterity.

I consider it an honour to be able to speak at this defence, which is a real event not just for psychology but for science in general. At issue here is one of the fundamental pillars of the entire materialist world-view, a generally materialist understanding of the human mind. Is it necessary to demonstrate that without this concept a materialist understanding of history is also impossible? Petr Yakovlevich Gal'perin said that this dissertation is playing a tremendous role in the struggle between two currents in psychology. I think that this idea can be expressed even more boldly. This dissertation arms, with incisive arguments, not only materialist psychology in its struggle against pseudomaterialist attempts to explain the human mind but also the philosophy of dialectical materialism in its struggle against every attempt to undermine, in one way or other, the principles of a materialist concept of history, and the principles of a Marxist-Leninist outlook in general. It is in this that I see the importance of Meshcheryakov's work. He deserves tremendous thanks for this.

Now here was a surprise. Usually Evald Vasilyevich speaks in such a way that you simply take delight in listening, but here suddenly he himself was caught short and uttered only a few quite clipped sentences. 'Yet to speak the truth, that's the way one must speak about one's friends on official occasions. But where is that note? Ah, here it is finally'.

"I heartily congratulate you for the triumph, but of course you absolutely deserved it. You have found yourself, and your work will suffice you your entire life. But this is only the main investment in a great achievement."

The note, to be sure, was on a piece of paper, but it was written by a pen, not by pencil – Alexander Ivanovich had not remembered correctly

– and beyond that, it was in a most precise handwriting, that of a person used to having order in his thoughts. The words “triumph” and “absolutely deserved” and “found yourself” are carefully underlined. Below is a signature. It cannot be deciphered, but I know it says Luria. Alexander Romanovich Luria, Professor, one of the greatest of Soviet psychologists, director of the Department of Neuropsychology of Moscow State University – a person under whose guidance Meshcheryakov had become a scientist, defended his candidate’s dissertation, and whom he later left behind, so to speak, if one could squeeze life into the prescribed classic framework of relationships between teacher and pupil in science.

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“Alexander Romanovich is a very good man. I sensed this always, but as you grow older, you grow wiser. I really understood this only after we had already been friends for many years.”

This was told to me by Alexander Ivanovich Meshcheryakov about his teacher Alexander Romanovich Luria.

“We worked together at the Burdenko Institute of Neurosurgery,” related Meshcheryakov, “and studied the location of psychological functions in the brain. But as it happened, both of us had to leave this institute. We went over to the Institute of Defectology – for only a temporary period, we thought. This was in 1952. There was no job for me except as a technician. But I, of course, did not care what I was called. I took the job and began to work. We were interested in feeble-mindedness – mental retardation. I, of course, wrote the obligatory annual reports and did what was necessary according to our contract; but the actual problem of mental retardation did not attract me.

“Ivan Afanasevich Sokolyansky worked in the same institute. At that time he was already old, the spark of life in him was already fading, and twice he had to abandon all scientific work for an extended period. He had only one teacher and one deaf, dumb, and blind little girl, Yulya Vinogradova – you saw her at Zagorsk; she now speaks excellently, and has become the most accomplished seamstress, and her works can be bought at the Moscow GUM. I, of course, saw how sorry the practical work of Sokolyansky was; but his idea of studying the human mind in its purest form, of constructing everything with one’s own hands, seized me. I was enthralled by the beauty of the idea. I began to work with Ivan Afanasevich on social principles. Actually, I was his only scientific co-worker, and devoted all my thoughts and almost all my time to work with the

blind and deaf children, although I was counted as part of the laboratory for the feeble-minded, to which they finally transferred me officially from the ranks of technicians.

“I don’t know if this was embarrassing for Alexander Romanovich, but he did not once reproach me, never interfered with my work with Sokolyansky, and indeed helped as much as he could.

“Without help we truly would not have survived. In 1960 Ivan Afanasevich died. He was already 70 at the time. A year later the laboratory was founded and named in his honour. That actually was only a shingle hung out. We had to transform our office into something real. They even began bringing children to us, although we couldn’t do anything with them – we could help parents only with consultation. But we saw that people were being destroyed, that a special school was necessary for them. We began to write papers to various authorities. The Ministry of Education answered that it would open up such a school; but since these were deaf, dumb, and blind children, and hence invalids, who were involved, then would we please turn to the Ministry of Social Welfare? They, in turn, sent us a letter saying that since the issue was one of education, then it did not matter whether the people were healthy or invalids, that it was not their affair, but that of the Ministry of Education.

“I don’t know how many years this merry-go-round went on; but out of despair we persuaded Olga Ivanovna Skorokhodova to write a letter to Voroshilov*”; she had corresponded with him for a long time, and sent him the books she had written. Kliment Efremovich sent her letter to the proper authorities with the request that measures be taken to find a way to open a school for our deaf, dumb, and blind children. But there in the proper higher offices, our letter got stuck. Olga Ivanovna again turned to Voroshilov – he had become at that time the President of the country. And then, suddenly, we obtained an urgent, categorical instruction to prepare post-haste, at the 24th hour, all the necessary documentation to open our school.

“We began dashing around all the environs of Moscow, searching for a building. At first they offered us a building in Krasnogorsk, but we rejected it. Then they offered us the house in Zagorsk, where you have

* Kliment Efremovich Voroshilov was a Central Committee member of the CPSU from 1921 and became Head of State after Stalin’s death, until his retirement in May 1960.

been. But we still had to work out the statutes, recruit the personnel, and go through a thousand bits of paperwork and bother.

“By every means and, to tell the truth, by ruses, we bargained with the Ministry of Finances for the right to have one teacher and two helpers for every three pupils. This meant one adult for every child. We began to train teachers, but what could we teach them? Everything was new, everything was unclear. The co-workers at the institute gave them lectures on whatever anyone knew. They taught sign language, to speak with the hands, the Braille alphabet for the blind, and to print in Braille on an ordinary machine. To be sure, it turned out that our lectures were not of much use. That was not where the matter lay. In our school, a good teacher was someone who had two qualities: honesty and conscientiousness; but of course, in addition to all this, he or she had to love children, or be simply touched by them and want to do something for them.

“So the years passed in haste, in bustle, in work. There was not even time to think about our closest friends. For that reason I was very happy about the note that Alexander Romanovich Luria jotted down at my defence. He was very much in a hurry, and was unable to wait to the end, so he sent it to me. So as not to lose this note, I stuck it away in the folder with the other papers, and then later on put the folder away, so that now I cannot immediately lay my hands on it. ...”

26

Meshcheryakov said this, and I was thinking how surprising were the strange ways different people chose to give their time, their minds, and their hearts to deaf, dumb, and blind children. Take Waterhouse, for example. He had to work as a packer in a factory in Cambridge, right next to the famous American university. Indeed, this proximity prevented him from giving himself up to the joys of purely physical labour and did not let him forget that only a few months before he had been a teacher in a Washington private school for boys. But it was April 1933, that terrible time for Americans, when the depression reached its peak and there was no way to pay teachers their wages. Edward Waterhouse packed boxes from 10 at night until 8 in the morning in a factory (he worked the night shift), and from 8 in the morning until 10 at night he had a chance to devote himself to reflection and reminiscences. He remembered that somewhere along the way from Brighton to Waltham he had noted a road sign indicating the way to a school for the blind. He decided to go there and find out if there was any work – his thoughts about his past

teaching career would not leave him; and, moreover, in Cambridge he did extra work in the daytime as a companion guide for a wealthy blind person. Waterhouse had some unusual luck. They hired him as the head of the kitchen and, at the same time, to do the job of a teacher of mathematics, physics, and labour. From that time on his fate was tied to the education of deaf, dumb, and blind children. He tackled the most diverse tasks. He made relief maps, special three dimensional models, participated in the designing and production of a new type of typewriter for the blind, and in 1951 he became the 5th director of Perkins, succeeding Samuel Gridley Howe. The quarterly journal the *Lantern*, published at the illustrious and excellently equipped school, from which I gleaned the principal facts in my biography of Waterhouse, tells in detail about his activity in this difficult post, although, to be sure, it says nothing about the fact that the new director had fundamentally to change the system that had reigned in the section for deaf, dumb, and blind children. But the enumeration of his achievements did not conceal from me the most important thing: it was not the depression of the '30s that brought Edward Waterhouse to blind and deaf children. He could have changed his profession a thousand times during these 40 years, and during the war years he worked in the top-secret factory of General Electric, in Lynn, Massachusetts, and even there had some notable achievements to his credit: his mathematical abilities were extremely well suited for the designing of a new jet engine. But the war had hardly finished when he was again at the school for blind and deaf children, having refused some very attractive propositions from the company. Some people seem to have an unquenchable thirst to shape, with their own hands, the human soul from the raw material provided by nature. Sooner or later such a person, a teacher sent by God, finds what he is yearning for. But if he is destined to come into contact not simply with children desiring knowledge but with little boys and girls deprived of sight and hearing, he is unable to abandon them to the end of his days: What could replace that perception, known only to a true creator? God created man in his own likeness and image...

These exalted thoughts, if I remember, did not occur to me at all when I suddenly, completely unexpectedly, saw Meshcheryakov with a wet white cap on his head, like Venus emerging from the ocean waves. It was in the summer of the same year I met Waterhouse. I had spent my holidays at the Riga coast in Yurmala; and Alexander Ivanovich, it turned out, was taking six children, four students from Moscow State University, who had passed to the second year, and two other girls from Zagorsk,

Valya Belova and Olya Gotseva, on a circular tour from Moscow to Leningrad to Tallin to Riga and back to Moscow.

I, of course, was happy at the meeting. I talked with Yura Lerner, sitting on the sand; and he told me how two days before he had been in Salisbils, the memorial museum to the victims of Nazism. He told me about what was the most important for him in life, about sculpture, about the Salasbils, the memorial museum to the victims of fascism; and once again I saw before me the gigantic figure of a man trying to stand erect and live, despite the dark veil enveloping his consciousness. Yura told me how difficult it was for him to perceive the huge block of rock and how easily he understood the intention of the sculptor, and I dispelled from my mind the analogy that had occurred to me involuntarily, realising that it was far from the truth and in fact essentially wrong.

But the creator of the memorial certainly did not want to talk about what I was thinking about, gazing at my friends, these happy people who had just gone off on an ordinary tourist trip, not for a second, realising that in doing so they had rejected nature's prognosis.

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“Alexander Ivanovich, I read your candidate's dissertation, which you did under Luria – it is not at all about blindness and deafness, and does not even have anything to do with defectology. At that time you were doing completely different experiments: you were studying the brain – more accurately, its frontal lobes – and were attempting to discover what section was responsible for this condition. You yourself write about how even insignificant damage to these frontal lobes can result in deterioration of the personality and break down the hierarchy of values so that a person doesn't know what to do first, what next, and in the worst cases, loses sight of his goal completely: he begins, let us say, to drift, and can't stop because he doesn't know why he is doing all this in the first place.

“So I ask you, you, a person who is able to think like a physiologist, do you think that the human mind is independent of the kind of brain a person has inherited? Let us say that emotions, memory, excitability, talent, are not transmitted genetically. But the structure of the brain, its morphology, is it true that these have no influence on the human personality at all?”

“Who told you that? Not only the brain's morphology but any characteristic of a human being may fundamentally alter a person's mind. For

instance, in Gumenka, the Ryazin village where I was born, we had a neighbor who was called Red Vonka. We boys and girls would not give him peace. Many years have passed and I still remember how we teased him. Rusty asked Red: ‘How did you make your beard red?’ So, what happened? The fellow became closed up, neurotic; he stammered – his whole life was ruined because of just one feature, the colour of his hair, or, let’s take a quite simple example. The psychology of a beautiful girl and a homely one – there’s a world between them – and the reason – a few morphological differences in body structure. And go far as the morphology of the brain is concerned we think we don’t know anything about this yet...

“But listen: all these features – the colour of the hair, the curve of the nose – influence man’s psychological makeup not in themselves, but only through society, through other people. A girl whom we consider homely may be beautiful to other people. It is in this sense that Evald Vasilyevich and I say that the mind of man is social. No matter what features of his brain he may have inherited, no matter what has been handed down to him genetically, only society can stimulate development of this or that talent or disposition or induce a person to struggle against them. We inherit a number of predispositions to become Beethoven or Repin*, or some Rockefeller; but only a small part of them are realised, through other people, the environment, and society. Initially society can exert no influence at all on our deaf, dumb, and blind children: their psychological givens are not as manifest.”

“Then let me ask you just one more question. On what grounds do you feel warranted to extrapolate the conclusions you have obtained in work with deaf, dumb, and blind children to ordinary, normal, seeing and hearing children? After all, we receive a tremendous amount of information about the world – millions of bits per second, coming to our visual and auditory channels. When the brain is deprived of all this information, doesn’t it become something quite different? Can we compare nature’s devices, though they maybe identical, with one another?”

“First of all, in counting bits, amateurs continually fall into one unforgivable error. If you look at how broad and capacious are the channels that go to the brain from the muscles, how many they are, formed over

* Ilya Yefimovich Repin (1844-1930) was a Russian artist whose work served as a model for “Socialist Realism” during the Stalin period.

the course of evolution when there did not exist the perfect vision and hearing of today, you will understand that any person, not only a blind and deaf person, receives his main information about the world through the surface of his entire body. He receives information through innumerable dermal receptors, through special sensors – the muscle spindles, which communicate to the brain how relaxed the particular muscle is; the Golgi receptors, which respond to the exertion a muscle develops; sensors for the angle of rotation, which nature has installed in the joints – through all these, signals are constantly flowing into the brain... That's how we form our image of the world. Vision and hearing, unsupported by tactile and muscular sensations, would give a person nothing; in the final analysis, they are no more than spots of light on the retina of the eye and vibrations of the membrane of the ear. 'The hand teaches our eye,' wrote Sechenov. The infant reaches for his rattle, which at first is for him only a bright spot; he feels it with his hand and only then recognises something about distance, shape, remoteness, and proximity of objects and their parts.

“For instance, I can easily account for how ideas of space are developed in a blind person: he perceives objects tactilely, senses their form and volume; but I can't understand how a seeing person without reaching out and touching a cupboard is able to form an image of it and even locate this image not at some point in the eye where the light rays impinge, but right there in the corner where the cupboard is standing. The phenomenon of vision is a real riddle.

“Cases are known in which a blind adult suddenly regained vision and could see nothing but bright spots. Some time had to pass before relations were established between the spatial images formed from his tactile sensing of objects and the signals sent to his brain by his eyes.

“Thus, a blind and deaf person does not differ so drastically from a normal person. No, we are not working with a broken machine – our conclusions are valid for any one person.

“But we have to be more careful with our conclusions. I would not say that an orienting reflex does not exist in human beings just because we have been unable to discover it in blind and deaf children. Some other statement would probably be closer to the truth. We think – nay, we are convinced – that the orienting reflex does not have that omnipotence attributed to it. This reflex is not the reason or cause for the development of the human mind. A child reaches for its rattle, exhibits curiosity and an

interest in new objects, an impulse to know the world. This simple sequence is not what actually happens; in life things are much more complicated. Education and upbringing are a purposeful, organised process; they do not arise of themselves, outside a society of people, in an empty place, but are specifically created, as we must do with our children, or emerge as a result of the environment, as in the ordinary child.

“The case of children found in the forest, the odd Mowglis, the famous history of Caspar Hauser, who had been kept in the dark from early childhood to the age of 17 – all these show us that without human society, the mind of man does not develop.

“That’s why Ivan Afanasevich Sokolyansky said: ‘The most difficult thing is to teach a normal child; it is easier to teach a blind child and it is easiest of all to teach a deaf, dumb, and blind child.’ Society constantly acts in thousands of unknown ways on the personality, but how we do not know. Only at the Zagorsk children’s home is all of education in the hands of the teachers.

“Well, have I convinced you?”

“No, Alexander Ivanovich. I still have to think about it a little bit.”

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I think that Professor Higgins’s paradoxes seem more and more contrived to me, and those words contradicting common sense that I heard from Meshcheryakov are testimony to the paradoxicalness of life itself. Once again I was letting my imagination wander, but now my thoughts were assuming more concrete form. At some time the decision, already taken, to build a whole series of buildings at Zagorsk, with sections for infants, for schoolchildren, and, most importantly, for adults will be implemented. Then they will be able to take on those children who have already been waiting their turns for a long time – and there are not just a few of such children in the country. The factories are making all the necessary equipment for them; a radiotactor, about which they have dreamed for so long, and which is no more complicated than an ordinary police transmitter. There will be laboratories, apparatus, and people.

And how much new will be discovered about man in this new and splendid “synchrotron” if in the old, small one the problem of the beginning of the mind’s development has already been solved, as was said in one of the reviews of Meshcheryakov’s work? What other atoms of intel-

ligence shall we be able to perceive because of blindness, and what quanta of consciousness will we learn from human deafness?

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“It is not always harmful to fantasise; my friend, the great teacher of the proletariat, Vladimir Lenin, defended the right to fantasise in life and work.

“And in letting my imagination roam, I allow myself to think that perhaps epistemology, the theory of how we know the world, in time will be the same sort of science as all other empirically based sciences.

“Nature deprived you of three of the five senses through which we perceive and understand the phenomena of nature; science, acting on your sense of touch, one of the five senses, restored to you, as it were, what had been taken from you. This speaks simultaneously of the imperfection and chaos of the forces of nature and of the power of human intelligence, its ability to rectify the grossest errors of nature.

“I have never been particularly enthralled by ‘reason in nature’; I have never believed in it, and I still don’t believe in it, for in nature there are too many senseless and humanly harmful things: the best and most complicated of all of nature’s creation can be destroyed by typhoid fever, the tuberculosis bacillus, etc.

“I believe in human intelligence. Man is to me an organ through which nature comes to know itself, the investigator and organiser of its chaotic forces.”

“I recall you as a symbol of energy that could not keep from being active even when you were physically restricted.

“Against the background of the portentous events of our days, your personality for me, a writer, and hence a little bit of a dreamer, has acquired the significance of a symbol of the triumphant energy of the human intellect, the most valuable energy created by nature, by matter, almost as if for its own self-knowledge.”

“You are a wise person. You are right when you say that it is devilishly difficult to alter the psychology of a philistine, a person in whose pinched but vacuous spirit eternal vulgarity has been created and hardened into dead rock. It is difficult to persuade such a person that we study blindness, deafness, and dumbness, in the final analysis, so that he himself can become less of an idiot. It is difficult to force him to understand that he, too, is deaf, dumb, and blind, but not because of the evil

arbitrariness of nature, but as a result of his own personal lack of talent, his stupidity.”

These are fragments from different letters by Alexei Maximovich Gorky to Olga Ivanovna Skorokhodova, the deaf, dumb, and blind educator at the little Kar’kov clinic and school, pretentiously named the Institute for the Study of Physical Defects. There are also letters to her teacher, the former director of the Institute, I. A. Sokolyansky (one of them begins “Dear Ivan Afanasevich,” Gorky writes from Sorrento, “I should like to tell you that I am deeply moved and happy with the notable achievements of your institute”) but Ivan Afanasevich was already dead. Olga Ivanovna, Candidate of Pedagogical Science, senior scientific worker at the Institute of Defectology, was sitting before me in the university auditorium; she had been given Ilyenkov’s talk to the scientific council of the faculty.

“We are blind and deaf to the voices of the universe. The human eye distinguishes only a portion of the light rays, and stronger electromagnetic radiation is totally inaccessible to man. We hear over a narrow range between two limits, and this is true even of people who are musically gifted. Of course, instruments expand our capacities – such as eyeglasses or a hearing device. But perhaps there is still a tremendous number of means for transmitting information in the universe that we do not even suspect. I repeat – we are blind and deaf to the great world around us.

“And for this reason the tremendous work being done by Alexander Ivanovich, so important for defectology and necessary for pedagogy, is important and necessary above all to us philosophers. The problems the teaching of the deaf, dumb, and blind pose to a scientist are the problems of epistemology. The neuropsychologist, deciphering the mechanism of the brain that is inaccessible to direct analysis, the astronomer, describing far off galaxies, the physicist, studying invisible particles – all, in the final analysis, are learning about a world hidden to the sense organs we have. Would not a theory of knowledge, enriched by what we have learned and are still to learn at the Zagorsk School, give them new methods?

“To fantasise is not always harmful...!”

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No, I cannot honestly say that Dubna makes no impression whatsoever on me now. The synchrotron there also helps us to learn something important about the nature of the world. Indeed, even people who are

constantly working with the foundations of matter occasionally come up with astonishing discoveries. “God is cunning, but not cruel”; every scientist, not just a physicist, is guided in his work by these words of Einstein’s, uttered, not by accident, at Princeton. Nature, the only God for Einstein, cunningly created and hid its secrets from us, but harbours no malice for anyone who tries to uncover them. Occasionally nature herself orchestrates grandiose experiments for us – it is necessary only to be able to understand their meaning.

“Nature created you as a creature for experimentation; with what you are, and with what science has already made of you, you will serve mankind. This is so, Olga Ivanovna, and you have the right to be proud of this service.”

I was thinking that the time would soon be with us when science would imperiously ask so-called normal people: “Do you want all diseases, deformities, imperfections, premature feebleness and death of the human organism to have been studied accurately and in detail? Such a study cannot be achieved through experiments on dogs, rabbits, and guinea pigs. Experiments on man himself are necessary...”

This time, which Gorky foresaw, is now coming. The interest of science is moving on. From the microcosmos of elementary particles and the macrocosmos of the universe, science is moving on to what lies between man. Psychology, the science of the human spirit, is now dictating maximal velocities to machines and airplanes; and even the study of new planets is designed according to how long an astronaut can live away from the earthly cares to which he is accustomed. And it is not at all accidental that scientists are now setting up experiment after experiment in sensory deprivation chambers, special setups that cut a person off from his community with other people. “The individual in solitude” is a rigorous scientific formulation of many research projects and appears in the titles of articles in special journals and books.

Ilyenkov and Sasha Suvorov were sitting on the steps of the staircase. They were embracing each other about the shoulders, and their heads were almost touching one another. But this did not look at all sentimental. Sasha, Alexander Vaselevich Suvorov, had traversed mountains much higher than his renowned namesake. And Evald Vasilyevich, carefully tapping on his hand with his fingers, was learning priceless information, inaccessible to others, from a person whose whole life had been spent confined in the most terrible of all sensory deprivation chambers. Love,

inseparable from pain, enables us not only to correct the consequences of a criminal experiment of nature but even to draw conclusions from it. intelligence, both bright and good, on its eternal path toward self-knowledge....

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I don't know what Alan Heis had in mind when he was speaking about the best path to God. But I think that he was talking about the way by which man himself becomes all-powerful, capable of struggling with darkness and muteness, and creating and shaping the human soul with his own hands, in a word, to do even more than any religion permits to a believer – namely, to know oneself.

But, nonetheless, he scarcely remembered at that moment his own great compatriot and playwright, although perhaps the play was not intelligible until the very end; and I at this point was still thinking: How much easier it was for Pygmalion to bring the lifeless Galatea to life with his love than to imbue her with a living human soul. I ask myself: Are we aware of how great is the miracle of bringing a human being into the world of people; do we know how long and difficult a path this is, from a mere human individual to a human being?

Digression One.

From the Works of Vygotsky

“One can hardly understand the history of labour and the history of speech separately. Man has created not only the tools which gave him mastery over nature; he has created stimuli for directing his own behaviour with the help of which he can control his psychic processes. This is seen clearly if one looks at the early stages of man’s development. On Borneo and Celebes sticks for digging which had smaller sticks attached to the end were found. While sowing rice, the stick was used to hoe the soil and the little stick produced a sound. That sound was something like a working exclamation or order to set the pace for the movements. The sound of the contrivance attached to the hoe replaces the human voice, or at any rate performs the same function.

“That blending of sign and tool as symbolically expressed in the primitive hoe shows how early the sign and later, its highest form – the word – began to play the role of human tools and how early the sign stimulus came to fulfil a specific function in the overall structure of the operations that took shape in the early stages of man’s labour activity.”

From Meshcheryakov’s Book

“From the Marxist point of view, one must consider man as *active* and only then as perceiving, sensing, and learning. An attempt to apply the theory of historical materialism to the development of the human psyche was made by the outstanding Soviet psychologist Lev Vygotsky in the 1920s and 1930s. Vygotsky’s studies gave us new insights into the development of the psyche, not only historically but also in the individual. The studies in genetic psychology by Leontyev, Luria, Zaporozhets, Galperin, and El’konin have developed Vygotsky’s ideas, the essence of which is the importance of objects and norms of human culture and the communication between adult and child in the mental development of the latter. These studies provide theoretical and concrete scientific grounds for thinking that the child’s mentality is shaped by assimilating – ‘acquiring’ to use Marx’s expression – social experience. This trend in psychology which realises the theory of activity in combination with the idea of the individual psyche as a basically social entity, is now prevalent in Soviet psychology. The categories of that scientific trend have been analysed by Leontyev. In the field of education and philosophy, the ideas of the role

of practical activity in psychic development are being pursued by Ilyenkov, Davydov and others.”

Davydov on Meshcheryakov’s “Awakening To Life”

“Many years have passed since Sokolyansky proved that deaf, dumb, and blind persons could be made intelligent. It is now a well-known fact. The process has been described in detail in lectures and popular pamphlets. However, his pre-war results reproduced many times in experiments by Meshcheryakov can and must be provided with a profound theoretical interpretation because its results are of fundamental relevance for the whole of psychology. Let me dwell on two points: the character and role of the genetic modelling method in psychological studies and the nature of thought.

“For decades, the descriptive method dominated genetic psychology. That made it possible to fix and describe the empirically observable psychic traits of children at various stages of development. The materials obtained by this method prompted some empirical correlations between the age of the children and their level of consciousness and intellectual maturity. Paradoxically, as these materials were accumulated, it emerged that mental development does not seem to be determined by training and education, but follows its own immanent laws. That idea was most vividly and convincingly expressed in the work of Jean Piaget, a major modern psychologist. The idea confounded practitioners. And one must say that within the framework of the descriptive method, this was the only conclusion possible.

“Back in the early 1930s, Vygotsky came up with a hypothesis that mental development is realised in the form of learning. He believed that to find the interconnection between development and learning, a very different method must be used – the active and purposeful moulding of certain psychic qualities in a person. Initially, that process could best be carried out under special experimental conditions which model the process being studied. Once these conditions are known, the corresponding traits can be formed in man under ordinary circumstances. This new method was tentatively called ‘genetic modelling’, and for many years it was neglected. And the traditional descriptive method often seemed adequate for the development of the child under ordinary conditions.

“There is a breakthrough in psychological thinking associated with the work of Sokolyansky and Meshcheryakov who, due to exceptional circumstances, could handle children only by a method similar to the ge-

netic modelling method. With a deaf, dumb, and blind child, everything must be formed at a predetermined level – the construction of psychic process is simultaneously a means of shaping personality and a means of studying it. In the language of today, it can be called unity of experimental training and instruction and the study of the nature of psychological processes.

“The effectiveness of that method has now been demonstrated by numerous studies in child and educational psychology. One is still often asked what the essence of that method is. To this I can reply by advising a careful study of the works of Sokolyansky and Meshcheryakov. They contain both the theoretical principles of the method and its practical application. It is for historians to judge how the work of Vygotsky and the activity of Sokolyansky and Meshcheryakov are connected. One thing is clear already, however: in both cases we have a fundamentally new method of experimental research in psychology, apparently amply suited to serve its purposes. That circumstance calls for both profound theoretical analysis and redressing a historical injustice. Our historians of psychology have unfortunately overlooked the pointedly dialectical tradition of the theoretical model of the psyche, of the ‘ego’, ‘the soul’, or ‘the self’ as expounded by Descartes, Spinoza, and later by Fichte, which one must bear in mind if one is to understand the present methods of revealing the mysteries of the soul. This method is central to all Meshcheryakov’s work.

“The past few decades have produced a mountain of literature about thought. While it contains much that is interesting and instructive, a lot is derivative. A tradition which is inherently linked with the descriptive method has established itself in these studies, yet its originators also pledge fealty to the method of genetic modelling. I think Meshcheryakov’s works have shown that thought is a form of operational activity. Besides, being a form of such activity, thought is least of all determined by the meanings of words and utterances. Philosophers have long established these propositions in the phylogenesis of thought. Positivism and behaviourism were responsible for the prolonged separation of experimental psychology from these materialistic and dialectical traditions. Meshcheryakov’s work revived them by indicating ways for concrete experimental study of them.”

From Alexei Leontyev's Speech at a Meeting of the
Academic Council of the Psychology Department,
Moscow University

“The brilliant results of the work of Sokolyansky and Meshcheryakov were possible because they represented a blend of the best materialistic traditions of Russian science (Sokolyansky began as a pupil of Bekhterev and Pavlov) with Marxist-Leninist philosophy, with a dialectical materialist conception of the nature of consciousness and thought, and their connections with the external world. No other philosophical conception could offer the clue to the problem of instructing and forming the personality of deaf, dumb, and blind children either theoretically or in practice. And the logic of the search for a solution to this problem led Sokolyansky to overcome the mechanistic notions of the mind and personality which he entertained in his youth.

“Before Sokolyansky's work the world knew only two instances of the education of deaf, dumb, and blind children, two landmarks: Laura Bridgman, a pupil of the American teacher Howe (a detailed account of her story was given by Charles Dickens) and Helen Keller, ‘the miracle of the century’, who was instructed by Anne Sullivan. Although Howe's achievements were rather modest (Laura, according to Lesgaft, was doomed to ‘knitting stockings’ all her life), they deeply impressed many people of that time. But that was nothing compared with the sensation created by the instruction of Helen Keller. She became a writer, the focus of a high society salon, and lived her life basking in world fame; even American presidents thought it an honour to be photographed with her. Mark Twain compared her achievements with the victories of Alexander the Great and Napoleon. Helen Keller was surrounded by strident publicity, and she was portrayed as (and thought herself to be) a miracle – the miracle of a person consigned to eternal darkness being visited by divine inspiration, seeing the light of Logos.

“Such a view of the phenomenon of Helen Keller was in accordance with the underlying ideas of twentieth century bourgeois philosophy. The church hailed the Keller phenomenon as support for its religious doctrines. That was facilitated by the failure of naive mechanistic theories to explain the phenomenon. There seemed to be only one option – to admit that man had an innate spirituality that needed only a slight external stimulus to be ‘awakened’ and embark on ‘self-development’.

“This was the prevalent view until a kind of ideological antipode of Keller, Olga Skorokhodova, appeared in the Soviet Union. Her personality and her life – which was a life of heroic struggle and work, and not the sheltered life of a darling of high-society – can be seen as the embodiment of the scientific and moral principles which guided Sokolyansky in educating her. Olga Skorokhodova, like Helen Keller, became a writer. Those who have read her books will know that they record in excellent literary language the immense and arduous experience of her own observations and reflections on the world around her. Olga Skorokhodova’s books give us an inside look at the complex process of the birth of a soul through intense work, the path along which Sokolyansky led her. Along that path there were doubts, setbacks and sorrows. Olga Skorokhodova was a member of the Young Communist League, she lived through the tragedy of the Second World War in which she lost her comrades (Sokolyansky’s school near Kharkov was burnt by the Nazis in the summer of 1941, and with it the ‘defective’ inmates. She herself survived by a fluke). Initially a pupil and then an indispensable associate of Sokolyansky and Meshcheryakov, senior research worker at the Institute for the Study of the Handicapped, Olga Skorokhodova had done a lot to equip our students for life and university studies.

“However, as long as Olga Skorokhodova remained the only person in our country to have conquered the handicaps of blindness and deafness, her experience could not serve as a clinching argument in our ideological dispute with the interpreters of the phenomenon of Helen Keller. To be recognised as valid, a scientific experiment must be duplicated. A unique incident, a stroke of luck is not a conclusive argument, because one can always say, ‘anything can happen once’, and thus ascribe the success to unique qualities of the phenomenon which may not have universal relevance.

“But now theoretical and philosophical conclusions will have to be made. Now we have not a unique phenomenon but a group of four excellent students. They are not ‘Mozarts’, but logical products of the colossal work over which Sokolyansky’s disciple, Meshcheryakov, has presided for the past fifteen years. These young people have come from a special school which has given a secondary education to dozens of deaf, dumb, and blind children, which puts an end to any talk about ‘revelations’ or innate gifts.

“The materialist tradition developed by Sokolyansky determined the path of his searches, which relied not on revelations or extraordinary cir-

cumstances and unique incidents but on a persistent search for a sensible way of moulding the mentality of children who were born blind and deaf or had lost their sight and hearing at an early age. I must add that the loss of hearing and vision in infancy leads to the same results as congenial blindness and deafness, because the budding human psyche quickly degenerates. The whole work was, of course, based on maximum use of the child's remaining sensuous link with the external world, the whole spectrum of its sensations. These are, above all, tactile sensations and also vibratory and olfactory sensations. To this one could add the so-called 'sixth sense', a far from mystical, albeit somewhat more complex faculty which enables a person to identify an obstacle blocking his way or a space (an open door), etc., before him. These phenomena have been rather well described in the literature, so I need not dwell on them here.

"In general, in the case of such children, there is a highly inadequate basis for the development of a full-fledged mind because of the extreme scarcity of sense information. The result is a very discouraging picture: while the brain is intact, contact with surrounding people is absent. Hence, learning is impossible. Even the objects of the surrounding world are not initially discrete, and the sensations originating in the organism itself are mixed and confused with external sensations so that no clear image of the external world is formed. Complete helplessness in space and, what is most amazing, a total absence of orientative reactions. There is no need for objects, there are just elementary organic needs which cannot generate organised or oriented behaviour. For, to use Sechenov's words, organic needs contain 'no elements that could direct movement one way or another or modify it according to terrain or accidental meetings'.

"The psyche, in this case – if one can use the word psyche at all – is something amorphous, unorganised and chaotic both objectively and subjectively. No stable images can be isolated from this stream of sensations.

"In order to use the remaining sources for cognition of the surrounding world and development of the mind, an actual basis for their development had to be found, so a long search began. Eventually the process of learning to handle objects provided the clue for the modelling of the human mind. Let me specify – I am referring to human handling of man-made objects, i. e., objects made by man and for man the combination of which creates, in Marx's words, the inorganic body of man. It is through such actions that the deaf, dumb, and blind child can first become aware

of the functional qualities of objects, i.e., the way they are used by the social man, and come to identify objects as things existing separately from one another and from the person handling them. By being included in the 'working process' and 'working communication', to use Meshcheryakov's favourite expressions, the child comes to regard the external world in a human way and gets a human image of that world.

"Actions with objects which the child carries out jointly with the teacher and under his (manual) guidance provide the basis for acquiring gestures, the elementary language of communication. Initially, the gesture is the same action performed in the absence of a real object (spoon, towel, doll, etc.) and by virtue of that, acquiring a new function, the function (meaning) of a sign, a form of communication with another person collaborating in operational actions. Gradually the gesture is 'reduced', i.e., becomes more symbolic, which prepares a natural transition to the verbal (initially, finger) denotation of actions and their objects and for a system of such denotations, i.e., language in the proper sense of the word.

"Having mastered language deaf, dumb, and blind children have new horizons opened before them for the development of their mentality and personality and new possibilities for operational activities involving the senses. The secret of success was that the whole process of education and instruction was geared to the gradual transformation of actions with external objects into internal actions, i.e., the 'internalisation' of external activity. This applies equally to all forms of activity – intellectual, moral, emotional, aesthetic and any other. Even facial expressions were no exception. I remember the plaster masks with the help of which Sokolyansky taught his children human facial expressions. He regarded mime as a kind of language, a means of communication. But having become a means of expressing emotional states, the mime exerted immense influence on the organisation of the emotional sphere. Human facial expressions humanised the emotional sphere.

"And, of course, the solution of the problem of deaf, dumb, and blind children offers some instructive facts for the linguist who is wrestling with the problem of the links between language, speech, and thought; for the teacher, who is seeking ways to combine intellectual and moral development with education through labour; for the socio-psychologist investigating small ethnic groups; and for the psychophysicologist studying the link between the work of the hand and the work of the brain... I very much hope that today's event will attract the attention

to the problem of deaf, dumb, and blind children that the matter deserves due to the moral, theoretical, and practical educational opportunities offered by the solution of this problem.”

From Bonifaty Kedrov’s Speech

“The unique experiment of Sokolyansky and Meshcheryakov is the first and only one of its kind in the history of science. And all its implications must be somehow confirmed and assessed. I think a major serious scientific work analysing and summarising the educational and psychological aspects of the matter and showing its profound philosophical significance is necessary. In communicating with the deaf, dumb, and blind students, I became convinced that their intellectual histories provide us with invaluable material for understanding the nature of creativity, scientific discovery, and human talent. For literally every step in the life of such people is a discovery... Our present students should not be passive objects of observation. They are already equal partners in the experiment revealing the nature of creativity, and it is our duty to provide them with an opportunity to make their contributions to science. If we could form a serious scientific team around these students to continue the noble cause of Sokolyansky and Meshcheryakov with their aid, it would, I am sure, be one of the most significant efforts in the history of human thought.

“During his lifetime, Meshcheryakov managed to publish an excellent and profound book *Awakening to Life* which, however, does not exhaust the material accumulated over the decades. If we could organise a scientific team to replace him to some extent after his untimely death, it would be the finest possible tribute to his memory...”

From Evald Ilyenkov’s Speech

“When Maxim Gorky learned about the early successes of Olga Skorokhodova, then a very young girl, he hailed them as an event comparable with the greatest achievements of human reason in this century, as a serious step in solving that which was the central concern of Gorky’s own life – the task of asserting socialist humanism on earth. No more and no less.

“Should one regard this view as the poetic hyperbole of an artist moved by the girl’s dramatic life story? Of course not. It is the insight of a man who, due to his many years of communication with Lenin, was well aware that the true wealth of a society depends not on the number of

material objects it possesses but on the level of development of the people creating those objects.

“That is why he always looked to education with the sharp eyes of a Leninist humanist, regarding it as the key sphere of social life. He understood that it was this sphere in which the main productive force of society is created – namely, man himself – and that this concept makes the difference between the socialist and bourgeois outlooks. That is why to him the phenomenon of Olga Skorokhodova assumed historic significance. His clear-cut world-view provided Gorky with an amazing theoretical insight: he saw behind all this a perspective which Ivan Sokolyansky himself was unable to see at the time.”

When introducing Meshcheryakov, who was to report to the Presidium of the USSR Academy of Sciences, Chemist Academician Semyonov, a Nobel Prize Laureate, described the work of the Sokolyansky-Meshcheryakov school as very underrated and a far from exhausted contribution to science. “I hope,” he said, “that the experiment will attract more serious attention than it has hitherto.”

That major scientist saw the true implications of the work with deaf, dumb, and blind children even though psychology was far from his field. Meshcheryakov’s achievement had resolved a long-standing argument. All those who wrote about the instruction of the deaf, dumb, and blind – and there were dozens of them, not only teachers and doctors but also historians, writers, public figures, and, of course, theologians – believed that the capacity for communication and speech is inborn and that it must merely be awakened. It never occurred to them, it seemed, that a child who was born blind and deaf and, consequently, dumb, is unaware of the existence of words denoting objects and, moreover, of the existence of the objects themselves and the external world to boot. If such a child failed to develop speech, he was proclaimed feeble-minded or an idiot, and in the rare cases when it was possible to teach the child to speak, he was regarded as a genius, a divine phenomenon. They put speech first. Once there is language, any idea can be put across to the child and it can be told about any object. A great and mystical capacity to influence the “soul” directly was imputed to the word. (In modern terminology one should substitute the word “psyche” for “soul.” Yet the point is that the psyche does not exist and must first be created.)

So prevalent was this point of view that any facts contradicting it were simply dismissed. Nobody bothered to analyse the history of Helen

Keller which she had written herself and which had been reprinted many times.

The little girl who did not see or hear clung to her mother's skirt. Kate Keller did not mind: of course her daughter was a nuisance, but at least she could keep an eye on her that way. Helen touched every object handled by the mother and learned to handle them herself. She knew how to cut bread, stir sugar in a cup and pour water into a kettle. The imitations of these simple actions were her first gestures, to which nobody paid any attention – in fact, the members of retired captain Arthur Keller's family were annoyed by them: instead of speaking the child was making strange signs. But it was the signs that emerged from the handling of objects which provided the beginnings of language. They would never have developed if there had not been another person in the same household who was three years Helen's senior.

“In those days a little coloured girl, Martha Washington, the child of our cook, and Belle, an old setter and a great hunter in her day, were my constant companions. ...I tried hard to teach her my sign language, but she was dull and inattentive. Belle would get up, stretch herself lazily, give one or two contemptuous sniffs, go to the opposite side of the hearth and lie down again, and I, wearied and disappointed, went off in search of Martha.”

Helen Keller always preserved grateful memories of these two creatures who played an immense role in her life. While the loyal dog was unable to learn what Helen described as “my sign language,” the black girl understood its meaning instantly. And the emerging consciousness of the blind and deaf child arrived at an important conclusion: humans differ from a cat or a dog, although both are “warm and can move.”

“Martha Washington understood my signs, and I seldom had any difficulty in making her do just as I wished. It pleased me to domineer over her, and she generally submitted to my tyranny rather than risk a hand-to-hand encounter. I was strong, active, indifferent to consequences. I knew my own mind well enough and always had my own way, even if I had to fight tooth and nail for it. We spent a great deal of time in the kitchen, kneading dough balls, helping make ice-cream, grinding coffee, quarrelling over the cake-bowl, and feeding the hens and turkeys that swarmed about the kitchen steps.”

Thus, every day the deaf, dumb, and blind Helen was getting used to the world of objects at the kitchen steps. And the long-suffering and

kindly poor soul, a black girl with the sonorous name of Washington, helped Helen Keller in her desperate attempts to turn the imitation of actions with these objects into gestures understandable at least to one person among all those around her.

It was much later that her mother, having read *The American Notes* by Dickens, wrote to Doctor Howe in Perkins near Boston pleading for help. Samuel Howe had been dead four years but the school's new principal, Michael Anagnos, responded to the desperate plea and sent a 20-year-old teacher, Anne Sullivan, herself blind, and a graduate of the Perkins School. Doctors had managed to restore her eyesight partially. For six years, Anne had lived at Perkins with the famous Laura Bridgman, and she had spent six months studying the notes of the late Doctor Howe. That was all she knew of the science of the education of the deaf, dumb, and blind. Not that there was any science at that time; one can say with confidence that if Anne Sullivan had had a pupil in worse condition, she would hardly have achieved anything, for all her talent and dedication.

“There are some grounds for saying that Helen Keller's first teacher was the little black girl, Martha Washington.” The sentence is couched in rather guarded tones but that, one feels, is only because Meshcheryakov thought it fit to conform to scholarly style in his Doctoral dissertation.

Alan Heis left the Zagorsk boarding-school carrying a puppy in his arms. Long-eared, with glittering eyes, it was almost alive – you couldn't buy such a puppy in a shop. It was made by children who were deprived of sight and hearing. The same children also make clothes, furniture, and other objects. The hammer, the screw-driver, the plane-jack, the sewing-machine and the pressing iron – they can handle all these as well as normal children in an ordinary school. But the workshops here are not just a place where they learn “skills.” They are places where human personalities are moulded. The nail and the saw, needle and scissors, just like the spoon and fork and other great inventions made by people – and which made them people – humanise the deaf, dumb, and blind child. Guided by its teacher, it covers the long road trodden by humanity and masters the human wisdom concentrated in utensils and tools. By learning to handle a comb or a chisel it learns the human behaviour and that forms its consciousness.

The boarding-school – still the only one in the country – was founded in 1963. Until that time parents of deaf, dumb, and blind chil-

dren applied for help to the Institute for the Study of the Handicapped. They were directed to the laboratory headed by Meshcheryakov and before him by Professor Sokolyansky, the founder of Soviet education of the handicapped. There was no in-patient department at the laboratory and all it could do was offer consultations – tips to the parents on how to educate their children. They were told that the first thing to do was to train the child to care for itself – to eat, drink, dress, put personal objects in their proper places, set the table – and a lot of other household chores. This more often than not came as a surprise to mothers and fathers who were prepared to sacrifice anything to make their children intelligent creatures. “We don’t mind taking care of them,” they said, “we’ll feed them and clothe them all right, they are our children, after all. You should tell us how to teach them to talk, how to make them understand speech instead.” And it was very hard to convince the parents that unless the child acquired these simple habits there was not the remotest chance of teaching it to think, because it could not have images of objects. And unless there were some urgent need the deaf, dumb, and blind child would never have anything to do with objects – it is interested only in objects linked with its primary needs.

Alvin Apraushev, the director of the Zagorsk boarding-school, let fall a remarkable phrase: “It is much harder to teach speech to a child who sees but doesn’t hear than one who is deaf and blind.”

How is that again? But Heis, after hearing my word-for-word translation, nods his agreement. I was acting as an interpreter and it would have been improper to ask for an explanation but as soon as we were back in Moscow I brought that up.

“There is nothing to be surprised at,” replied Ilyenkov, “a deaf person with eyesight usually cannot learn to speak and even the written world is beyond his reach. Such people make excellent machine operators and fitters, but they could never write the simplest paper. Why? Because they are not forced to by circumstance. Why learn words and grammar if one can get by with gestures? Of course the teachers at school insist on having them learn the finger spelling and even try to make them talk. But as soon as the teacher turns away they can revert to the simple language of gestures to talk to their friends.”

...As always, necessity dictates our behaviour, and having realised that teachers of the deaf, dumb, and blind make conscious use of it in their

work. That necessity became part of the paraphernalia, along with the instruments such as the teletactor.

The teletactor is an instrument with the help of which a normal person can talk with a blind and deaf one. But it is more than an instrument: it prevents the normal person from remaining blind and deaf to human misery and human courage.

With the help of the teletactor¹ I communicate with three boys and a girl. They cannot hear nor see, and yet there are their faces – expressive, responsive, inspired.

I can hear their voices. Sasha's clear, flawless enunciation, Natasha's quiet, high-pitched treble, Yura's unusually loud talk and Sergei's flat, monotonous voice. I sit in front of an ordinary typewriter and each of the four has his or her index finger on a small plastic circle with six raised dots – arranged by threes in two vertical columns. There is a combination of six dots corresponding to every letter, figure or punctuation mark – it is the Braille alphabet used in books for the blind.

Accustomed as I am to the typewriter, I do not find communicating with its help strange. But I have an odd feeling when I think that my fingers touching the keyboard actuate little metal dots that press into living flesh. This sensation of communion, physical link with my interlocutor so confused me that I couldn't talk to them as I would have liked to. "No, it's not very difficult to study at the Psychology Department." "Yes, it's examination time and you have to work hard." "Of course this happens because we sometimes goof off during the term. We know we should study all the time during the semester, but sometimes we haven't enough will-power. You pick up a novel instead of your textbook and spend half a day reading it." "Yes, it's a different book every time. Right now we are all crazy about Yuri Gherman's *Answerable for Everything*." That's the kind of conversation I had with them.

At that moment, Ilyenkov joined us. They met him gladly and literally dragged him to the teletactor in eager anticipation of an interesting talk. "Evald Vasilievich," said Sasha in his staccato way. "Tell us something philosophical. For example, about appearance and essence."

¹ A teletactor has been developed in the USSR which prints a whole line in Braille alphabet at the touch of a finger. Such lines are much easier to follow than letters appearing one by one.

We talked a little on that subject but then our interest flagged. Suddenly Natasha popped a question: “What do you think, can a noble, heroic death atone for a worthless life?” As she was saying that she simultaneously communicated her message to Sasha, Sergei and Yura through the six dots on the Braille device. “No,” Yura chipped in immediately as he sent his fingers flying over the keyboard. “It is better to live a good life than to die a good death.” “If you think that Gherman’s book says something different, you are mistaken,” Sasha came down on Yura’s side.

Digression Two

From Sasha Suvorov's New Year's Letter to Olga Skorokhodova

“Olga Ivanovna,

“I am writing this letter at Meshcheryakov's place and he will convey this message to you. I am very glad you like my fable. As for rhyming, I don't think it is necessary to rhyme everything. Recently I challenged Natasha K. on that in my diary (she is also here at Meshcheryakov's). I set out my requirements for poetry in five points:

“1. Content. There must be a message that runs through or concludes the poem.

“2. The music of the verse – the rhythm must reflect the throbbing heart of the author (because there are some hearts which even great poetry cannot move).

“3. Language – not necessarily ‘printable’ but the author's colloquial language corresponding to the music of the verse that sounds in the poet's heart or helps him to grope for such music.

“4. Rhyming should not necessarily be complete. My minimum rhyme is two letters in each of the words being rhymed. One of them should be a stressed vowel.

“5. Independence. In writing verse, the poet must rely only on his personal experience and that of the authorities he recognises, and of the great masters he considers to be his teachers.

“I will send you my poems which are to be published in the 4th Braille collection of my poems. Perhaps not all of them live up to the above requirements because I have only recently formulated them for myself.

“I won't write to you about myself. I could tell you when we meet if you are interested. Good-bye for now.

“I almost forgot to wish you a Happy New Year. Ill say no more because I am sick and tired of the meaningless polite greetings that are usually sent on such occasions.

“Here is a sampling of my poetry:

They often tell me,
 You don't know for whom you write your verses,
 You have no reader,
 I write for the same reason as the rooster crows,
 Greeting dark and light with song,
 For a singer cannot sleep without a song.
 I may not know who I am writing for,
 I write the way I talk,
 But I will find my reader,
 There are people who speak my language
 And think my thoughts. "

To the Rector of Moscow State University from Yuri Lerner

"I ask your permission to be allowed to take the entrance exams at the regular sessions of the Psychology Department on the subject 'Education and Educational Psychology'.

"My reasons for choosing this subject are as follows. I lost both sight and hearing in early childhood and at the same time developed an interest in clay modelling. I devote all my free time to it. I have made considerable progress in this during my studies at the Krupskaya People's University of Fine Arts. I feel more and more drawn to modelling. I have set myself the aim of becoming a sculptor. And I am persistently working towards that aim, but now I am asking myself in what field I could be most useful.

"I understand that I have little chance of becoming a full-fledged sculptor because a desire to be one is not enough. So I have decided to devote my life to education. During my studies at the school for deaf, dumb, and blind children, I became convinced how necessary modelling is for the education of such children. They can only learn about the surrounding world by touch, and everything must be presented to them in a tangible form, the only one that is accessible to them. A child's psyche is very complex and that of a deaf, dumb, and blind child is even more so. This problem has not been widely studied. Knowledge of psychology is essential in work with deaf, dumb, and blind children.

"In entering the Psychology Department I have not abandoned my coveted goal of becoming a sculptor. On the contrary, I am approaching it. My plans go even farther: I intend to take a degree in history and be-

come a history teacher. History is my favourite subject, but psychology is going to play the most important role in my work all the same.”

From a Letter to the Komsomolskaya Pravda Newspaper

“Dear editors,

“There are people in our country who are deprived of sight, hearing and speech. At first sight, a person who is deaf, dumb, and blind seems to be completely isolated from the world, unable to communicate with the public at large and unfit for work.

“But that is a big mistake. Like all people who see and hear, a deaf, dumb, and blind person can become a useful citizen of his country. For that, prolonged and persistent cultural and spiritual development under the guidance of a teacher is necessary.

“...The workers at the Zagorsk boarding-school are building bridges from the world of the deaf, dumb, and blind to the world of people who hear and see. Children here are taught vocal speech, are acquainted with flat print so they can freely communicate with people by drawing letters on the palms of the hands.

“...There is another window that our teachers have cut for us into the world of those who hear and see: they are teaching us to type on conventional typewriters. That triumph over the hardships and whims of blindness, deafness, and dumbness has given us, the prisoners of darkness and silence, vast opportunities for communicating with the world... I am typing this letter on an ordinary typewriter – and what a pleasure it is for me!

“...The boarding-school helps us find our place in life and make us full citizens of our country.

“Sergei Sirotkin,
Secretary of the local Young Communist League Organisation
of the Boarding-School for Deaf, Dumb, and Blind Children, Zagorsk.”

From Natasha Korneyeva’s Composition on the Subject “What I would Like to Be”

“I have decided to become a teacher. Why? I think it is the only profession to which I can commit all my energy and mental and spiritual abilities. I think if I like my work, my whole life will be happy, because there is no greater happiness than knowing that people need you and that you can be useful to them.

“I haven’t yet decided which subject I am going to teach. I like history, literature, biology and physics. One thing is clear, though: I must choose a subject that I can teach competently so that at my lessons the pupils don’t just sit waiting for the break to come, but are interested and eager to know more.

“If I were a normal person, I would probably have chosen a different career. I would like to operate a huge machine-tool, or work in a Zoo or have a job involving a lot of travel. When I was younger I had a passionate desire to go to Africa or South America and join the guerrillas there fighting against the oppressors, hiding from the police, suffering tortures, living among lions and snakes... As it is, I would be happy enough if I can be a good teacher. I could never become the romantic heroine of my dreams.

“I am very fond of children. As a child, I looked after my brothers and nephews; they obey me and love me, probably because now I am away from home for much of the time.

“I think the work of a teacher is very responsible so that sometimes I am even afraid. I will be entrusted with teaching children – kind, credulous, capricious and curious. You can mould them into any kind of person. And I will have to make them good citizens of our society. It takes a lot of attention, sensitiveness and skill to foster in the souls of children the kind and beautiful feelings and notions and to keep insidious evil out of their hearts.

“Such work claims all the riches of your soul, all your knowledge, sensibilities and nerves. I wouldn’t like to have docile, passive pupils with whom you never have any problems. Children misbehave from the fullness of life; they don’t understand whether they are acting right or wrong, but they are confident that they are right and that the adults just want to subjugate them to their will. There are no bad children – there are bad teachers. Until a child understands its actions, it cannot be held responsible for them.

“If the pupils grow up unhappy, some embittered and difficult to get on with, some bootlickers and faint-hearted and some too dependent on others – it’s all the teacher’s fault. And it would weigh heavily on my conscience if I knew that I had made a person unhappy or less happy than he could have been, or that I have failed to instil good qualities in him and keep him from evil. This guilt would torment my soul all my life.”

The lights go out in the hall and everybody falls silent. Meshcheryakov is showing a film about how his pupils are rescued from the world of darkness and silence, how reason and judgment, feelings, will, and fantasy are developed.

Everything is undramatic, as if he had deliberately set out to make an anti-thriller.

Here is a five-year old girl being taught to eat with a spoon. Now she is learning to put on her clothes. The teacher's hands hold the girl's hands and they put on her tights. Once, twice, thrice, a hundred times until at last it is enough to bring the girl's hands in touch with the tights to start her putting them on. The beginning of the action became the signal to carry it out.

Be that as it may, even the most "down-to-earth" film is a thriller compared to real life: it compresses time, creating a cinema world. In actual life the command "put on your tights" is remembered and carried out in throes of pain. At first the child begins to put on the tights, but can't complete the action. They say it does not receive encouragement because there are no results. Any psychologist knows that in such a situation nothing can be learned. But if you help the child constantly in such elementary operations, that's not much use either, because no link appears in its mind between the actions and the results. It is only by carefully dosing help to the pupil that the teacher can succeed in having the child do things independently. The psychological cyclotron demands a jeweller's precision.

...The projector is whirring on compressing years into minutes. Grown-up pupils and teachers constantly try to "talk" to the young children, giving them a chance to "observe" conversations and arguments. And the little children develop "gesture babble," just like normal children babble with their tongues. They constantly point out things with their hands, imitating grownups. Shortly, the meaning of these movements will come home to them. They will have acquired their first language, the language of gestures.

And again one must remember that such a fine instrument as the human brain requires very precise handling. Who knows what associations must be formed in the brain and how that invisible fabric must be woven?

Give the child an unfamiliar object, and it casts it away. But make a slight change in the shape of the spoon it usually uses, and the five-year-

old deaf, dumb, and blind will never part with the object. Thus, a narrow path is cut towards its consciousness.

Soon this path will become a broad highway. We now know that the child is most interested in objects that are familiar but slightly altered. And this enables the teacher to link different objects into long series, each object only slightly different from the next. Thus the child develops a need to explore the surrounding world. What was once thought to be innate is actually created by the teacher's persistent work. Now a deaf and blind child can be taught to be as avid for new objects and impressions as a normal child is.

Many objects need many gestures to denote them. And in the depth of this gesture thinking (this is not a slip of the tongue, it is a fundamental concept: there is thought but no verbal language), the need for a different and more complete mode of expression emerges. What microscope will allow us to see this atom of consciousness? The teachers of the Zagorsk school have an unmistakable way of determining when such a moment has arrived from little signs they have studied over the years. Now instead of the familiar gestures, the child will be presented with their verbal names. Of course it will not understand that the new gesture consists of letters (and the succession of finger combinations can only be perceived by it as gestures). Now it has learned the new names for about ten objects and notices that a certain combination of fingers keeps recurring. The idea of an "elementary particle" of language – the letter – is born in its head – not from divine inspiration but as a result of the tireless, intense, well thought out work of its teachers.

...Looking at us from the screen is an adolescent. His quick, deft fingers make up combinations of touches into letters to convey to the hands of his classmate something funny and, judging from his facial expression, something personal.

...The fingers fly over the Braille book – it is no problem now to establish the link between combinations of fingers and combinations of projecting dots denoting one and the same letter.

...The lips of a blind-deaf girl move silently. But that is only because it is a silent film. Actually the children in Zagorsk learn to pronounce all the sounds by copying the position of the lips, teeth and tongue of their teacher. They remember every new sound in all its fine phonetic detail – they hold their hands for hours on the teacher's larynx, tongue and lips to sense the tension of the vocal cords, the barely perceptible stream of air

that creates the vowels and consonants in our speech. The sounds then arrange themselves into words and words into phrases. Then follows harder task of perfecting phonetics, a new strain on the memory, new efforts.

But even that prolonged and complicated process does not now appear incredible. If it were not a documentary but a feature film, its climax could well have been this: a little girl is bringing a spoonful of porridge towards her mouth with visible effort.

Life has a way of proceeding in circles. Many situations repeat themselves on new levels.

Doctor Howe, the pioneer of the teaching of deaf, dumb, and blind children, in the case of Laura Bridgman, chose what seemed to be a very natural way: he relied on the girl's tactile sensations which were intact. But his successors – even at the Perkins School – held a different view. They believed that the main thing was to teach the child oral speech, and once that was mastered and the child learned to pronounce sounds and words, the rest would be far easier. And indeed they had the Biblical phrase (“in the beginning was the Word”) to support their argument.

Inis Hall, the first head of the department of deaf, dumb, and blind children at the Perkins School followed that doctrine fanatically. Children who tried to use gestures were punished, and if they failed to learn to speak within a certain period they were expelled. Inis Hall herself spent all her days, including holidays, with a boy by the name of Leonard Doudy. When he entered the school, he was in terrible shape: he crawled backwards on all fours so he wouldn't bump his head. At the Perkins School Doudy not only learned to speak freely but even became a rather educated person, able to live and work on his own. But Inis Hall had to sacrifice her own personal life for the sake of that one pupil, and she demanded the same kind of dedication from the other teachers. Things remained that way at the Perkins School for over twenty years until 1951 when Edward Waterhouse became the school's principal. When he arrived, his school's most difficult department was facing a critical situation. There were only four children left, and there was no one to teach them, because they couldn't find a teacher in all of America.

..Doctor Waterhouse made a trip to Moscow to see for himself what Meshcheryakov had told him about during a seminar on the education of deaf, dumb, and blind children held in Britain.

He went to Zagorsk, met the four students and spent several hours talking to them via the teletactor. Meshcheryakov took him to his laboratory at the institute for the Study of the Handicapped (the lab has now been named in honour of Professor Sokolyansky). And there was an informal meeting at the home of Olga Skorokhodova, the deaf, dumb, and blind researcher at the laboratory, a pupil of Sokolyansky, author of several books, numerous poems, a Candidate of Science. Meshcheryakov asked me to act as his interpreter, so I did not miss a single word of the long conversations. And the meaning of the accomplishment of Sokolyansky, Meshcheryakov and their many associates became clear to me.

Doctor Waterhouse had a hard time bringing his school back to the old idea of teaching children starting with gestures and putting the stake not on words but on actions. But when in the end, he managed to get his way, success was not long in coming: now there are seventy children at the Perkins School deaf, dumb, and blind department and a full staff of teachers who no longer have to make inhuman sacrifices. The heroic but basically fallacious method of Inis Hall was replaced by what Doctor Howe would have described as “plain and straightforward efforts.”

At the Condover School in Britain, where Meshcheryakov and Waterhouse met, they still stick to the “oral method,” at least on paper. In actual fact children are taught there with the aid of the finger alphabet before pronunciation of sounds is taught. Waterhouse overheard Myers, the schoolmaster, saying in puzzlement: “I don’t know how far we can go with our policy of oral speech at any price.”

The road chosen by Professor Sokolyansky back in the 1930s when he was setting up a small school and clinic in Kharkov, proved to be the only correct one, although the rest of the world has recognised it only recently.

Digression Three

It is always difficult to tell the story of a person, both because every life is unique and because the lives of most people are so similar.

It would seem easy to give a portrait of a person who lives side-by-side with you – you can always get any questions answered, observe, and even eavesdrop on that person. The trouble is that much of what the person is destined to accomplish is still in the future, and no one can tell whether or not there will be among these accomplishments some that will transform this person.

Whatever you might think, it is easier to write about the great people of the past – their mighty deeds have been accomplished and time has given them its impartial assessment. Of course you cannot ask these historical figures questions, but then Olga Skorokhodova talks about herself with great reluctance. I have talked with her many times and each time I have to wrest any detail of her biography from her. Many was the time that I asked her to let me read the letters she wrote to Gorky in her youth, and each time she refused saying they were too naive.

Of course, I could have obtained these letters from Gorky's archives, but I would still have needed her permission to publish them. But then perhaps they are better unpublished, because, after all, the things that a person doesn't want known also tell us a great deal about the kind of person he or she is.

So I decided in my story about Olga Skorokhodova to use only the information she herself thought worth bringing to the attention of other people, which means her works, her poems, reviews and articles printed in the press at various times and the letters which she herself selected for me from the archives and finally, my own transcripts of her public speeches, my talks with her, and various conversations with other people conducted in her presence and communicated to her.

I

I will never forget the year 1933 and the day
of June 18th when I received the first letter from
Maxim Gorky. I was not only glad to receive the
letter but – and I can say this without
exaggeration – I was shaken by its depth and wisdom.

Olga Skorokhodova, "Unforgettable Friend"

"13 January 1933, Sorrento

"Dear Olga Ivanovna,

"I owe you an apology for delaying so long my reply to your kind, exceedingly flattering and wonderful letter. Everything has its reasons, and I also have an excuse but I'd rather not tell you about the reasons why I did not reply to you until now.

"Let me just tell you that I was on the point of writing to you many times and each time I felt that I couldn't quite rise to the challenge of the facts and had no words that were powerful enough and at the same time guarded. This is because your letter is a miracle, one of the great miracles marking the achievement of Reason that freely and boldly investigates natural phenomena which move us greatly and give us confidence in the power of Reason and its ability to resolve all the riddles of life, both outside and inside ourselves...

"So I let my dreams run wild under the influence of your wonderful letter. I would be glad to hear from you again and I promise not to be so shamefully late in replying the next time.

"Wishing you high spirits and inexhaustible energy in learning.

"Maxim Gorky."

*

I have never seen him,
I only have fingers for eyes,
I look at him with my fingers
And Gorky comes to life.

Olga Skorokhodova,
To the Bust of Gorky

*

"Nature has deprived you of three senses out of five, the senses with the help of which we perceive and understand natural phenomena. But science, influencing your touch, one of the five senses, returned to you, as it were, what has been taken away from you. This shows at once the imperfection and chaos of Nature and the power of human reason and its ability to correct Nature's rude mistakes.

"I have never been among the admirers of the 'intelligence of Nature'. I have never believed in it, because there is a lot in Nature that is

meaningless and harmful for Man, the best and most complex of its creations which can so easily be killed by a typhus flea or a tuberculosis germ...

“I believe in human reason. Man seems to me to be Nature’s organ for self-knowledge, the explorer and organiser of its chaotic forces.

“Nature has created you as a creature for experiments, almost deliberately so, in order that science should investigate one of its grossest and most hideous errors. Scientific reason has corrected the mistake in part but it is still unable to undo the crime itself and return sight, hearing and speech to you. But you are serving mankind by being what you are now and by what science has already done with you. There is no doubt about this, Olga, and you have the right to be proud of your service.

“Maxim Gorky.”

*

He understood me, sensitive and tender; His mighty brain made mine alive; In those hard days, so simple and so human, He gave me joy, and called on me to strive.

Olga Skorokhodova

*

“Dear Comrade Skorokhodova,

“I have greatly enjoyed reading your letter conveyed to me by L. N. Fyodorov, and it deepened my respect and admiration for you.

“To me you are more than just the object of an amazingly successful and scientifically important experiment, not only vivid proof of the power of reason to explore the mysteries of Nature – no! You are to me a symbol of the new realities which our talented and industrious people – the workers and peasants – are creating so quickly and courageously. Until recently the majority of our people, while they had sight, hearing and speech, lived under the slavery of autocracy and capitalism and they were as good as deaf, dumb, and blind.

“But as soon as the scientifically organised reason of socialism touched the masses, it produced from their midst thousands of talented and courageous builders of a new life. You will understand what I mean.

“...I think of you as a symbol of energy which strives to manifest itself even when it is physically constrained.

“Against the background of spectacular events of our day, your personality to me as a writer (and, by definition, a person given to dreaming) acquires a symbolic significance bringing the message of the victory of the energy of human reason, the most valuable energy created by Nature – matter – for its self-knowledge as it were.

“Maxim Gorky.”

*

“It is interesting that Gorky, preoccupied as he was with his writing, displayed an interest in the study of all fields connected with the human being that is rarely found in a writer of fiction. When he began corresponding with me, he became interested in the problem of the deaf, dumb, and blind, and not in the same way as Dickens was interested in Laura Bridgman (the predecessor of Helen Keller). What struck Dickens most about Laura Bridgman was that she could sense music by touching the instrument with her hands and that she could express her joy through laughter.

“Every letter from Gorky gave me the same infinite joy as the first one, and I grew intellectually with every letter: I was able to understand the books I was reading better, learnt more about life and people, all because his every word gave me more insight into the surrounding world. I wrote letters to him eagerly, with a pounding heart: I often felt that I was still ignorant, and that it saddened him. But then he wrote me: ‘Your letter also attests to a remarkable growth of your intellect.’ That encouraged me greatly and made me confident that friendship with Gorky was of tremendous help to me, because he inspired me and directed me towards everything which is good and sensible.

“I have kept all the letters I received from Maxim Gorky. My teacher typed them out for me in Braille script so I can read them on my own whenever I like. Yes, I read and study them...”

Olga Skorokhodova, Unforgettable Friend

*

“I am very glad you are so confident of the strength of reason and that you have decided to devote yourself to a scientific career. You are quite right when you say that human intelligence is growing in order to conquer ‘the intelligence of Nature’.

“It is already conquering this force, and you are among the most vivid proofs of its triumphs. Of course you must devote your energies to reviving and developing passive common-sense for the cause of further releasing the cultural and revolutionary energy of the masses.

“Forgive me for being late with my reply to your letter, and do please write to me whenever you feel like it. Your letters are very meaningful and I am fond of learning.

“Wishing you good health, and sending warm greetings,

“Maxim Gorky.”

*

Olga, how did your correspondence with Gorky begin?

It happened like this. In 1932, the fortieth anniversary of Gorky’s literary work was being celebrated. I was at Sokolyansky’s school-clinic in Kharkov at the time. They were already reading newspapers to me and I learnt from them that many people were sending congratulations to Gorky. He was my favourite writer, and of course I was sorry that I was late with my congratulations. And then I decided to write a letter to him. I did not let on about my secret wish, not even to my teachers. I simply went to my little study – every pupil had a small room to himself – sat down to my Braille printer and began to think over my letter to Gorky.

Eventually I composed my letter. The whole nation is congratulating you, I wrote, so allow me to add my congratulations. I went on to write how much I liked his works and quoted a little from them, which of course gave him to understand that I had indeed read a good deal of what he had written.

The following day I read the letter to my teacher, Lydia Ulanova. She was greatly moved and very happy and she asked me to dictate that letter to her so she could write it in conventional alphabet. Then Lydia Ulanova showed the letter to Sokolyansky who was very impressed by the fact that I had written such a letter on my own. Of course it was a naive letter, but it was sincere and was prompted by my love of Gorky. Sokolyansky told me to copy the letter in pencil myself (in block letters) so that Gorky could see that I had written it unaided. I did so and the letter, written in my own hand, was sent to Gorky. Several months later a reply came from him. And that is how our correspondence began.

Olga, I would like to publish your letters to Gorky. I think they could be of general interest.

No, I don't think you should do that. All these letters are too naive and would be of no interest to the reader.

But you were only nineteen, most young women are likely to sound a little naive at that age.

Well, I don't see why you should publish letters written by naive girls. If you must write about that correspondence, which is so dear to me, why not publish Gorky's letters to me – there is much wisdom and kindness in them, and they are very little known.

*

“20 March 1936, Tesseli

“Dear Olga,

“I was very glad to receive your letter, thank you for remembering me...

“...The conditions in which we live demand that each of us be aware of the responsibility for his shortcomings, for his ignorance and poor education. I was very stirred by the fact that you, too, have been exposed to human narrow-mindedness and stupidity. I think that is too much for you; let such things be reserved for people with normal sight and hearing. But enough of that.

“Last summer I was visited by Romain Holland, a very good and intelligent man, a great supporter of justice and a sincere friend of our people. He wanted very much to go to the Ukraine, including Kharkov, where he would of course have met you. But he is old and ailing and he couldn't make the trip. I am very sorry about that, because I wish he could have met you and talked with you.

“I am as busy as usual, I work a lot and I am a little short-winded – my heart is weak. In general I am not doing badly and this is what I wish for you, my dear Olga, from the bottom of my heart.

“I wish you good health. Don't be angry with fools; they will be around for quite a while yet, and you should treat them as you do bad weather.

“Yours, Maxim Gorky.”

*

Who are the people getting such rough treatment from Gorky, Olga? What did you tell him in the letter that upset him so much?

I was very upset myself at the time because I had met some people who thought that educating the deaf, dumb, and blind was a useless and meaningless affair. I wrote about these conversations to Gorky and he replied within a fortnight.

Coming back to your first letter to Gorky, Olga, do you remember anything of it?

No, I don't. I remember, though, that I asked him if I had understood correctly a sentence I encountered in one of his books: "To an empty face, even a scratch can sometimes be flattering." But that's all I remember. And anyway, it doesn't matter.

You probably know that this correspondence has already been published – once – by the journal "Zhizn' glukhonemykh" (The Life of the Deaf and Dumb), No. 7, 1940.

Yes, I know that. But I still don't think you should go ahead with your plan.

All right, let it be as you wish.

II

Olga Skorokhodova, *Spring*

Gone are the days
 When the sounds and glitter
 Charmed by sensitive ear and eyes...
 Those days, those happy days are over,
 Like vanished dreams.
 My memory will keep
 The pictures and the sounds,
 Like the last ray of light
 That flickered ahead of me,
 And suddenly died...
 Endless darkness begins.

Olga Skorokhodova, *How I Perceive, Imagine and Understand the Surrounding World.*

"I was born in the summer of 1914 in the village of Belozerki near Kherson in the Ukraine. My parents were poor peasants. When my father was sent to the front in 1914, mother remained the only bread-winner in a family consisting of my father's brothers and sisters and my sick grandfather. Mother worked as a day housemaid for a priest. In any weather, in autumn mud and winter frost she got up before dawn and went far away, across the river leaving me in the charge of my ailing grandfather.

“But no matter how hard the early years of my life were, they were still ‘a golden childhood’ until the day I became ill. It happened in the summer of 1919 when I was five.

“I still have some memories of my illness. For example, I remember that I had a high fever; I had visions of fires, fiery mad dogs which chased me. I did not see anything, but I thought it was because I was weak and did not want to open my eyes. Mother attended to me all the time (grandfather had died, and the other members of the family went to live on their own so mother and I were left alone). I recognised her touch without opening my eyes. I remember once when I regained consciousness, mother gave me tea with apricot jam. This time I wanted to open my eyes to see where the jam was and what colour it was. I opened my eyes – or so it seemed to me – but I couldn’t see the jam and couldn’t learn what colour it was....

“I was ill for a long time, I remember that well because when I began to recover I noticed that it was cold; and indeed it was already autumn. But I didn’t mind the autumn. The terrible thing was that neither mother nor I had any doubts left that I had gone blind and was almost deaf... The country was in chaos; the Civil War was on, and of course mother was unable to send me for treatment. She did what she could, of course. She took me to doctors in Kherson but the eye and ear specialists only patted my head and sympathetically told my mother not to lose heart.

“In the autumn of 1922 the People’s Education Authority in Kherson sent me to a school for blind children in Odessa where I stayed until 1924. I soon realised that all the pupils at the school were blind. They kept bumping into me, feeling me with their hands and asking me something. I shunned the crowd, cried a lot, and longed to be with sighted people. The older pupils and the teachers were nice to me – they took me for walks, gave me trinkets, necklaces and ribbons, patted me and tried to teach me things. Nobody had time to instruct me individually, and there was no point in my attending classes because I couldn’t hear the teacher’s explanations. When addressing me, they had to shout loudly into my right ear: my left ear went deaf immediately after my illness.

“A year after I entered the school, my right ear also went deaf. They pitied me but they could not help me. They took me to doctors and treated me; they sent me to a sanatorium for children, but all was in vain. I spent solitary days in my bedroom.

“They didn’t even take me for walks about town any more because, having lost hearing, my sense of balance was impaired and I couldn’t walk by myself.

“A professor in Odessa, learning that there was a deaf, dumb, and blind girl, wrote to Professor Sokolyansky about me for he was then in the process of setting up an institution for deaf, dumb, and blind children. I entered the Kharkov clinic for the deaf, dumb, and blind in 1925.

“My admission to the clinic for the deaf, dumb, and blind marked the beginning of a new and unusual time. There were already five patients at the clinic at the time. We were well cared for, and the place was clean and pleasant, the staff was wonderfully kind to us. And I think it would be true to say that our teachers and Sokolyansky himself loved us as if we were their own children.

“It was not until I had got used to the new situation and settled down to a routine that they began to instruct me. Professor Sokolyansky began to rehabilitate my speech which had been impaired after I went deaf. The Professor’s efforts were successful, and my oral speech was almost completely restored. Of course I couldn’t hear what I said and couldn’t judge how I was talking. But everyone who talked to me corrected me all the time and I was never allowed (and am still not allowed) to strain my voice or talk loudly.”

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Olga Skorokhodova, *Aspects of the Formation of Concepts in the Deaf, Dumb, and Blind* (unpublished)

“With the onset of blindness and deafness I became haunted by a painful feeling of mistrust of everything around me. It seemed to me that all things living and inanimate were out to deceive me. Therefore I felt that everything around me was full of ‘lies and cheating’. I didn’t trust the table, the chairs, the bed, the plates and any other objects.

“When I gingerly approached the corner of the room where the big stove was and where the oven forks and the poker were, they at first appeared to me quite harmless, smooth and long sticks with iron ‘tips’ that felt coarse to the touch. Rather timidly, but with interest, I explored the oven forks and the poker with my hands being aware that they were not moving towards me. I had a momentary feeling that the oven forks and the poker had no intention of bashing me: after all they did not move,

there was no doubt about it in my mind, because while my hands were touching the handles and the iron parts, the oven forks and the poker were perfectly well-behaved. But as soon as I began running about the room and lost my sense of direction while running (which happened quite often after I went deaf and lost my sense of balance) the oven fork and the poker in the corner of the room would 'get in my way'. They suddenly started behaving quite differently than when I used to creep up to them slowly and touch them lightly with my fingers, feeling that they were immobile and thinking of them as lifeless. Whenever I drifted by chance into the 'ugly corner' I was invariably stunned by the fact that the oven fork and the poker immediately 'came to life'. That is to say, the poker would hit me hard on the face when I stepped on it and the oven forks also began falling on me when I accidentally touched them.

"I felt less insulted by the 'quarrelsome' oven forks and poker when mother was around to intervene, i.e., when she would restore them to their place in the corner. Then she would put something cold to my bruises and bumps. But when mother was away for a whole day, I felt miserable and tried to keep away from the 'dangerous' corner. And when mother returned home I would lead her up to the poker and the oven forks and gesture to her that they had 'attacked' me. I found it strange that these long sticks, which were probably taller than my mother, were 'afraid' of her: they immediately became motionless.

"The conflict temporarily settled, I returned to my thoughts and the results of my 'reflections' were not always comforting. I did not quite understand my environment, and that made me more distrustful of the objects which I imagined to be either good or bad. Buckets and small tubs could be bad. Buckets were especially ill-behaved when they were full of water. In the spring and summer when it was warm, people would leave buckets, both empty and full, near the house and sometimes in the middle of the yard. I would bump into these buckets and hurt my feet. When the buckets were full of water, they seemed to be harder because they were heavier. I got bruises on my feet and fell into a puddle if I tipped the bucket. No wonder I thought ill of the buckets. No wonder I was afraid of open spaces where so many unpleasant things were in store for me.

"And when the 'angry' objects inflicted so much grief and physical pain on me during the day, I became very confused; I felt ill because I could not understand the bad behaviour of the objects without outside help. Sometimes I threw some things away or hid them, and when

mother looked for them, I gestured to her that this particular object had a way of fighting and scratching and that it should be thrown away.

“Fire was a terrible ‘evil spirit’ to me. I probably developed my fear of fire and smoke and the smell of fire because there was a big Russian stove in our house which filled the room with smoke when mother forgot to open the shutter in the stove pipe.

“In the summer, we cooked our food on a clay stove in the courtyard, and the smoke from it filled the yard. I burned my hands when I put firewood into the stove, which had no door. All the people in our village kept such stoves in their courtyards and in the evening, when Ukrainian dumplings were being made, there was smoke all over the place, and to this day it brings back unpleasant memories. Those were some of my early perceptions of the environment. They provided the basis for all my ideas and my understanding of primitive and complex things alike...

“Yet in spite of all sorts of unpleasantness caused to me by the poker, the oven forks, the buckets, the tubs, dogs, pigs, cats, fire, holes in the ground and so on, I could not stay put. I wanted to perceive, know, and imagine things. My hands and my feet (with which I also explored the world when I could walk barefoot) were covered with burns, scratches and bruises. In spite of the pain, I would wade into stinging nettle to find out for myself how much of this ugly thing was around because a single thistle or nettle did not give me any idea of how large these unpleasant plants were. Of course these explorations of area around me did not have a definite or significant goal, but I wanted to know about what was around me if only to imagine the space that was outside my usual range, i.e., which I had not studied by touch, and which was therefore not included in my ‘field’ of movement or in my plans for unforeseen future actions.

“You may be surprised to hear about the actions of a deaf, dumb, and blind girl. Indeed what actions could such a child undertake? My behaviour and my acts may have appeared strange to other people but they did not appear so to me. I sometimes did not understand why the poker and the oven forks fought with me or why buckets of water, dogs and pigs kept getting in my way, or why the knife cut not the bread but my finger, or why the water I poured into the cup scalded my fingers if it were hot. Many things were not as I imagined or would have liked them to be. But this did not mean that I always had to be afraid of the treach-

ery of the objects around me in the unknown spaces. And I did not resign myself to either the situation or an immobile existence without a struggle. Mentally normal deaf, dumb, and blind children have never tended to remain in absolute repose if they were able to move, no matter how so slowly and gropingly.

“I studied these unkind and tricky objects and areas so I could imagine them as parts and wholes and control them purposefully (of course, I am using that word in hindsight). I sought to use them in my interest. This ‘exploration’ of objects and their interrelationships and connections and the study of the space around me, which I explored step by step, allowed me to teach myself to walk, clumsily of course, and to use some of the objects. I could make my way about the yard, take the footpath to the vegetable garden, cross the nettle to get to the fence and generally occupy myself no matter whether other people thought my goings about useful or practical. What I needed was something to keep me busy, so I did all this for my own sake.”

*

V. Frenkel, *The World in an Unusual Dimension*

There were eight pupils at the Sokolyansky school when the Great Patriotic War of 1941-1945 broke out. The Nazis who occupied Kharkov stormed into the school and killed six of them. Olga Skorokhodova was one of the two who survived by a miracle.

*

Olga, what do you remember of the horrible time when you lived under the German occupation?

I remember that even at the grimmest of times, I was sure for some reason that our army would come back and I said so to everyone: perhaps some of us would be wounded or shell-shocked, but we would live to see our army back.

In 1943 the Soviet troops approaching Kharkov were shelling the city. Once during an air-raid or artillery attack, I was hiding in the corridor of our school and from the rocking of the ground, I realised that shells were exploding nearby. I was frightened and ran up the steps into the house. The porch held a surprise for me – for some reason it was all smashed. I stopped in front of the door – for some reason I was afraid to

go further. Then a woman ran up to me and said that a mine had landed in our courtyard precisely at the moment when I stopped..

An even more frightening thing happened when I was walking in the city with a friend and the Germans arrested her and took her away and I was left alone. I had a stick which I used to guide me along the pavement, but I wouldn't dare cross the street because I knew from the smell and vibration of the ground that German motor vehicles were passing along the street. And I could also tell from the smells that German soldiers were walking past me. To make things worse, the sun was setting – I could feel that because it was getting cooler – and the Germans had imposed a curfew in Kharkov. To this day I shudder at the memory of how I entered a house and stumbled over a corpse. Then I nearly fell into the basement. A kind woman gave me shelter for the night and in the morning took me back to the school for the blind.

Life at school was not easy either. The Germans had appointed a former White Guard officer principal; I will remember his name all my life – Utkin. He threatened me many times that he would give me away to the Germans as a YCL member, and if he didn't do it, it was only because the teachers who had stayed on at the school, prevented him from doing so by threatening to leave so he would then have to answer to the Germans for the mess he had made of the school. Utkin took away my Braille typewriter and my paper, deprived me of any chance to communicate with people, and destroyed all my notes.

In 1943, the long-awaited Soviet troops came and Utkin was arrested the next day.

The following year I was already in Moscow where I met my teacher Ivan Sokolyansky with whom I never parted until his death.

Olga, your early childhood passed under the favourable influence of your mother. Who was closest and most necessary to you in your youth?

Then and later it was Sokolyansky. And not only for myself. There are many people in this country who will feel indebted to Sokolyansky all their lives – he was such a remarkable man.

*

A. V. Petrovsky, *Popular Talks About Psychology*

“Soviet teacher and psychologist Professor Sokolyansky accomplished a remarkable feat of research and education in his work with Olga

Skorokhodova, the deaf, dumb, and blind girl who lost her sight and hearing at an early age. Using special methods of training, he achieved spectacular results... As it turned out, Olga had not only scientific ability but also a literary gift. There are poems in her highly readable book *How I Perceive, Imagine and Understand the Surrounding World*. One can argue about the merits of the poetry but the fact that the author has a gift for writing is indisputable; by the way, this was recognised by Maxim Gorky who corresponded with Skorokhodova and showed great sympathy for her efforts. Judge for yourself:

You came and brought me a bunch
Of sweet-smelling mimosas,
A greeting warm and friendly
Like the beautiful dreams of spring.
Yes, Spring sent you to me
As its sign of dawn...
I wait for a wonderful beginning –
Fragrance, sounds and light...
My soul comes alive
Amid the raging storms,
And, as in my childhood, I'm breaking off
Tender branches of mimosa.

“What is amazing is that this was written by a person for whom the world of colour, light and sound was shut off many years ago, and whom scholars thought it was impossible to teach to speak. A valid system of education and perseverance enabled Skorokhodova to develop her faculties through smell and touch, the so-called sense of vibration and taste, and to compensate to some degree for the missing senses.

“The remarkable phenomenon of compensation of some faculties by others opens up inexhaustible opportunities before every person, immeasurably expanding the perspectives for his development.”

III

The evening approaches. Coolness
Descends dissolving the heat.
But I am not happy.
I like my work by day more.
Olga Skorokhodova

Olga, what are your plans for the future? For the next few years?

I have to write another paper, “The Formation of Perceptions and Concepts in the Deaf, Dumb, and Blind.” It will be combined with my

two previous papers to make up a book entitled *Some specific features of the Deaf, Dumb, and Blind*.

Aren't you thinking of defending a Doctoral dissertation?

First I have to finish the work that I have planned and then I'll see.

I had a reason for asking her that question as I had before me several documents signed by prominent Soviet scientists. One of them reads as follows:

“Esteemed Olga Ivanovna,

“Thank you very, very much for the priceless gift – your remarkable new book. In spite of the two earlier books, it makes engrossing reading and its contribution to psychology is impossible to overestimate. We at the Institute of Psychology were honoured to have you defending your Candidate’s dissertation at our establishment. And it would be an even greater honour if you would defend your new book as a Doctoral dissertation at our Institute. I am aware that the decision rests entirely with you, because any other academic council in psychology is sure to assess your work just as highly as our Institute’s council.

“With profound respect,
“A. A. Smirnov.”

*

Olga Skorokhodova, *How I Perceive, Imagine and Understand the Surrounding World*

“There was only one person who invariably understood me correctly and explained whatever happened to confuse or worry or baffle me. That man was Sokolyansky. When I learnt to write, I took to putting down the questions that interested me and giving the notes to him. So I developed a habit of recording my impressions about the environment. Sokolyansky took my notes very seriously, read them attentively, preserved them and did everything to encourage my curiosity. You mustn’t think my notes were just like you can see them in my published works. Not by a long shot! At first these notes made sense only to those who instructed me. But as my colloquial speech improved, my notes became more coherent.

“When enough of these notes had been accumulated to form a large file, there was a suggestion that they should be edited and then published in book form. Of course, I redrafted my descriptions of some phenomena dozens of times. You see, it is one thing to touch, to perceive, to

'look at' an object with your hands. That is not too difficult. It is far more difficult to describe the object in words exactly as I perceive it, i.e., to give a complete image of the object. When the deaf, dumb, and blind describe sensations, perceptions and concepts in the language of sighted people, one should always bear in mind that their perceptions are received through different sense organs although they are described in the words of people who see and hear. When a sighted person sees a cow from a distance he says: 'I am looking at the cow, it is piebald, and it has large beautiful eyes.' A blind person's description of that cow would be couched in the same words as those used by sighted people, but if he were to describe his immediate sensations and perceptions, he would say the following: 'I have looked at the cow with my hands. It has a smooth, soft coat, I felt its legs and head and found the horns. They felt very hard to the touch.'

"And what can a deaf person say about piano playing? Only one thing: I held my hands on the piano. top and sensed the vibrations from what normal people call sounds...

"I perceived many phenomena. And the more I communicated with people, the more I knew about life and nature by going to places of interest, the richer and more complex became my sensations and perceptions of the external world. And I had that much more difficulty finding the necessary words to describe every individual event. I have no doubt that many of the descriptions in my book will be found wanting in 'artistic terms' by some people.

"My knowledge grew year by year and my literary style improved. The reader may or may not believe it, but I must say that I owe all my knowledge and literary speech to reading, above all, to the reading of fiction. Reading is the salvation for blind people or deaf mutes, and especially for the latter. My teachers will tell you how to teach a deaf, dumb, and blind person to read and write. I want only to tell you that I think about reading as the only means of salvation for a multiply handicapped person such as myself. When those who are in charge of the instruction and education of the blind, the deaf, or the deaf, dumb, and blind come to understand this, their teaching will progress much faster than it does today.

"...During our visits to museums, I could not carry my Braille typewriter about with me in order to make note of what attracted my attention. For that purpose, my sighted guide carried ordinary notebooks. I

told him what to put down and later translated it all with the Braille typewriter at home. It was enough for me to remember one characteristic feature of a statue I had surveyed to restore the whole image of it in my memory.

“I resorted to such brief notes all the time I was working on my book. With such ‘memoranda’, I could spend whole nights describing various facts and phenomena.

“I preferred to work at night because nobody disturbed me then; my thoughts throbbed freely and begged to be committed to paper.”

*

Olga Skorokhodova, *On Aesthetic Perceptions
of the Deaf, Dumb, and Blind* (unpublished)

“When I appear before various audiences, I am often asked the questions: How do you perceive music? Who are your favourite composers? Do you still write poetry? How do you perceive sculpture? Do you like nature?

“I thought it would be best to answer these questions in some detail in a magazine article. The article deals with the perception and concepts of the multiply handicapped, i.e., people who are simultaneously deprived of such important means of analysis in the cognition of the external world as sight and hearing.

“In my youth, I read many books about Russian and foreign classical composers. Reading about Glinka’s life, I was struck by the words he uttered at the age of eleven or twelve: ‘Music is my soul.’

“After reading these words I thought: ‘Music is out of my range, so let poetry be my soul.’

“I became so fond of poetry that in my youth I could not live a single day without it. I read many books of verse – Russian, Ukrainian, and the works of the world’s greatest poets. I read it myself in Braille and I had printed books read to me by anyone who was able to communicate with me (either by finger alphabet or by drawing flat letters on my palm).

“While I was sometimes at a loss for words to express my poetic aspirations, I realised that my serious interest in poetry would not be a waste of time, that sooner or later I would want to write myself. Of course being inexperienced and unversed in poetry, I thought that it was easy to write poetry – all you had to do was rhyme the words.

“I tried to write verse unaware that I was imitating Pushkin, Lermontov, Blok or even anonymous authors of various songs. I can’t remember the first verses I wrote. Perhaps some of them are still in my archives, but they are so poor and inconsequential that it’s not worth the effort trying to find them.

“I am sometimes asked how I learned to write poetry.

“Nobody taught me to write verse, and nobody instructed me in versification. I began writing poetry because I liked the rhythm of words and the harmony of rhymes. It happened before I began to use manuals of Russian language and literature. Poetry truly became my ‘verbal music’; I read it often and in large quantities, and the very fact that I could feel and understand it in my own way was a source of pleasure to me.

“My relatives told me that when I was a toddler, I liked to listen to people singing songs or playing the *balalaika* or the accordion. After I went deaf, I became fond of poetry which was most accessible to me in terms of rhythms, harmony, vivid portrayal of human nature, emotions, man’s aspirations and struggles. We blind and deaf people find not only colourful and imaginative descriptions of nature in poetry but its rhythmic image, as it were. People who are not deaf can find all this in music, but we find it in fiction and especially in poetry.

“...When I was living through a difficult period of doubts and reappraisal of the surrounding world I was given Ragozina’s book, *The History of One Soul*. From that book I learnt that as a girl, Helen Keller behaved rather like I did. She touched everything with her hands, was attentive to different smells, and actively sought to perceive, imagine and understand the environment... And so I came to believe that I was surrounded by material reality and that I was perceiving it adequately. That discovery was crucial for me. It flung open the doors and windows of my imaginary ‘dark cell’ letting in smells, warm waves of light, vibrant sounds, and even nebulous perceptions of the visual and audible world. Reading about the life of Helen Keller and the unique experiment of her education gave me strength and confidence that I too could find a place in life.

“In her reminiscences about her childhood, Helen Keller writes that she liked to perceive the sound of the surf. She also liked to ‘listen’ to the cat purring with her hand, to ‘hear’ barking of dogs, the naying of her pony, the crowing of the rooster, and even the songs sung by her mother and nurse. Imitating them, Helen herself tried to ‘pur’ and lull her dolls to sleep. The pupils at the school for the deaf, dumb, and blind in Zagorsk

also like to 'listen' to different sounds and knocks with their hands. They themselves produce lingering sounds, which gives them pleasure because they imagine that they are singing just like normal people. That is an interesting psychological trait of the deaf, dumb, and blind.

"...Sergei Sirotkin, Yulia Vinogradova, Yuri Lerner, and Natasha Korneyeva – the senior pupils at the Zagorsk school, also want to 'listen' to music. Natasha has found a vehicle for expressing her feelings and images: she writes poetry in which she tells of the things that she can perceive and understand. She writes about nature, the flowers, the cool of the evening, the sun rising over the river or the sea. Natasha is a serious and thoughtful girl, who makes for good company; she is fond of literature and takes an interest in philosophy.

"...Yuri Lerner also tried writing poetry, but his particular gift is different. He was interested in sculpture, and with the help of his relatives and teachers he developed that interest to such an extent that he managed to enter the Krupskaya People's University as a correspondence student of fine arts."

*

Olga, as far as I can see, you are not going to give up your research work. What about your archives? When will you get around to sorting them out? There must be a lot of interesting documents there.

Perhaps when I retire I'll attend to the archives. But come to think of it even then I probably won't have any time for them. No matter what happens to me, I will give all my strength to the deaf, dumb, and blind. They are my whole life...

*

I passed through dark and storms,
I looked for the road to light,
To a rich creative life...
And I have found it! Remember that!
Olga Skorokhodova

*

What does it mean to be "recognised" in the academic community? At any rate, it is not the roar of kettle drums and tossing the triumphant scientist up in the air.

“We often and quite rightly lament that our Academy does not conduct enough basic psychological and educational research aimed at solving cardinal problems. At the same time, we don’t pay enough attention to work of exceptional significance that has been going on quite some time. I am referring to the studies of Alexander Meshcheryakov and his associates. It is hard to imagine another experiment that can provide answers to such important questions about the motive forces and laws of spiritual development, an experiment that can match it in purity, validity and conviction.”

I heard these words at the meeting of the Presidium of the USSR Academy of Pedagogy in February 1973. The speaker was Alexander Zaporozhets, Full Member of the Academy and Director of the Pre-school Education Research Institute. Zaporozhets had just made a report on his work, and then one after another, scientific luminaries, prominent educators and psychologists took the floor to speak about those aspects of Meshcheryakov’s work which were most important for them.

Zaporozhets seemed most intrigued by the prospect of observing the emergence of the child’s mentality in its pristine form, free of external influences.

“It is exceedingly difficult if not impossible to study these things in a normal child,” he said. “No matter how thoroughly and cleverly you develop a system of influencing such a child, it is constantly exposed to a vast number of spontaneous and unrecorded factors which often act without the teacher’s being aware of them.

“In the case of deaf, dumb, and blind children, because of a tragic freak, we have a normal human brain which possesses the potential for development. However, this potential is not realised because all normal forms of social influence within the family and in the peer group are ‘switched off due to the absence of sight and hearing, those two main channels of communication. And until a special system of instruction for such a child is devised, the child will not develop. Thus every step in the emergence of the human mentality is observable.

“I remember the day when Sokolyansky first showed me and Leontyev a deaf, dumb, and blind boy who had just been brought to the clinic. It was a depressing sight. There was nothing human about the expression of his face, and he couldn’t even walk erect like a normal child. But after a couple of years, a dramatic change had taken place. The teachers got through to the child, penetrated into his dark, silent world, brought him

within the human experience, and the child began to develop human personality traits that could reach heights as great as in the case of Olga Skorokhodova or the four young people who are now studying at the University.

“Thanks to the work of Meshcheryakov and his associates, we can observe this process. Clearly, these studies have relevance beyond the study of the handicapped – they are important for the whole of psychology and education and, as far as I can see, for philosophy.”

Another speaker at the meeting of the Presidium was Daniil El'konin, Corresponding Member of the Academy. Like Zaporozhets, he knew Professor Sokolyansky and had followed his work with deaf, dumb, and blind children since the twenties.

“Meshcheryakov's work provides us with a psychological development model extended over time like film in slow motion,” said El'konin. “It can assist us in making a detailed analysis of many complex phenomena. For example, we at the Institute of General and Educational Psychology are wrestling with the problem of the interaction between child and adult, challenging the theory of Piaget who defines and explains the whole process of child development in terms of conflict with the environment, and completely ignores the role the adult can play in the process. We think that his theory is methodologically false, and now we have experimental proof of our views. Now we can see in the behaviour of a normal child the phases of development so clearly pronounced in deaf, dumb, and blind children such as various types of concrete activities when the adult starts doing something and the child finishes it. We have been able to observe all this in normal children thanks to the detailed picture drawn by Meshcheryakov in his investigations of deaf, dumb, and blind children.”

Among the other speakers at the meeting of the Academy's Presidium was its President, Vsevolod Stoletov. Summarising the discussion, he made a remark of which I took particular note. The names of Laura Bridgman and especially Helen Keller are known to millions of people through books, plays and films. But very few people know about Olga Skorokhodova, the Moscow University students, or the work of Sokolyansky and Meshcheryakov. “This situation must be rectified,” said the President, “we must use the mass media to tell people about things that are extraordinarily important for all of them. There is all the more need to do this, because there are several approaches to the study of the hu-

man psyche. We are convinced that the path taken by Meshcheryakov in his studies is the correct one.”

Digression Four

From a Book by Alvin Apraushev

“Simultaneous loss of sight, hearing and all possibility of communication has a stunning effect even on adult. A person’s psyche is on the brink of catastrophe. A person deprived of sight, hearing and communication for six days shows symptoms ‘characteristic of psychoses associated with the disintegration of a personality’. But if an adult suffers from irreversible loss of sight and hearing and is consigned to darkness and silence to the end of his days, or if such a misfortune befalls a child from birth and it must live its whole life under a ‘dark soundproof dome’? Could the adult retain his intellectual level and would a congenitally deaf, dumb, and blind child become a full individual?... Are there ways to conquer the tragic consequences of loss of sight, hearing, and speech? Yes, there are. It appears that the ‘dark soundproof dome’ is not impenetrable. But to accomplish this Herculean labour, deaf, dumb, and blind adults must be instructed with a view to forming special means of communication to link them to the rest of humankind once again. With children who are deaf and blind from birth, and consequently also dumb, the first task is to mould a human mentality artificially. Today this can be done, but the problem of the deaf, dumb, and blind does not end there. Even if the intellectual disintegration is prevented in time and the instruction of the deaf, dumb, and blind from childhood is successful the question of the place of the deaf, dumb, and blind in society still arises. The uninitiated sometimes argue in the following way: ‘Why teach them? What use are they to society? They can’t do anything anyway. It’s just money down the drain. Their place is in a home for the disabled.’

“This is a utilitarian, but basically inhumane approach. However, the question must still be answered. What, indeed, can the deaf, dumb, and blind do apart from acquiring knowledge and education through the immense efforts of their teachers? How will society benefit from their education, and, most important, would it not make them still more miserable by giving them an intellectual awareness of the unusually cruel way in which nature has treated them? Would they not find themselves in the position of Ichtandr in the famous Soviet book *The Amphibious Man*, by Alexander Belyayev? In the story, Ichtandr was given a fish’s gills but was lonely among the fishes. The question is not only one of what the

deaf, dumb, and blind can or cannot give society. The problem should be viewed in a broader context, including the moral aspects of the issue. To form a human psyche in a deaf, dumb, and blind child, to give it an education and to fail to offer it an opportunity to employ its intellect and to organise its social communications and labour activity means to pervert a basically humane idea. Such a person, aware of his helplessness and uselessness, would feel left out of society, and that would be a painful personal tragedy. He would inevitably degenerate as a personality...

“The prime task, therefore, is to organise communication between the deaf, dumb, and blind and the people around them. But to gain awareness and maintain stable social links, it is not enough for the deaf, dumb, and blind to possess a developed intellect and a special means of communication. The people around them must also have an interest in communicating with them. Without such an interest in communication, social links tend to be unstable. What can cement these links? On what basis can they develop? Special sociometric experiments and the study of the lives of adults so afflicted (Olga Skorokhodova, Maria Sokol, Ardalion Kurbatov, the graduates of the Zagorsk school for deaf, dumb, and blind children) have shown that social rehabilitation must be based on diversified labour and the entry of the deaf, dumb, and blind into a work situation. Means of communication fail to develop outside a group of people who work together, and socialisation is unthinkable without such communication.

“But perhaps a more sensible approach would be this: for a deaf, dumb, and blind person to be useful to society, to justify the cost and effort involved in his instruction, and to provide him with constant employment, wouldn't it be better to teach him some elementary skills, for example, making brooches or wicker baskets? The answer is no. The problem cannot be solved on such a narrow basis. Neither society nor the deaf, dumb, and blind person will gain anything from such an approach. Let us imagine that a deaf, dumb, and blind person is doing some productive work at an enterprise and bringing some material benefits to society. He earns his keep, as it were. But can such a state of affairs satisfy the handicapped person or the people close to him? Of course not! If a deaf, dumb, and blind person is trained only for a narrow specialty he becomes helpless at home and must be cared for by other people. It is possible that the effort involved in caring for such a person would be much greater than the effort he exerts at work. In that case, speaking in utilitarian terms, ‘the game is not worth the candle’. And on a moral plane

as well, the handicapped person will not be happy with this dependence on the people who care for him and will be haunted by a feeling of helplessness all his life. So he becomes a lifelong burden for his relatives.

“For such a person to be a truly useful and full member of society, he must have diverse working skills, a wide range of knowledge and interests, and a feeling of social responsibility. In everyday life, a deaf, dumb, and blind person must not only be able to take care of his own needs but to help other people in whatever way he can. The interest of the people around him to get help from him stimulates communication and the further study of the special means of communication, which promotes the socialisation (the acquisition of universal human experience by the individual) of the deaf, dumb, and blind.

“Socially useful labour precedes the preparation of deaf, dumb, and blind children to acquire a trade. It enables them to develop various labour skills and equips them for future independent life and work. But the deaf, dumb, and blind need socially useful labour not only to form various skills, which brings to mind a wise statement made by Meshcheryakov. He wrote in this connection: ‘To form an image of a thing reflecting its objective properties, the individual must perform a practical action with it. Simple perception of an object without practical handling of it offers no opportunity to gain an insight into its essence.’ That proposition is fully in accord with the tasks facing the teachers of deaf, dumb, and blind children as regards their involvement in socially useful labour. That involvement enables these children to understand the essence of human relations, to gain a practical knowledge of various aspects of human activity, to expand their knowledge of the surrounding world, and to develop harmoniously.

“What the President of the USSR Academy of Pedagogy Stoletov said about the role of physical labour for the harmonious development of a healthy child fully applies to the deaf, dumb, and blind because Stoletov rightly ascribes the basic role in the cognition of the world not to sight and hearing but to the tactile sense, to the acting hand. ‘In accordance with age-old habit,’ he writes, ‘people promptly name sight, hearing, and even smell and taste as the channels linking man’s brain with the external world. But all too often they forget about the tactile sense, about the hand. Meanwhile the human hands play at least as big a role, and possibly a bigger one, in the cognition of the world, and especially of nature, as do the eyes and ears. Manual work is one of the most powerful channels of the human brain’s sensory communication with the external world. A

person not engaged in physical labour deprives himself of many opportunities of knowing about the world and developing his thoughts, and thus curtails his chances of harmonious personal development.’

“The pupils at the school for the deaf, dumb, and blind take part in socially useful labour from the very beginning of the school curriculum. At that stage, their linguistic development is still at a very low level: they are only learning to communicate verbally by means of the finger alphabet. Thus, verbal exhortations and explanations of various operations are not always within their grasp. This makes the task of involving these children in labour more difficult. But such concrete labour activity allows for the creation of conditions which generate a natural need for communication...

“How much these children know about the practical aspects of life depends to a large extent upon how adequate their idea about work in different trades is and how actively they are involved in this work themselves. That is why at the boarding-school they have many kinds of economic activity: rabbit and poultry breeding, gardening in the greenhouse and flower-beds, carpentry, sewing, and shop work. All this provides the pupils with opportunities to work.

“The skills and habits of socially useful labour are formed in the process of concrete collaboration between the instructor and the trainee. Both in teaching the children to take care of their personal needs and in teaching them to be concerned for socially useful labour, there must be a specific amount of help on the part of the instructor. For example, in showing the pupils how to make flowerbeds, the teacher must first perform the operation with the spade, encouraging the child to feel how the action is done with its hands and then to repeat it along with the instructor. Gradually the instructor becomes less active and encourages the pupil’s initiative. Then joint actions are carried out in the course of which the instructor helps the pupil with the more complex manipulations of the spade: turning the layer of turf and breaking it. To form skills in handling tools, the deaf, dumb, and blind must develop the so-called *instrumental tactile sense*. The first instance of this development is when the child learns to eat. With time, this sense acquires growing significance for the child. It needs this tactile sense to find its way with a cane, to write in Braille, to use both the ordinary and Braille typewriters, and to handle any implements of labour: spades, rakes, forks, or hammers, and to operate machine-tools. The instrumental tactile sense is one way of compensating for the lack of visual control of one’s own actions. Thus, in working with

a spade, the deaf, dumb, and blind use the tactile instrumental sense to judge the hardness of the soil, the depth to which the spade is plunged. Deaf mutes who are completely blind must feel what they have done every time to learn to use their instrumental tactile sense in working with the spade. They must control the plunge of the spade into the earth and then repeat the feeling movements to determine how much soil they have scooped up. Thus they work very slowly and their labour productivity is low. They must be specially taught the instrumental tactile method.

“Should one train the deaf, dumb, and blind, and can they be useful to society?”

“In manual trades such as assembling TV sets or electric cords, stamping, and packaging deaf, dumb, and blind workers are in no way inferior to their blind colleagues. They are generally extremely painstaking and diligent, working with great concentration, so most of them fulfil their production quotas by 120–150 per cent. Thus, given the correct choice of profession, there can be no doubt about the productive capacities of the deaf, dumb, and blind.

“In intellectual pursuits, too, we have more than just the achievement of Skorokhodova. The successful studies of the four deaf, dumb, and blind students at Moscow University elicited this comment from Full Member of the USSR Academy of Pedagogy, Alexander Luria: ‘If the power of the motives that drive them were spread equally among all our ordinary students, if our sighted and hearing students worked with the same sense of purpose, using all the potential they have, they would be able to move mountains...’ Despite the fact that they are busy with their studies, all four students do a lot of community work within their own collective and at the Zagorsk boarding-school.

“The life of a deaf, dumb, and blind person can be just as varied, interesting and just as useful as that of normal people. But that is not all. I would like to pay special attention to the unusual fortitude and single-mindedness they must possess to overcome their handicaps. Each of them can be a model of tenacity and courage.

“Man can overcome any obstacles – this is the message such people convey with the whole of their lives.”

Alvin Apraushev, *Vocational Education of Deaf, Dumb, and Blind Children*

From an Article by Raisa Mareyeva

“Through his sense organs a person perceives and forms an idea of the surrounding world filled with a multitude of objects possessing the most diverse properties. The role of various sense organs in the cognition of the world was described by the famous Russian physiologist Ivan Sechenov. He noted that ‘...the eye has seven different reactions and as many different categories into which it sorts properties (colour, flatness, size, distance, direction, corporeality and movement). The tactile sense of the hand and the body has at least nine different reactions corresponding to warmth, flatness, size, distance, direction, corporeality, compressibility, weight and movement. For hearing there are only three reactions (duration, pitch and timbre). Finally, the senses of smell and taste have only one type of reaction apiece.’

“Thus, according to Sechenov, the senses are arranged in order of their importance in analysing the surrounding world as follows: the tactile sense, sight, hearing, smell, and taste. The tactile sense remains the leading one in the instruction of the deaf, dumb, and blind and provides the main lever in this process. However, even though such an important analyser as the sense of touch is intact, if sight and hearing are impaired to a large degree or completely lost, the inflow of information from the outside is sharply reduced, and a person cannot orient himself correctly in the constantly changing world without special training.

“A person can be born deaf, dumb, and blind, or it can occur in the early years before the child has learned to speak. In either case the child is dumb, which further isolates it from the outside world. If hearing is lost during the period of speech acquisition, i.e., between the ages of two to five, speech quickly disintegrates without special training, and the child also becomes dumb.

“Deaf, dumb, and blind children develop differently not only from normal children, but also from other handicapped children, for example, those who are blind or deaf only.

“A child with normal sight and hearing becomes acquainted with the surrounding world and the objects in it quite early. In the first months of life, it develops complex forms of perceiving and distinguishing objects. Preschool normal children do a lot of building, modelling, and drawing, and in the process actively learn about the different qualities of objects: form, size, colour, and spatial position. That is why such a child can select, name, and depict various concrete objects.

“Things are very different for a deaf, dumb, and blind child. Thus, while the normal child draws-heavily on experience for intellectual and physical development relying on active use of all the sense organs, a blind child develops using its hearing to establish contact with the surrounding world, and a deaf child uses its sight. Meanwhile a deaf, dumb, and blind child, deprived both of sight and hearing from early childhood, is practically doomed to complete isolation from the external world. As a result the development of all its psychic processes (sensation, perception, memory, etc.) is stunted.

“The world of such a child is initially highly circumscribed, usually limited to the bed or room where it stays constantly. In many cases, in an effort to keep such a child from hurting itself or out of pity, relatives restrain the child’s movements and do everything for it, as a result of which the child’s muscles become weak and its hands fail to acquire the habit of feeling objects.

“Observation has shown that the movement of an untrained deaf, dumb, and blind child’s hands is chaotic and has no exploratory purpose. As a rule, such a child handles an object purposelessly, banging the table with it, bringing it to its lips or head, putting it into its mouth, shaking it near its face, or throwing it on the floor. Chaotic and aimless, such movements provide no food for thought and do not help the child form the image of the objects it touches.

“Thus the deaf, dumb, and blind child gradually becomes sedentary and inert or, on the contrary, restless and incapable of displaying a specific interest in anything. Its natural need for movement is as a rule reduced to acquiring undesirable stereotyped movements (for example, pendulum rocking of the body or circling in one place). The fact that the parents artificially restrain the child’s movement, the formation of meaningless repetitive motions, and the confinement of concrete activity to the most elementary manipulations does great harm to the child’s development as a whole.

“Professor Sokolyansky, a well-known Soviet specialist in educating the handicapped who spent many years studying and training deaf, dumb, and blind children, particularly in the early phases, wrote: ‘A deaf, dumb, and blind child has a normal brain and the potential for full intellectual development. But while it possesses that potential, it can never achieve any level of intellectual development by its own efforts. Such a child will remain an utter cripple for life without special instruction.’

“Only the child’s cognition of the world through special training will enable the child to avoid that sad lot...”

Raisa Mareyeva, “The Education and Training of Deaf, Dumb, and Blind Children at Home”

“He who walks slowly but follows the right path gets to the destination quicker than he who moves quickly along the wrong road.” The old Confucian saying is only partially true. It is also important to know *who* is following the right path. When the Academic Council of Moscow University’s Psychology Department discussed the difficulties encountered by the four multiply handicapped students in their studies, someone suggested that last-year students be asked to translate lectures into Braille for them and to carry out other work for them. “By no means,” said Professor Leontyev. “When you are dealing with people as infinitely unfortunate as they, but who nonetheless have enough strength to overcome their misfortunes, you cannot treat them in a stereotyped way. The people working with these four heroes – and they are heroes in the full sense of the word – must be exceptional people.”

... It is ten o’clock in the evening, but Ilyenkov is still sitting in the corridor talking with Sasha Suvorov. Meshcheryakov was still there, too. He looked pretty tired, but the three young people have thousands of questions for him that needed answers. “Once Yura Lerner waylaid Meshcheryakov,” Ilyenkov told me, “And asked him, ‘Do you think I can be happy?’ Meshcheryakov was momentarily at a loss. But being a teacher he replied cautiously: ‘What do you yourself think?’ ‘You know,’ replied Yura, ‘I am happy in the most direct and precise meaning of the word. To be unhappy means to lose something that you used to have. But I had nothing and I am getting something new every day.’

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...Evald Ilyenkov, Doctor of Philosophy, is sitting on the stairs next to a deaf, dumb, and blind boy. They are talking, and it seems something valuable for both of them flowing from hand to hand. Meshcheryakov’s research has not found that humans possess an orientation reflex – and that is very important for his field. But Ilyenkov, too, has gotten some help from these deaf, dumb, and blind children in resolving the old philosophical argument between Diderot and Helvetius, and between Spinoza and Descartes – the argument about the nature of the human soul and how it is created. Ilyenkov’s judgments are even more categorical than those of Meshcheryakov. He is convinced that a person’s psyche

inherits nothing. The chromosomes carry no code for memory, character, affect, no talent for music or poetry. We cannot blame our laziness, light-heartedness or selfishness on heredity. All this comes to us from the environment, the people around us, objects, and sometimes, even very inconspicuous artefacts. Man is a totally social animal. This point of view has been the subject of lively arguments for many years, and not surprisingly, Ilyenkov devotes every free moment to his “kids,” as he calls the four students. He was probably the first professor of philosophy to be able to cite his own experiments in a scholarly discussion.

He writes in one of his works: “Work with the deaf, dumb, and blind offers much valuable and experimentally impeccable material for the solution of such a problem as the shaping of the image of the external world.” And the word “experimental” crops up in the article more than once: “This problem is of primary significance not only for the general theory of psychology but also for epistemology and Logic (with a capital L) and even for the theory of reflection. Facts related to the perception of the external world by people born blind has predictably been the focus of fierce discussions among philosophers for the past three centuries. Suffice it to say that such thinkers as Berkeley and Locke, LaMettrie, Condillac, Diderot and Feuerbach crossed swords over the interpretation of such factors, or rather over their philosophical implications.”

Ilyenkov also took part in this argument and made tangible contributions. He was able to put new experimental data on the scales that have been tipping first one way and then the other for centuries. “The development of a deaf, dumb, and blind child,” he wrote “also gives the scientist a wealth of material for solving concrete psychological, philosophical, and genetic problems, demonstrating in pure laboratory conditions as it were (for they can be fixed quite rigorously), all the crucial stages in the evolution of the human mind, by pinpointing appearance of such phenomena as self-awareness, reflection, imagination, intuition, thought (in the theoretical sense of the word), moral awareness, appreciation of beauty, etc... In this case, the shaping of a specifically human psyche is extended in time, especially in the early – and decisive – stages so it can be examined at length.”

Equipped with modern technology and research techniques, Ilyenkov gave an interim conclusion to the argument of the great thinkers of the past (in accordance, of course, with the present stage of scientific knowledge about the human psyche). Sight and hearing, the two key analysers of reality, seemed to be the only senses enabling one to form images of

surrounding objects. If these receptors – the organs for perceiving light and sound – are absent, the person has no idea of the particular corner of the universe in which he happens to live. Observation of human behaviour would seem to bear out that point of view. But a “normal” person is too complex an object for even ultra-modern forms of scientific investigation. And only “in the education of the deaf, dumb, and blind do we encounter not an exception, but an exceptionally convenient opportunity for observing and analysing the development of the normal human psyche. The fact that the higher mental functions can be formed in the absence of sight and hearing shows that these functions are independent of the senses but are on the other hand, dependent on various genuine conditions and factors in which sight and hearing play no more than a mediatory role.”

The above is quoted from Ilyenkov’s formulation of the genuine conditions and factors creating the human soul. “The facts revealed by the investigations of Sokolyansky and Meshcheryakov favour the view that all physiological mechanisms catering for the specifically human psyche are programmed not within but outside the individual, in his ‘inorganic body’ as philosophy has described the substantive body of civilisation.”

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Evald Ilyenkov was bold enough to come forth with such an untraditional solution to the problem of how the mind is formed, and thus entered into the open-ended dispute taken up by Berkeley, Diderot and many other thinkers of the past. The argument, which was sparked off by a particular episode, had to do with the basic concepts of philosophy, which accounts for the passionate way in which it was pursued.

The notorious Bishop Berkeley, who managed to attack almost all the advanced schools of thought of his time, published a treatise called *Essay Towards a New Theory of Vision* in the early eighteenth century. In this work, he challenged anyone to argue with him about the classical problem known as the problem of Molinet. It seemed innocuous enough at first: if a child born blind suddenly gained its sight, would it recognise familiar objects? Would it be able to tell a square from a circle? Berkeley maintained that the “object of touch” and the “object of vision” are two unconnected things grouped together into a single “entity” only through misunderstanding or habit. In his frame of reference, a blind person who gained his sight would be unable to distinguish visually the objects that he

knows well by touch. And an operation carried out at the time to remove a cataract seemed to offer irrefutable (experimental!) proof of Berkeley's theory.

But it followed from his system that the concept of images is a fiction and that our sense organs reflect unrelated aspects of objects. The materialists found it hard to reconcile themselves to such a capital loss, and forty years after the publication of Berkeley's essay Diderot attempted to salvage the concept of images. In his *Letter About the Blind for the Use of Those Who See*, he introduced an additional condition into the Molinet problem which modified the solution given by Berkeley. If the blind man who gained his sight were a mathematician, argued Diderot, he would be capable of recognising objects familiar to him by touch and could tell a circle from a square, because a mathematician was capable of understanding the general and permanent relationships representing the same object both by vision and by touch. The idea of an image was reinstated, but at the cost of complicated geometrical reasoning and logical operations. So philosophers continued to be haunted by Berkeley's simple, "vivid" arguments.

"The artifice of Berkeley's argumentation which gave materialist philosophy and psychology so much trouble apparently consists in the replacement of the psychological and epistemological problem of the image with a purely physiological problem," writes Ilyenkov. "But if one looks at the mental development of the deaf, dumb, and blind from a broader angle than just the physiological factors, it will amount to an *experimental* confirmation of the materialist concept of image, the confirmation that Diderot was lacking in his argument with Berkeley. Namely: developed deaf, dumb, and blind persons have an adequate image of external (and very complex) objects identical with that of people who perceive the external world mainly through vision. Suffice it to observe the remarkable precision with which a deaf, dumb, and blind girl, Yulia Vinogradova, reproduces in plasticine the shape and proportions of an object which she feels, and the object can be as complex as a village house with all the cooking utensils or the outline of a ravine in which she walked."

Ilyenkov did not emphasise the word "experimental" in his article – I have done so with his consent. Ilyenkov did not find the combination of the words "philosophy" and "experimentation" at all surprising.

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“...The parts containing the basic material of the experiment read like a fascinating novel, and when it ends you are sorry that it ended so soon. The impression of the thrilling narrative is enhanced by two factors: the process of the emergence and development of the mentality of a child from the initial, usually very sad state, sometimes even horrible and inhuman, into a human being thirsty for knowledge of the world, for purposeful work, and friendly relations with other people – all this is described in the book as a sympathetic account of the lives of concrete individuals who have been cruelly treated by life and have been saved by humane and dedicated teachers. The other factor is the language of the narrative, not that Meshcheryakov’s work is remarkable for literary elegance or any particular style, but the narrative flows so that you simply do not notice the style: you become immersed in the discussion of the views and problems analysed and see the events being described completely forgetting that it is not the events themselves you are witnessing but only the story of them.

“But the main thing, of course, is the content. It tells how the mentality of a child and its psyche reduced by major and sometimes repeated misfortunes, not just to nothing but rather to a distinctly negative value, slowly and at first mistrustfully comes to life and then blossoms, tended by the careful, confident, friendly hands – literally – of its instructors. This picture of a human spirit gradually arising from the ashes of catastrophe makes an overwhelming impression. And the demonstration of how it takes place undoubtedly has the most basic general psychological and even philosophical implications for anyone who has ever pondered on the spiritual life of man.”

This assessment comes from Pyotr Galperin, Doctor of Psychology and a Moscow University Professor, very well known in the psychological community. I managed to wheedle from Meshcheryakov a large file of typewritten pages clipped into items running five or six pages. These little pieces all begin in approximately the same way, so I always look at the end where each time I see the names of major specialists, world-famous scientists whose works I have read and reread, but have, on occasion, found their dry academic style formidable. Truly Meshcheryakov has performed a miracle if the ordinary reviews of a Doctoral dissertation, of which dozens if not hundreds are written, suddenly blossom forth with poetic emotion.

“I have read Meshcheryakov’s dissertation on ‘Deaf, Dumb, and Blind Children (Psychological Development in the Process of Education)’ – 593 typewritten pages plus 235 pages of supplements – presented as a Doctoral dissertation in psychology. I did not just read it, but was overwhelmed by what I found in this dissertation. It is a truly outstanding scientific discovery, a major, profound theoretical generalisation that sets an important trend not only in education and psychology but also in philosophy (including epistemology and logic).

“The vast amount of material accumulated by Meshcheryakov over his many years of educating deaf, dumb, and blind children and adolescents stimulates theoretical thought in itself. But it acquires particular importance in light of the analysis offered by the author. As I see it, we have here an inquiry into a problem, exceedingly complex and practically unique, where such factors as intuition, discovery, and in general the essence of the creative intellectual process of the child and adolescent are presented in their pure form because nature itself seems to have put insuperable barriers in their way to knowledge of the objective world. The skill exhibited by Meshcheryakov as a teacher, just his ingenuity in overcoming the obstacles confronting his pupils, would have been sufficient reason to confer on him the degree of Doctor of Science. But Meshcheryakov did not confine himself to describing and classifying the material he had collected and the experiments he had staged; he set out to summarise this rich and extremely humane experiment theoretically and grounded it within the general principles of psychology and philosophy. This lends particular significance to the work accomplished in revealing a new and unexpected approach to the study of an area of the human intellect that is exceedingly complex and defies investigation by ordinary methods and means – the area of spiritual, technical, and artistic creativity. I will not dwell on specific propositions contained in the dissertation here because I intend to be present at the defence and to speak there. I have written this review in case I am out of Moscow at the time of the defence. In such an event, I would like it to be read at the defence to express my complete confidence that the Academic Council will support my proposal to confer the degree of Doctor of Science on Meshcheryakov for this, his major, brilliant and noble work which would be to the credit of any scientist.”

“Academician B. Kedrov.”

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I leafed through the reviews. The signatures were familiar. Here is one signed by Alexei Leontyev, Dean of the Psychology Department of Moscow University. But my eyes skipped over names and titles in search of a small note on a scrap of paper; and I still couldn't find it.

I came to the end of the official reviews and moved on to the transcripts of the comments in the discussion during the defence of the dissertation. Not all of them were recorded, but some were taped by Meshcheryakov's associates, typed out and filed. Some speeches were serious and others jocular, but all were brief, some only a few sentences. Yes, I was getting warmer in my search.

And sure enough, soon I stumbled on a real gem. I had asked Ilyenkov many times what he said at the defence of Meshcheryakov's dissertation, but each time he said he didn't remember. But now I discovered that his speech had been put on tape.

"I consider it to be an honour to speak at this defence which is a milestone not only in psychology but in science in general. For we are dealing with a fundamental principle of the materialist world-view, with genuine materialist conception of the human psyche. I need hardly argue that a materialist conception of history is impossible without such an understanding. Galperin has said that the dissertation would play a major role in the confrontation between the two trends in psychology. I would go even further and say this: the dissertation provides decisive arguments not only for materialist psychology in its struggle against pseudo-materialist attempts at explaining the human psyche, but also to the philosophy of dialectical materialism in its struggle against any attempts to undermine the materialist conception of history or the principles of Marxism-Leninism as a whole. This is the relevance of Meshcheryakov's work. And a great word of thanks is due to him for that."

The remarkable thing is that Ilyenkov, usually a spellbinding speaker, preferred to confine himself to only a few sentences on that occasion. Perhaps that is how one should speak of friends on official occasions... And there at last was the note I'd been looking for!

"Congratulations on your triumph, you absolutely deserve it.

"You have found yourself, and you have enough work for a lifetime, and that is an assurance of great success."

The note is indeed on a scrap of paper but it is written in the calligraphic hand of a person used to orderly thinking. The words “triumph,” “absolutely deserve” and “have found yourself” are carefully underscored. The note is signed “Luria.” Alexander Luria guided Meshcheryakov in his academic career and throughout his Candidate’s dissertation, but later, as often happens in the relations between teacher and pupil in science, their paths diverged.

As I held the little personal note in my hand, a scrap of paper dug up from amongst dozens of pages of official documents, I couldn’t help thinking about that common human kindness which can be an instrument in gaining knowledge about nature, an instrument more powerful than any cyclotron.

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“Alexander Luria is a very kind man. I have always felt that, but as you grow older you grow wiser and I did not really understand the full extent of his kindness until we had been acquainted many years.”

This is how Meshcheryakov spoke of his teacher, Luria.

“We worked together at the Burdenko Institute of Neurosurgery and studied the localisation of mental functions in the brain. It so happened that both of us had to leave the Institute. We came to the Institute for the Study of the Handicapped. That was in 1952, and we did not expect to stay there long. We did research on mentally retarded children. I duly wrote annual reports and did everything as we had agreed, but I wasn’t carried away by the problems of the mentally retarded.

“Sokolyansky worked at the same Institute. He was already old and battered by life, having twice had to interrupt his research for long periods. He had just one teacher and only one deaf, dumb, and blind girl, Yulia Vinogradova at his laboratory. You saw her in Zagorsk, she now speaks fluently and is a top-notch seamstress; her handiwork can be bought at Moscow department stores. Of course I was aware that the concrete basis for Sokolyansky’s experiments was poor, but his idea of studying the human psyche in its ‘pure’ state, of moulding it with your own hands was growing on me. I was fascinated by the thought. I volunteered to help him. As a matter of fact, I was his only assistant and all my thoughts and my time were devoted to work with the deaf, dumb, and blind children, although officially I worked at the laboratory for the mentally retarded.

“I don’t know if Luria felt bitter, but he never admonished me or tried to prevent me from working with Sokolyansky. He even helped us as best he could.

“We would not have survived without his help. Sokolyansky died in 1960. He was over seventy. A year later, a laboratory named in his honour was set up. Initially, of course, there was only the name. We had yet to get it off the ground. They began to bring us children although we had no in-patient facilities and could only help the parents by giving them advice. But we saw human beings who were in a desperate situation, and we felt that a special school had to be set up for such children. We applied to various government bodies.

“In 1962 we were given a building in Zagorsk and the right to hire one teacher and two instructors for every three pupils, which worked out to one adult per child. We set about training the teachers. But what should we teach them? Everything was new and unclear. The members of our Institute each lectured to them on the subjects they knew. We taught them dactylology – finger spelling – the Braille alphabet for the blind, typing on Braille and ordinary typewriters. True, as we found out later, our lectures were not of very much use. Lectures were not what they needed. Eventually the best teachers at our school proved to be those who had two qualities: honesty and diligence. And of course, love of children. The teacher had to feel sympathy for them and want to help them.

“Those were hectic and busy years. And what with all the exigencies of the work, one sometimes had no time to keep up old acquaintances. So I was overjoyed to receive this note from Luria during my dissertation defence. He was in a great hurry and couldn’t stay until the end, so he thought he would write a note to me. I would have hated to lose it, so I put it into the file along with my other papers, and I put the file away so that I have difficulty finding it myself.”

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“Professor Meshcheryakov, I have read the Candidate’s dissertation you wrote under Luria’s supervision. It has nothing to do with blindness, deafness or the handicapped in general. You were then engaged in other experiments: you were studying the frontal lobes of the brain trying to find out the function of each area. And you yourself wrote that even the slightest damage to the frontal lobes leads to the disintegration of the personality – the hierarchy of values is destroyed, and the person can’t

determine priorities for his actions. In more severe cases, he has no sense of purpose at all: for instance, he starts taking a shower and can't stop because he has forgotten why he is doing it in the first place.

“And I would like to ask you this: do you, with your background in physiology, really believe that the human psyche does not depend on the kind of brain with which the person was born? All right, I am prepared to admit that emotions, memory, excitability, and talent are not inherited. But doesn't the structure of the brain, its morphology make any difference in personality?”

“Where did you dream that up? Not only the morphology of the brain but any individual trait can make a lot of difference in a person's psyche. In the village of Gumenki near Ryazan where I was born, there lived a boy who was nicknamed 'Vanka the Redhead'. We local boys and girls used to taunt him. After many years I still remember our taunts: 'One Redhead asked another: With what do you dye your beard?' Well, as a result the poor lad became an introverted neurotic and a stammerer. His whole life was ruined by the colour of his hair. Or take a very simple example. There is a world of difference between the mentality of a pretty girl and a plain-looking one. And the reason is the slight morphological differences of the body. And as regards the morphology of the brain, we simply know nothing about it.

“But please note that all these traits – hair colour and the shape of the nose – influence the person's psyche not in and of themselves, but because of society, through other people. A girl who seems ugly to us may seem beautiful to other people. This is what Ilyenkov and I mean when we say that the human psyche is socially determined. Whatever the peculiarities of the brain a person has inherited, whatever traits have been passed on to him genetically, only society can make these traits blessings or drawbacks and lead a person to develop some traits and suppress others. We have in us the makings of Beethovens or Tolstoys, but only a small portion of it is realised due to other people, the milieu and society. Well, at first our deaf, dumb, and blind children are impervious to the influence of society, and their psychological traits have no way of revealing themselves.”

“Can I ask you another question then? What grounds do you have for extending the conclusions gained from your work with deaf, dumb, and blind children to ordinary children with sight and hearing? After all, we receive an enormous amount of information through the eye and ear.

Doesn't the absence of all this information make the brain different? Are you sure that we are comparing identical natural mechanisms?"

"To begin with, your question involves one unpardonable misconception. If you look at the numerous connections running between the brain and the muscles and remember that they evolved before we had such perfect eyesight and hearing, you would understand that any person, not only a deaf, dumb, and blind one, receives his basic information from the world with the whole surface of his body. Signals are constantly sent to the brain from the countless receptors on the skin. Then they also come from the special gauges – tendons which report the extension of a particular muscle to the brain and, from the Golgi cells which measure muscle strain, and finally the angle gauges installed by nature in our joints. This is how we form our image of the world. Sight and hearing unsupported by tactile and muscle sensations would have been of no use to man – after all they are no more than blobs of light on the eye's retina and oscillations of the eardrum. 'The hand teaches the eye,' wrote Sechenov. A baby reaches for the toy rattle which is just a bright circle for it, feels it with its hand, and only then learns something about the distance, shape, and parts of the object.

"I can easily understand how a blind person forms his ideas of space: he does so by feeling the objects, their shape and volume. But I find it far more difficult to understand how a sighted person could form an image of a cupboard without touching it and localise that image, not in the particular point of his eye where all the light rays converge, but precisely in the corner where the cupboard stands. The phenomenon of vision is a real riddle.

"Cases are known when eyesight was restored to adult blind persons, and at first they didn't see anything apart from splotches of light. Some time had to pass before they established a link between the spatial images gained by the touching of objects and the signals sent to the brain by the eye.

"In light of this, it would seem that a deaf, dumb, and blind person is not that different from a normal person. Certainly, we are not just dealing with a broken machine – our conclusions hold good for any person in general.

"However, one should be more careful with the conclusions. I for one would not say that there is no orientation reflex simply because we have failed to discover it. But I do believe that the orientation reflex does

not have the omnipotence imputed to it. This reflex is neither a pretext nor the cause for the development of the human mind. When the child reaches for its toy, it triggers a chain reaction: curiosity – an interest in new objects – and a desire to explore the world. Of course in real life, there is no such simple chain; everything is far more complex. Education and training is a purposeful and structured process that does not come about of itself, outside human society, in empty space; it is specially created, as in the case of our children, or it comes about as a result of the environment, as in the case of an ordinary child.

“Incidents with children found in the forest – all sorts of feral children, the well-known story of Kaspar Hauser who was kept in prison from early childhood until the age of seventeen – all this shows that the human mind cannot develop without human society.

“That is why Sokolyansky said: ‘The most difficult thing is to educate a normal child. Teaching a blind child is easier. And teaching a deaf, dumb, and blind one is the easiest of all.’ The budding personality is exposed to society in thousands of different ways, and the impact of this exposure is hard to assess. It is only at the Zagorsk boarding-school that education is completely under the control of the teachers. ‘Well, are you convinced now?’ “

“No, Professor, I am afraid I’ll have to do some more thinking.”

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... As I do my thinking, the paradoxes of Professor Higgins seem more and more “cerebral” to me while the words of Meshcheryakov, which on the face of it, defy common sense, appear to reflect the paradoxes of real life.

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“Fantasising is not always harmful; my friend, the great teacher of the proletariat Vladimir Lenin, defended the right of fantasy to operate.

“And as I indulge my fantasy I think that perhaps epistemology will in time be an experimental science like the other sciences.”

“You are a clever girl, and you are quite right: it is infernally difficult to alter the philistine mentality... It is hard to convince such a person that the deaf, dumb, and blind are being studied, in the final analysis, in order to make him less idiotic. It is hard to make such a person understand that

he is also deaf, dumb, and blind, not through a fluke of nature, but due to his own mediocrity and stupidity.”

These were extracts from Gorky’s letters to Olga Skorokhodova written at various times. Olga Skorokhodova was sitting opposite me in a University auditorium having Ilyenkov’s speech before the Academic Council transmitted into her hand:

“We are blind and deaf to many of the sights and voices of the universe. The human eye is only sensitive to a portion of the light spectrum, and the rest of the electromagnetic radiation is inaccessible to it. Even people with the finest musical ear can only hear sounds within a certain range. Instruments, such as spectacles or hearing aids expand our potential. But it may be that there are many other ways of conveying information in the universe of which we are unaware. I repeat, we are blind and deaf to the larger world around us.

“That is why the enormous work being carried out by Meshcheryakov, while it is important for the study of the handicapped and for education, is above all important and necessary for those of us who study philosophy. The problems posed by the education of the deaf, dumb, and blind are epistemological problems. The neurophysiologist deciphering mechanisms of the brain inaccessible to direct analysis, the astronomer describing remote galaxies, and the physicist studying invisible particles – all of them, in the final analysis, are exploring the world hidden from the sense organs’ at our disposal. Perhaps what we have already learnt and will yet learn thanks to the Zagorsk boarding-school will give us new epistemological methods.”

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I cannot in all fairness say that Dubna doesn’t impress me. The cyclotron there is also helping us to learn something important about the universe. And the people who constantly deal with the fundamentals of matter sometimes come to remarkable conclusions. “God is subtle, but He is not malicious,” any scientist, not only physicists, can be guided by Einstein’s words engraved at Princeton University. Nature clearly creates in a clever way and hides its secrets from us, but it treats those who probe into these mysteries without malice. At times it even sets up spectacular experiments for our benefit – we must merely be able to comprehend their meaning.

“I think the time will soon come when science will present so-called normal people with an urgent problem: if you want to see all the diseases, deformities, imperfections, premature senility and death of the human organism studied in detail, such a study cannot be achieved by experiments with dogs, rabbits and guinea-pigs. Man himself must become the object of experimentation...”

Gorky's prediction appears to be coming true. There is a shift in the focus of science. From the microcosm of elementary particles and the macrocosm of the universe, it is shifting towards man who stands between them. Psychology, the science of the human soul, now dictates maximum speeds to machines and aircraft, and even the exploration of new planets now depends on how long a cosmonaut can live away from his native Earth.

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I don't know exactly what Alan Heis meant when he spoke of the best way to God, but I have a hunch that he had in mind the way whereby man himself becomes all-powerful, capable of challenging darkness and silence, of moulding the human soul with his own hands, even coming to know himself.

But when Heis made that statement, I doubt he was thinking of his famous countryman and the play which hasn't perhaps been completely understood. Since then, I have often thought that it was far easier for Pygmalion to bring life to a stone Galatea by his love than to breathe a human soul into her after she was alive... I wonder if we are fully aware of the great miracle of the socialisation of a human being, whether we know what a long and arduous path it is from one human being to another. Looking back over the vast amount of work already accomplished by those who are investigating the world of the deaf, dumb, and blind and the infinite road that still lies ahead, I ask myself: is it all that difficult to be a creator, provided the correct road has been chosen?

Chapter V. Vasili Davydov. A Biographical Profile

The psychology of the future – that theory and practice of future man – will be similar to present-day psychology only in name or, to invoke Spinoza's brilliant language, it will be as similar to it as the Great Dog constellation is to a barking dog. That is why we put such store by the name of our science, a name on which the dust of centuries has settled but to which the future belongs.

Lev Vygotsky

DAVYDOV, Vasili (b. 1930), Doctor of Psychology, Professor, Full Member of the USSR Academy of Pedagogy, Director of the Institute of General and Educational Psychology of the USSR Academy of Pedagogy since 1978.

He graduated from the Philosophy Department of Moscow University in 1953, taking a degree in psychology. He went on to complete a graduate course at the University, and in 1956 defended a Candidate's dissertation "On the Problem of the Formation of Mental Actions." Between 1956 and 1959 he was an editor at the publishing house of the USSR Academy of Pedagogy. In 1959, he became a junior researcher at the Institute of General and Educational Psychology; in 1961 he became head of a laboratory at that institute, and in 1973 was named its director.

He defended his Doctoral dissertation in 1970. It was published as a monograph *Types of Generalisation in Learning* (1972). Davydov has more than seventy scientific papers to his name. Among them are *The Age Limits of Assimilating Knowledge* (1966), *Psychological Capacities of Elementary Schoolchildren in Learning Mathematics* (1969), *Psychological Conditions of the Origin of Ideal Actions* (1979).

The words Heraclitus said two and a half thousand years ago provide a fitting title for this chapter. The twenty-five centuries that have sped by have convinced people that it is not enough, it is in fact very little, to be knowledgeable, literate, or even educated. One must also be able to think. "Learn to Think from Youth," is the title of Ilyenkov's booklet quoted earlier.

Then, too, the epigraph to this chapter is provided by Vygotsky's article "Consciousness as a Problem of Behavioural Psychology" published

in the collection *Psychology and Marxism* in 1925. Vygotsky's book *Mind in Society* (published by Harvard University Press half a century later) opens with these lines. All of them are links in the same chain – constant attempts over the millennia to decipher “the phenomenon of man” and to get a clear idea of his psyche, consciousness and soul.



And so, I have chosen this talk with Vasili Davydov, Director of the Institute of General and Educational Psychology of the USSR Academy of Pedagogy to conclude this book. He was for many years scientific collaborator of Luria and Leontyev, a good friend of Ilyenkov and Meshcheryakov, he gladly hired the deaf, dumb, and blind graduates of the Psychology Department of Moscow University to work at his Institute, and on many occasions, he gave assistance and support to many of the other people mentioned here who make up an “invisible col-

legium,” the name of which is the Vygotsky school. But even if one ignores the fact that from his early days as a student he was in the midst of the ideas, arguments, successes and disappointments of that trend in Soviet psychology, the talk that follows leaves no doubt that Davydov is a successor of Vygotsky, representing the third generation of that remarkable scientific school.

“Much Learning does Not Teach Understanding” (A Conversation with Vasili Davydov)

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

gives the law to his *modus operandi*, and
to which he must subordinate his will.

Karl Marx, "Capital"

Professor Davydov, your books, articles and public statements suggest that present-day psychology needs new, drastically different methods and is therefore on the eve of a radical change of theory, and hence in practical application. Can you elaborate on that idea?

To begin with, I must say that contemporary psychology has split into a number of disciplines each having its own object of study. They are general psychology, psychophysiology, peer group, developmental and educational psychology, social, medical, the psychology of law, the psychology of labour, art, sport, and so on. In looking for answers to the questions put forth by life, psychologists are forging ahead with their investigations and have come up with a lot of valuable results. In a sense, such differentiation of psychological disciplines is useful as it gives deeper insights into the psychological laws of whatever happens to be the particular object of study. On the other hand, it results in the loss of something general that should unite all psychological studies. For a long time now the prevalent trend has been to allow not relative but complete autonomy to every branch of what used to be the one psychological tree: let everyone do his own job and forget about what the man next door is doing. And the connection between the psychology of art, peer group psychology, and psychology of labour, for example, is considered a problem of no particular interest, or else a task for another discipline.

The desire to immerse oneself in a narrow object of investigation has made the particular psychological disciplines essentially different in their tasks, methods, and analytical techniques – they "split the single body of psychology at the seams," as Leontyev once said. The results obtained in related areas of psychology are sometimes impossible to discuss simply because the researchers speak different languages and think in different categories. This, in my view, is the affliction of contemporary psychology. It badly needs a single basis, a common foundation. In other words, it is necessary to develop a contemporary general theory of the human psyche that will provide a fundamental basis for all the disciplines that call themselves psychological. Many scientists are aware of that necessity and so, in spite of the burgeoning of concrete psychological studies, the ancient problem of what the psyche is in general sparks off discussions in our midst.

I must stress that over the centuries, philosophy and other sciences have accumulated vast experience in analysing that problem and have amassed enormous factual material on the manifestations of human psychic activity. Soviet psychological theory proceeds from the methodological principles of Marxist philosophy which provide guidelines for concrete studies. These are, above all the seminal propositions on the role of operational activities in the development of the human mind and the proposition that the psyche is a reflective phenomenon, a function of the brain. At the same time, in their preoccupation with current research, many of our psychologists have come to feel that the main problems connected with the nature of the psyche have been resolved and that one need no longer apply oneself to such fundamental problems, but should rather use the solutions obtained for the study of more specific tasks.

Of course, dialectical materialist philosophy has laid a monolithic foundation for psychological theory and has cleared away the idealistic debris obstructing the path of its builders, but such a theory must be constantly developed in accordance with the present situation in science.

Let me stress that Western (chiefly American) psychology is dominated by positivism, which is in principle ill-equipped to discuss fundamental problems of science. One of the tenets of positivism is that "science is its own philosophy." On the theoretical plane, such a tenet is unacceptable for Soviet science. The trouble is that we, too, are not without sin: although we are aware of the snares of positivism and its wingless and utilitarian nature, in our practical research we sometimes succumb to this approach which has about it the appealing simplicity of common sense. In the preface to his book, *Activity, Consciousness, Personality*, Alexei Leontyev mentions the lamentable circumstance of "methodological carelessness" in concrete present-day psychological studies, even though it sometimes produces copious and important results.

I want to stress, however, that some contemporary psychologists echo the ideas of positivism for good reason. "One need not wrestle with profound problems of a general nature because, as history shows, they are insoluble. It is better to rule them out of concrete studies. One must study only the immediate facts and develop theories based only on facts, and not on philosophical categories." It sounds attractive, doesn't it? Especially for someone who has drifted into psychology "from outside," i.e., from the fields of technology, mathematics or physiology. There are many such specialists in our science already, and they are becoming more numerous with every year.

It is difficult to gear one's scientific work to a system of philosophical categories. For that one needs a special background and training, both in thought and in the conducting of scientific investigations – mainly in the posing of tasks, in choosing methods of tackling them, and in interpreting the data obtained. However, in the psychological realm one keeps running up against the sharp corners of such philosophical categories as “matter,” “object,” “subject,” “the ideal,” “goal setting,” “consciousness,” “activity,” “personality,” etc. In analysing any questions connected with the psyche, it is very important to apply these categories correctly, to know their history and their contemporary dialectical materialist content. Regrettably, psychology sometimes proceeds not so much from the philosophical meaning of these categories as from ideas of psychic phenomena that have grown out of the traditions of the empirical natural sciences – physics, chemistry and physiology. Researchers in these fields have considerable experience in dealing with psychic-related phenomena, namely, the neural and physiological prerequisites of psychic activity.

What approach do you suggest? Is it time to renounce the methods of psychological study that have been prevalent in the natural sciences for several centuries?

This is too serious a matter for sweeping answers. No one is suggesting that natural scientists should give up the study of various aspects of psychic phenomena. But it is important to be clearly aware of the degree of competence of a particular science in understanding and interpreting the inner nature of the psyche, the mind. The question is this: do the natural sciences possess a general method for studying and explaining the essence of the animal and the human psyche? My answer is no, they do not possess such a method. Such a method is inherent only at the philosophical level of psychological knowledge which makes it possible to use the categories of relations between “object” and “subject,” “matter” and “consciousness,” and consequently revealing the specificity of the “psyche,” “consciousness,” “the soul,” and their genuine seat – the subject of activity.

You may well ask what are the unique features of these objects of study? The long history of philosophy and psychology (which is closely related to it) identifies that special trait as follows: human activity is *goal-oriented* activity, i.e., man possesses a special capacity for setting and achieving goals corresponding to particular needs. Karl Marx, considering labour activity as primary in relation to all other forms of human activity, wrote: “At the end of every labour-process, we get a result that already existed in the imagination of the labourer at its commencement. He not

only effects a change of form in the material on which he works, but he also realises a purpose of his own that gives the law to his *modus operandi*, and to which he must subordinate his will.”

There is every ground for believing that the degree of development of the capacity for setting and achieving goals is the chief feature inherent in the life activity of creatures endowed with a psyche. Proceeding from the abovementioned philosophical categories, psychology can study and reveal the nature of the basic mechanism of the psyche – goal orientation; meanwhile no other natural science – neither physics, nor chemistry, nor physiology – has the means and methods for investigating and analysing that mechanism, because their own objects of study do not involve setting goals.

One of the main tasks of psychology consists in developing methods of investigating human activity, consciousness, and personality. Psychologists have notched up some impressive successes in the study of the processes of goal orientation, the building of sensuous and intellectual images, and the interconnection between the needs, tasks and actions of the person emerging within various forms of life activity. Of course, the specific nature of the object and method of psychology does not rule out its auxiliary use of the concrete procedures of the natural and applied sciences, for example, physiology and cybernetics.

Positivism is a bad theory for all the natural sciences, but it is simply disastrous for psychology, for positivism induces it to study the psyche in terms of the concepts of physics, chemistry and physiology and thus leads it away from revealing the essence of things fixed in such concepts as “activity,” “subject,” and “goal orientation.” That is why overcoming positivist trends and using the rich arsenal of philosophical categories and notions from the humanities is one of the current tasks for our psychology.

It is now clear that the view of the human psyche as presenting physical, chemical or physiological problems obscures rather than elucidates the basic questions of antiquity. The natural sciences approach, owing to the successes it has made possible in the study of inanimate objects, creates the illusion that the problems of psychology, too, can be tackled in terms, say, of biochemistry and physiology. It is suggested, for example, that properly scientific study of the laws of memory should consist in revealing the corresponding mechanisms of chemical reactions or electrical processes taking place in the brain. And since the brain is

undoubtedly the seat of the psyche, it seems natural to study its structure and modes of functioning in hope of understanding the laws of the “elusive soul.”

Such a view of the human psyche was once hailed as an outstanding achievement of materialist thought, and in fact many scientists today adhere to this position. However, the history of cognition and praxis has made it clear that such an approach to the psyche is characteristic of metaphysical, mechanistic materialism leaning toward the natural sciences and that it is by no means identical to a theory of the psyche based on the philosophical doctrine of dialectical and historical materialism. At the same time, the burgeoning of concrete psychological studies and the rapid growth of the many branches of psychology prevent some people from seeing that they are rooted in just this kind of mechanistic materialism which will ultimately prove fruitless.

What should one do in this situation? It would be very useful, among other things, to turn to the sources of psychology, a science which was born from the bosom of philosophy; but we must not try to go back – such things never happen in science – rather, we must approach the same questions from a new angle and at a higher level.

An anonymous writer of antiquity expressed an idea about the nature of the soul which to my mind pinpoints an essential aspect of the problem: “If you don’t know what you are searching for, then what is it you are searching for, and if you do know what you are searching for, why are you searching?” This paradoxical behaviour of animate creatures is a distinctive feature that no other body possesses. For an animate creature is characterised by searching, an inherently contradictory state. To search for what does not yet exist but is possible, although it is given to the subject as a goal, or ideal and not as reality, is the basic and central element in the life activity of every thinking creature, or subject, as we psychologists say.

The study of the mechanism of goal orientation within the sphere of search and the study of the laws whereby goals determine the modes and character of the subject’s activity – this is the object of psychology as a science. It must be said that today, cybernetics is close to that goal in claiming to analyse the behaviour of bodies and systems which have a semblance of search mechanism.

Aristotle, who is considered the father of psychology, wrote that “soul is an actuality or formulable essence of something that possesses a

potentiality of being besouled.” In the light of that idea, the paradox of search consists in that it combines the possible and the real. Foresight as the basis of planning is the identification of the possible. In his real actions man who possesses a “soul” carries out what is capable of being carried out in reality. The construction of a possible future to predict the real activity of the subject is precisely what cannot be described or explained by the methods used in the natural sciences. It is not that they are weak in themselves – they are very powerful in their own sphere based on the type of determinism that explains phenomena and events by tracing the links between cause and effect. Due to these links, the state of an object in the past determines its present state. But man bases his actions on what may happen in the future – a future that doesn’t yet exist! In this case, the goal – an ideal image of the future, an image of what must be – determines the present and actual behaviour and state of the subject.

This profound uniqueness of activity prompted by goals, the image of a possible future, has been a stumbling block for the natural sciences. And until the new concept of determinism – determinism of goal – was worked out, the study of the psyche was dominated by the materialism of the natural sciences which was essentially unable to reveal and describe this original phenomenon of life. The concept of goal orientation was created in the history of the philosophical dialectic and formulated in the materialist dialectic which opened the way for concrete scientific study of the psyche – a properly psychological study carried out according to a method corresponding to its object.

One must stress the great contribution to the development of that method made by the humanities which grapple with the key problems of the personality, in particular, the problem of choice. Choice exists only where there are possibilities. And it is only when there is choice that one can talk about will. Without *will*, there is no *subject*, and it is only the *subject* that possesses “soul” and consciousness. In the absence of this approach to reality and in the absence of these categories, one cannot get at the foundations of human activity, consciousness or personality.

How did the scientific approach you have explained arise? Is it recent or can you point out attempts to study the human psyche in a special way in the past?

After Aristotle, philosophy has seen many attempts to resolve the problem he posed in what must be called a dialectical tradition. Basically, it recognises the link between the future and the present. Hence, the goal orientation of man. True, for many centuries this dialectical approach de-

veloped within the mainstream of idealistic philosophy which was aware of the problem and elaborated it vigorously partly from ideological motives. As a result, it created a powerful conceptual apparatus for the theoretical study of the psychic processes. One must admit that idealistic philosophers, while they were wrong in the solution of the basic question of philosophy – the primacy of matter versus the primacy of the ideal – nevertheless elaborated profound concepts pertaining to the sphere of the ideal.

The psyche cannot be studied without such concepts. Thus, Descartes created a clear-cut theory of complete mechanical determination of the behaviour of animals, claiming that everything about it could be calculated and predicted. But he was immediately confronted with a paradox in analysing the behaviour of humans. It turned out that no matter how precisely the causal predetermination of behaviour was known, it was not sufficient to explain the universal character of man's daily activity. In any particular situation, a person can act one way or another; his actions do not lend themselves to prediction, nor are they derivable from past events alone. Thus, there was no place in the cause-and-effect network for the chain "universality – goal orientation – soul."

Building on Descartes' experience, Spinoza advanced a profound materialistic idea which many philosophers after him failed to understand. Only the materialist dialecticians, Marx and Engels, gave that idea its due. It consists in the following: thought, or as philosophers used to say, the soul, is a property of the thinking body. Hence our task is to study the mode in which such a body operates as distinct from the activities of a non-thinking body. The fundamental difference lies in the ability of a thinking body actively to project the trajectory of its movement in space in accordance with the shape of *another body* – *any* body. Hence the universality upon which Descartes was tripped up.

To explain Spinoza's idea, let me quote from a book by the well-known Soviet philosopher Ilyenkov entitled *Dialectical Logic*:

"The human hand can perform movements in the form of a circle, or a square, or any other intricate geometrical figure you fancy, so revealing that it was not designed *structurally* and *anatomically* in advance for any one of these 'actions', and *for that very reason* is capable of performing *any action*. In this it differs, say, from a pair of compasses, which describe circles much more accurately than the hand but cannot draw the outlines of triangles or squares. In other words, the action of a body that 'does not

think' (if only in the form of spatial movement, in the form of the simplest and most obvious case) is determined by its *own inner construction*, by its 'nature', and is quite uncoordinated with the shape of the other bodies among which it moves. It therefore either disturbs the shapes of the other bodies or is itself broken in colliding with insuperable obstacles.

"Man, however, the thinking body, builds his movement on the shape of any other body. He does not wait until the insurmountable resistance of other bodies forces him to turn off from his path; the thinking body goes freely round any obstacle of the most complicated form."

This wonderful idea of Spinoza is one of the foundations of the dialectical materialist approach to the study of the psyche. That idea was taken up by Kant and Fichte, but on an idealistic basis. Marx revived Spinoza's ideas, casting away their idealistic interpretations.

Don't you feel, Professor Davydov, that all these profound philosophical questions are only of relative interest to practical psychology, especially its concrete branches which, as you have said, are now burgeoning?

By no means! The need for a precise understanding of the nature of the psyche is prompted by earthly reasons. Here is a vivid example – and I will again quote from the work of Ilyenkov, this time from an article devoted to the successful experiment in educating the deaf, dumb, and blind students who graduated from Moscow University and are now on the staff of our Institute. Ilyenkov writes:

"Any animal forms the trajectory of its movement in accordance with the shape and position of external bodies, with the geometry of the environment. A person born deaf, dumb, and blind must be taught that. Here, one can discern the first stage in the solution of the task: to form the child's need and ability to move in space on its own initiative toward food, adjusting the direction in accordance with the shape and position of external bodies – the obstacles in its way. The ability to construct a trajectory in accord with the geometry of the external world, changing it every time there is a new "geometrical" situation, unexpected and unforeseen (and therefore incapable of being recorded by any genes) must be developed...

"It is perfectly clear that the need for food is congenital, while the need (and ability) to search for food by adjusting one's actions to external conditions is not innate. This searching is a very complex kind of activity that must be learned, and it contains the secret of the psyche in general. This is how it is done: the teat is removed from the child's lips by one

millimetre, and if the child manages to overcome that minimal distance by its own movement, it is removed by a centimetre and so on. Then the teat is separated from the child's lips by an obstacle which it must bypass. And the procedure is pursued until the child learns to find the food in the most complex situation using its sense of smell and touch to construct its trajectory according to the shape and position of external bodies. It is only then that an adequate image, a subjective copy of these bodies, and the image of space in general appears in the child's mind. Once that is achieved the psyche has been born."

Of course the shaping of the psyche in a deaf, dumb, and blind child is only a particularly vivid example. But psychology has been confronted with highly practical demands. Society expects a solution to some of the problems involved in the present-day scientific and technological revolution. Never before has psychology faced such an acute need for new knowledge about man which could be used to improve his activity, thinking, and mental capacities dramatically. Up till now, many achievements made in psychology laboratories existed independently, without exerting much impact on the practical side of our lives. So in the solution of theoretical questions, one could afford to make do with some illusions since the public interest was not usually affected by these studies. It is only in recent years that a fundamental need has arisen and, most important, a realistic proposition for improving various forms of human activity taking into account the achievements of psychology has become possible.

This is particularly apparent in three main spheres: labour, management and education. The connection between the above set of questions and management is obvious. Management is necessarily a forward-looking activity, a vivid example of goal orientation: at first an ideal image of the possible future is created and then that image is used to determine people's behaviour. Education is the concrete area in which I work and in which we are trying to apply our approach. It merits a separate discussion. Labour activity is man's main occupation and it provides perhaps the most vivid illustration of the theme we have taken up today.

Engels wrote that the division of intellectual and physical labour has existed since ancient times. All the functions of prediction and planning constituted intellectual labour, and this was one of the mechanisms that led to class privileges. This circumstance gave confidence to idealistic philosophers. The masses, as opposed to the powers that be, were mainly made to do physical labour which was devoid of the basic function of the social man – planning, foresight, programming and orientation toward

the possible. What was left for the masses was “swinish immediacy.” The masses worked, lived, and were educated according to a scheme that was a surrogate for genuine human activity – they were mechanically trained to perform manual operations without being given any part in the intelligent, goal-setting component of labour.

It is characteristic that those thinkers who proceeded from idealistic premises about the primacy of the spiritual failed to see the wholeness of human activity, because it was indeed difficult to observe. It is only now, in socialist society, that the objective prerequisites are emerging for the fusion of these formerly divided components of human labour. Thus planning, which allows for the transformation of nature in accordance with an ideal image formed in advance, will be united with the execution of these plans. It is only in the context of existing socialism that conditions appear for blending physical and intellectual labour and for breaking down the barrier that has been erected between them.

Professor Davydov, could you give us some examples of how your approach is applied in school education? This question engages the minds of millions of parents, while the school system has been repeatedly criticised over the past decades.

It is true that there has been a lot of criticism, and much of it is justified. A reform in public education has been carried out, but it so happened that in drawing up the new curriculum, the aims of the reform were sometimes overlooked. It is true that schoolchildren today are given information which we in our time could only get from popular science journals, and only during our university years. But does the mass of facts communicated to pupils in class shape their ability to think? Of course not. Much learning does not teach understanding. Let me give you an often cited example. In the present system of teaching mathematics, children are trained to solve problems of various types. The teacher wants them to solve as many stereotyped problems as possible. And that is why one often hears the pupils say: “We haven’t solved problems like this before.” Traditional education is oriented toward developing empirical thinking alone. In empirical thinking, the particulars are learned first, then they are compared with one another, as a result of which the pupil gets an idea of the subject as a whole.

But psychology has demonstrated, and we are already applying this in our experimental study groups, that the approach should be the reverse: first of all one must impart the spirit of science, tell the pupils how a mathematical problem can be solved in general, and then the pupil

should receive assistance in applying that general knowledge to concrete tasks. Our first-graders master the concepts of equality and inequality expressed in letters by the third month of school, while they are still unable to handle numbers. The mathematics course is based on the idea of relationship, from which emerges the concept of “value” and then its particular instance, “number.” To encourage schoolchildren toward a mode of theoretical thinking that makes it possible to go from the general picture to its details, to grasp the whole before its individual parts – this is the method of teaching that fosters the kind of thinking necessary for our times. Such education is based on the psychological ideas focused on the mechanisms of search, goal orientation and action, as I have said earlier.

This is the main thesis, and I could give you dozens of examples of its practical application: books, articles, and educational programmes have already been written. Let me give you just two examples. We have recently made a study of music education. We have found that neither knowledge of notes, nor good singing habits, nor the ability to play scales are enough to teach the child music, within acceptable time limits, if by this one means music and not just “playing the piano.” What is the clue? It appears that the children must be given an understanding of rhythm, by hand and body, in a material way. The simplest musical instruments, such as the xylophone, acquire a miraculous quality in the hands of the teacher who understands what he wants from his children: the children’s understanding of music will increase by leaps and bounds.

Or take the teaching of foreign languages. A laboratory here recently staged an experiment to find out the capacity of schoolchildren for learning a foreign language depending on age. A large amount of material has been processed, and it has been discovered that training should begin only from the fifth year at school because before that, the child is allegedly unable to remember sufficiently long texts to glean an acceptable vocabulary from the words occurring in it. But if one were to pursue that logic, one would have to say that the child could only learn his native language toward the end of school, and even then only a smattering.

Such methods and their traditional “scientific” foundations ignore the specific psychic features of the child. He must be taught a foreign language as an object of communication and search, and as a goal-oriented activity. Then, if skilfully guided, these processes will enable the child to learn everything fully and in good time. To organise such teaching and development of children, the educator must be aware of modern psychology and its method of analysing human psychic activity.

Extensive application of modern psychological methods can help solve many practical tasks confronting the school.

In Lieu of an Afterword

“My dear friends,

“You are beginning to realise the enormity of the task facing the psychologist attempting to restore the history of the human psyche. You are entering unexplored territory.

“When I noticed that in you earlier, I reacted with surprise. And to this day, I find it amazing that in the face of the given circumstances and remaining uncertainties, people who are only just beginning have chosen such a path. I was quite surprised when Alexander Romanovich Luria was the first to take that path in his time, and when Alexei Nikolayevich Leontyev followed in his footsteps. And I am overjoyed to see that I am no longer alone in my quest and that there are not just the three of us: there are five more brave souls setting out on this particular road to knowledge.

“A sense of the enormity of the tasks facing contemporary psychology (we are living in an epoch of cataclysm in this field) is my most basic feeling. And that places an *infinite* responsibility – a most serious, almost tragic (in the finest, most genuine sense of the word) burden on the shoulders of those few who are conducting research in any new branch of science – and especially the science of the person. You must test yourself a thousand times and endure countless ordeals before you make a decision, because this torturous path demands total devotion of self...

“Yours,

“L.

Vygotsky.

“Tashkent, 15 April 1929.”

This most interesting personal document – Vygotsky’s response to a letter from his young colleagues – was read by Vladimir Zinchenko at an All-Union conference dedicated to “The Work of Lev Vygotsky and Contemporary Psychology” held in Moscow at the end of December 1981.

These words, which have come down to us over a little more than half a century, are the most fitting afterword to this book.

Brief Biographies of Soviet Psychologists

APRAUSHEV, Alvin (b. 1930), Cand. Sc. (Education), director of the Zagorsk Boarding-School for Deaf, Dumb, and Blind Children.

Apraushev finished a vocational school in 1943 and volunteered to do economic reconstruction work in the Donbass area. He was severely injured in a mine explosion and was hospitalised until the end of the war in 1945. He then finished a chemical and pharmaceutical specialised secondary school and spent thirteen years working in industry. In 1952 he completed a degree course at the Moscow Institute of Education, by correspondence, majoring in literature and Russian language.

He has worked at the Zagorsk boarding-school since 1965, first as a teacher, then as director of studies starting in 1967, and since 1970 as director of the school.

In 1970, under Meshcheryakov's guidance, he defended a Candidate's dissertation on "Technical Aids in the Instruction of the Deaf, Dumb, and Blind." He is currently working on a Doctoral dissertation on "Labour and Social Rehabilitation of the Deaf, Dumb, and Blind." He has more than forty scientific and popular scientific papers to his credit.

BLONSKY, Pavel (1884-1941), Soviet psychologist and teacher. After graduating from Kiev University (1907), he taught education and psychology at a secondary school for girls in Moscow. In 1913 he became an Associate Professor at Moscow University where he lectured on psychology and philosophy. He also taught at the Shanyavsky University and at the Non-Credit University Courses for Women.

Between 1915 and 1917 he wrote several articles on education, including "The School and the Working Class" and "The School and the Social System." In 1919, he published a book entitled *Work-and-Study School*.

In the 1920s and 1930s, Blonsky gained prominence as a student of behaviour and development in children. He published a book, *Child Development*, in 1925.

He and Kornilov opposed the idealistic psychology of Chelpanov. He taught at the First and Second Moscow Universities and was one of the founders and leaders of the Krupskaya Academy of Communist Education. He led a team of young psychologists at the Moscow Institute of Psychology.

Blonsky's main works include *The Philosophy of Plotinus* (1918), *An Outline of Scientific Psychology* (1921), *Education* (1924), *Psychological Essays* (1927), *The Fundamentals of Education* (1929), *Memory and Thought* (1935), *Development of Thought in Schoolchildren* (1935).

BOZHOVICH, Lydia (1908-1981), Dr. Sc. (Psychology), Professor, one of the leading Soviet specialists in psychology of personality and education.

Her first experimental investigation, which she carried out as a Moscow University student under Vygotsky's supervision, was devoted to problems of imitation. After graduating from the University she worked as head of studies at the psychoneurological sanatorium-cum-school, and then at the psychology chair of the Krupskaya Academy of Communist Education, under Vygotsky. In the early 1930s she was part of a team of prominent psychologists (Luria, Leontyev, Zaporozhets and Zinchenko) that worked at the psychology department at the Psychoneurological Academy in Kharkov. During the war, Bozhovich worked as head therapist at a hospital. Between 1945 and 1975 she headed a laboratory at the Institute of General and Educational Psychology of the USSR Academy of Pedagogy, investigating the motivations and needs of the child and adolescent and the personality formation in childhood.

An important stage in her scientific career was her work at a boarding-school where she organised a comprehensive experiment to study the personality of the schoolchild in a concrete social environment. The results were summarised in the *Psychological Study of Children at a Boarding-School* (1960), which formulated several new principles for personality study. Among other things, Bozhovich demonstrated that psychologically, a personality is a combination of a certain type of behaviour learned by the child and a corresponding motive.

In the years that followed, Bozhovich staged some experiments to study the role of self-esteem, ambition and ideals in the child's motivations and needs.

The results of her in-depth studies of the personality of the child accumulated over three decades of research were summed up in her Doc-

toral thesis, which provided the basis for the monograph *Personality and Its Formation in Childhood* (1968).

Lydia Bozhovich worked hard to develop Vygotsky's scientific ideas.

CHELPAKOV, Georgy (1862-1936), psychologist, philosopher and educator, Professor of Philosophy at Kiev (1892-1906) and Moscow (1907-1923) universities. Until the end of 1923, he was Director of the Moscow Institute of Psychology which, owing to his efforts, had become a well-equipped centre of experimental psychology.

In the field of philosophy he was an idealist and a critic of materialism (*Brain and Soul*, 1900). His main scientific work was devoted to the perception of space (*The Problem of the Perception of Space in Connection with the Teaching of the A Priori and Innateness*, 1896-1904).

Among Chelpanov's other works are *Psychology* (1909), *Introduction to Experimental Psychology* (1924), "Psychology or Reflexology?" (*Moot Questions in Psychology*) (1926).

EL'KONIN, Daniil (born 1904), Dr. Sc. (Psychology), Professor, Corresponding Member of the USSR Academy of Pedagogy.

He began working early in life. After working for two years as a teacher at a colony for juvenile delinquents, he was sent to study at the Herzen Institute of Education in Leningrad. After graduation, he worked as a lecturer and then as an associate professor at the two educational institutes in Leningrad (the Herzen and the Krupskaya) and simultaneously taught elementary school.

When the Great Patriotic War broke out in 1941, El'konin volunteered for the front and was on active duty until the end of the war.

After the war, El'konin was appointed senior psychology teacher at the Soviet Army Institute of Education. In 1953, he transferred to the Psychology Institute of the Academy of Pedagogy where he has been working ever since as head of the laboratory. Simultaneously he holds a professorship in the Psychology Department at Moscow University.

El'konin's major contribution has been in the psychological studies of children, which he started under the guidance of Vygotsky. His work played a major role in developing Vygotsky's basic ideas, in particular, that of the leading role of the assimilation of social experience in the mental development of children, the mediated structure of psychic processes, and their formation during childhood, etc.

Subsequently, El'konin cooperated closely with Leontyev and his co-workers (Bozhovich, Galperin and Zaporozhets) in the study of the problem of activity and its role in the mental development of the individual, the gradual formation of psychic functions, their evolution, etc.

El'konin's studies of play and children's speech, as well as the psychology of pre- and elementary-school children and adolescents are widely known and represent a considerable contribution to the Soviet psychology.

Children's play, their speech development and the stages of their psychic development form the subject of the special lectures which El'konin delivers at the Psychology Department of Moscow University. These lectures are very popular not only among the department's students and teachers, but among a broader circle of psychologists and teachers in Moscow.

El'konin considers the problem of children's speech and its development not in isolation but as a form and means of general psychological development of the child's personality. The results of his theoretical and experimental studies in that field have been set down in the book *Child Psychology* (1960) which became widely known not only in the USSR but also abroad (it has been translated into many languages). The author is now preparing a second, thoroughly revised and enlarged edition.

El'konin deals with not only the theoretical but also the concrete questions in elementary education. In 1939 he published a *Primer, A Manual of Russian* and *A Teacher's Guide* to them for the schools of the Far North. He has created a new method of teaching reading, widely known within the Soviet Union and abroad. He used this method to create an experimental Primer which was first published in 1960 and was reprinted in 1969. His *Primer* is used in the Armenian SSR, in the Yakut ASSR, and is being tried out in Poland, Bulgaria and the GDR. The members of the Institute of Preschool Education of the USSR Academy of Pedagogy have used the psychological and pedagogical principles advanced by El'konin to develop a new method of teaching reading and writing at the kindergarten level.

El'konin has written about ninety works and has edited and contributed to many monograph collections.

GALPERIN, Pyotr (1902[-1988]). Prominent Soviet psychologist and teacher, a theoretical and experimental scientist, founder of a trend in So-

viet psychology which has gone down in history as the “theory of formation of intellectual processes in stages.”

After taking a degree as psychoneurologist at the Kharkov Medical Institute, Galperin practiced medicine at the Kharkov Psychoneurological Institute clinic starting in the 1930 and then became chief of the psychophysiology laboratory at the same institute. Since then, he has engaged in systematic research work. While working at the clinic, he developed an interest in questions related to psychology – the problems of suggestion and hallucinations.

When the psychoneurological academy in Kharkov organised a psychology sector in 1931, Pyotr Galperin joined that sector and devoted his efforts to the study of major psychological problems. Together with Leontyev, Luria, and Zaporozhets who had moved to Kharkov to work there, he developed the theory of activity, specifically the role of operational actions in mental development.

In 1936, Galperin defended a Candidate’s thesis on the subject “The Psychological Development of Tool Usage in Humans and Auxiliary Means in Animals and Their Significance.”

In 1941-1943 during the Second World War Galperin worked at hospitals for wounded soldiers in the rear. He was particularly active at the convalescence hospital in the Urals where he studied the psychological foundations of physical exercise and work therapy with Leontyev, Zaporozhets and others. That period saw the publication of his articles “Psychic Factors of Therapeutic Physical Exercise” and “Effectiveness of Movement in Various Types of Tasks.” These papers made a notable contribution to the understanding of the structure of activity.

In 1943, Galperin moved to Moscow and has worked at Moscow State University ever since, first as an associate and then as a full professor, holding the Psychology Chair of the Philosophy Department. Since 1971 he has been head of the Chair of Peer-Group Psychology in the Psychology Department where he has combined teaching with extensive theoretical and experimental work on the most current problems of psychology.

In 1943-1944 Galperin carried out an important theoretical study of the relation between the physiological mechanisms of higher neural activity developed by the Pavlov school and behaviour in concrete situations.

Since the late forties, Galperin and his associates have developed Vygotsky’s ideas in a series of research projects the results of which enabled

him to formulate a hypothesis on the developmental stages of mental functions and concepts involving the idea of the psyche as arising from operational activity and performing an orienting and regulatory function within the activity. The preliminary results of these investigations were reported at the Conference on Psychology in 1953.

Galperin devoted some thirty years to the theoretical and experimental development of his theory of the formation of mental functions in stages, continuously elaborating, expanding, and checking it on the basis of diverse material. Numerous works by his associates were based on material from the formation of concepts and mental functions in various fields of knowledge (mathematics, linguistics, geometry, biology, etc.) and at different ages (preschool, school age, etc.). They explored the opportunities for the formation of mental functions and concepts with predetermined qualities, their generalisation, reduction, and assimilation. All these studies were based on the theoretical concept of mental activity as basically operational by nature.

In its early stages, his theory was seen by many as merely a theory of the formation of mental functions and concepts geared to the problems of instruction. However, after 1958, and especially in recent years, he has presided over an increasing range of studies going beyond the examination of intellectual processes and covering a wide range of psychic processes and aptitudes: perception and its chief properties, attention, motor habits, linguistic consciousness, etc. The first in this series was the hypothesis on the psychological nature of attention, confirmed experimentally in 1969.

Then followed a series of works by Galperin himself, and his pupils and associates on the guided formation of various psychic processes (1977).

This idea contained a new approach to the very object of psychology and is set forth in detail in the book *Introduction to Psychology* (1976).

Galperin has more than one hundred printed works to his credit, many of which have been translated and published abroad (in Poland, the GDR, Bulgaria, the USA, Britain, Japan and other countries). He has participated in psychology congresses, conferences and symposiums in the Soviet Union and several international conferences.

Galperin devotes much of his time to teaching and to advanced training of psychologists. For many years he has lectured on the fundamentals

of psychology at the Philosophy and Psychology departments at Moscow University.

He devotes much time and effort to educating young psychologists.

ILYENKOV, Evald (1924-1979), well-known Soviet philosopher and theoretical psychologist, Dr. Sc. (Philosophy), Ilyenkov was a well-educated versatile scientist with a deep grasp of the basic problems of social science. He tried to raise and solve these problems on a philosophic level, skilfully applying the dialectical materialist epistemology with a profound awareness of its historical concreteness. The work of Ilyenkov and his pupils led to breakthroughs in several areas of social science, and he was a brilliant stylist as well.

Ilyenkov was born in Smolensk in 1924. After finishing secondary school in Moscow, he entered the Philosophy Department in 1941. Then he served in the army and, after finishing artillery school, went to the front. After being demobilised, Ilyenkov was first an undergraduate and then a graduate student at the Philosophy Department of Moscow University (1946-1953). From 1953 and until his death he was a senior research worker at the Institute of Philosophy under the USSR Academy of Sciences.

From the outset of his career, Ilyenkov studied the principles of dialectics taken as logic and epistemology, both its history and contemporary problems connected with it. He was rightly reputed to be one of the finest connoisseurs of the philosophy of Spinoza and Hegel. In 1965, the Presidium of the USSR Academy of Sciences awarded Ilyenkov the Chernyshevsky Prize, the highest honour in the humanities.

He devoted many years to studying the history of logic and psychology, the relationship between these sciences, prospects for the application of their achievements, and ways of devising scientific theories to provide a psychological and educational basis for the development of the harmonious individual. In the sixties, he teamed up with Meshcheryakov who created an original system for educating deaf, dumb, and blind children. Ilyenkov made a considerable contribution to that study which revealed many secrets in the development of human psychology.

Some of Ilyenkov's books are available in translation. His works *The Dialectic of the Abstract and the Concrete in Marx's "Capital"* (1960), *On Idols and Ideals* (1968), *Dialectical Logic. Essays on Its History and Theory* (1974) and numerous articles provided the basis for a new trend in psychology with

elements of philosophy and logic in the study of the functioning of consciousness and personality, an area now being developed by his pupils.

KHOMSKAYA, Yevgenia (b. 1929), Dr. Sc. (Psychology), Professor.

In 1952, she graduated from the psychology sector of the Philosophy Department at Moscow University, and for the next twenty-five years worked under Luria. In 1952-1957 she studied mentally retarded children at the Institute for the Study of the Handicapped and a children's neurological sanatorium. In 1957 she defended a Candidate's thesis, suggesting a conditional-reflex (verbal and motor) method for differentiating such children. She was the first to demonstrate and assess the possibilities of compensating for disturbances of the conditional motor reactions with the assistance of speech. This problem is part of a larger one – voluntary control over movement and speech organisation in involuntary movement and actions.

Since 1958 Khomskaya has worked in neuropsychology. Since 1972 she has been head of the neuropsychology laboratory at the Institute of Psychology of the USSR Academy of Sciences. Between 1958 and 1968 she investigated the functions of the frontal lobes of the brain.

Khomskaya has written more than 150 scientific papers.

KORNILOV, Konstantin (1879-1957). Dr. Sc. (Education), Full Member of the RSFSR Academy of Pedagogy (since 1944).

After finishing a teacher's college in Omsk (1898), he taught in Siberia until 1905. In 1910 he graduated from Moscow University and became a research worker at the Institute of Psychology. In 1916 he was made an Associate Professor at Moscow University.

In 1921, Kornilov founded the Department of Education at the Second Moscow University. He was appointed Dean and Professor of the Psychology Chair. In 1923, he led a group of psychologists who set themselves in opposition to the then director of the Institute of Psychology, Chelpanov, demanding a restructuring of psychology on a Marxist basis. In 1923-1930 and again in 1938-1941 Kornilov was director of the Psychology Research Institute. In 1944-1950 he was Vice-President of the RSFSR Academy of Pedagogy.

His major works are: *Contemporary Psychology and Marxism* (1925), *Outline of the Psychology of Preschool Children* (1927), *Human Reactions: Reactology* (1927), *Textbook of Psychology from the Dialectical Materialist Viewpoint* (1931), *Textbook for Teacher's Colleges* (1946).

LANGE, Nikolai (1858-1921) began working as a psychologist in Germany under Wilhelm Wundt. His first serious scientific work was devoted to involuntary fluctuation of attention in visual and audio perception. Then, with the addition of historical and critical material, the expanded form became part of his Doctoral dissertation. Subsequently Lange devoted most of his energies to teaching at Novorossiyskiy University in Odessa. He wrote several more scientific papers including *The Child's Soul in the Early Years of Life* (1892), a major article on Wundt's theory of the origin of the myth, an outline of the history of psychology, and a handbook on logic. His major work is *Psychological Studies* (1893) consisting of two works: *The Law of Perception* and *A Theory of Voluntary Attention*.

LEVINA, Rosa (b. 1908), an outstanding child psychologist, Dr. Sc. (Education), Professor.

Levina was also one of Vygotsky's disciples.

In 1936 she completed her article "Psychology of Children's Speech in Pathological Cases" (*Autonomous Children's Speech*, Moscow, 1936), a theme suggested by Vygotsky.

Vygotsky's ideas determined the whole of Levina's career. Her main publications include *Handicaps in Reading and Writing* (1941); *Writing Impairment in Children With Delayed Speech Development* (1961); and *Fundamentals of the Theory and Practice of Speech Therapy* (1958), written jointly with her pupils.

For a long time, Levina headed the speech therapy sector at the Institute for the Study of the Handicapped under the USSR Academy of Pedagogy where she studied the psychological and educational aspects of delayed speech development.

Levina discovered the nature of these handicaps, tracing them to abnormalities in phonematic perception. The rehabilitation methods developed as a result make it possible to completely cure speech and writing disorders.

Studies of speech development in mentally retarded children conducted at Levina's laboratory made important contributions to the psychology of thought and speech.

Levina's investigations generally combine theoretical depth and practical applications which gives them particular social significance. She initiated the establishment of speech therapy centres for school and preschool children in this country.

MAREYEVA, Raisa (b. 1928), head of the Sokolyansky Laboratory for the Study and Education of Deaf, Dumb, and Blind Children at the Institute for the Study of the Handicapped of the USSR Academy of Pedagogy.

After graduating from the handicapped studies department of the Lenin Institute of Education in Moscow, she worked at a school for children with impaired hearing and later at a kindergarten for deaf children. She completed a graduate course at the Institute for the Studies of the Handicapped under the guidance of Sokolyansky. She has been on the staff of the laboratory since 1960 and became its head after Meshcheryakov's death in 1974.

Her major work is *Education and Instruction of Deaf, Dumb, and Blind Children at Home* (1979). Many of her articles have appeared in scientific journals.

MOROZOVA, Natalya (b. 1906), Dr. Sc. (Education), Professor. In 1925 after graduating from a teacher's college, Morozova entered the Education Department of the Second Moscow State University (now the Lenin State Institute of Education) and began research into the psychological development of handicapped children under Vygotsky's supervision.

Morozova devoted more than fifty years of her life to the study of the handicapped. After graduating from the Institute in 1930, she worked as head of the children's group at the psychoneurological sanatorium-cum-school at the Gorky Medico-Biological Institute. She dealt with problems connected with special fields of psychology, revealing considerable talent as a theoretician and experimenter.

In 1939, Morozova became a graduate student at the Experimental Institute for the Study of the Handicapped. During the war Morozova, worked as a teacher and head of studies at the regional school for the deaf-mute children in the city of Ufa and then as senior researcher at the Bashkir Institute of Refresher Training for Teachers. In 1944 she defended a Candidate's thesis in psychology. In that same year she returned to Moscow to work as a senior researcher at the Institute of Psychology.

In 1953, Morozova resumed her work at the Experimental Institute for the Study of the Handicapped.

In 1968, she defended her Doctoral thesis and became a Professor in 1970.

She has published more than a hundred works, including five monographs on the development of speech and thought in normal and handi-

capped children. She made a considerable contribution to the study of the cognitive interests of children and their formation in development, normal and handicapped. While she was head of the department for the education of preschool handicapped children, she and her co-workers carried out a series of interesting studies in the development of auditory perception in deaf preschool children and the training and education of mentally retarded children, and developed a network of special preschool institutions and methods of selecting children for various institutions.

PETROVSKY, Artur (b. 1924), Dr. Sc. (Psychology), Professor, Full Member of the USSR Academy of Pedagogy (since 1971).

He graduated from the Potyomkin Educational Institute in Moscow in 1947 and defended a Candidate's dissertation in psychology in 1950.

From 1952 to 1968 he was first an associate and then a full professor and head of the Psychology Chair at the same institute. He defended his Doctoral dissertation in 1965. Since 1971 he has been chief of the laboratory at the General and Educational Psychology Research Institute of the USSR Academy of Pedagogy.

Petrovsky's research centres on the history of psychology and social psychology. His major works are: *History of Soviet Psychology. The Formation of the Foundations of Psychology, The Social Psychology of the Collective and The Psychological Theory of the Collective*. Petrovsky has authored and edited several textbooks on psychology including *Psychology, General Psychology, and Peer-Group and Educational Psychology* which have been translated into many languages.

RUBINSTEIN, Sergei (1889-1960), major Soviet psychologist and philosopher. He began as a teacher of psychology and logic at a gymnasium in Odessa in 1915. He received training in philosophy at Marburg University (Germany). In 1919, he became an associate professor at the chair of philosophy and psychology of the Novorossiysky University in Odessa and, following the death of Lange, in 1922 succeeded him as head of the Psychology Chair at the Institute of People's Education formed through the merger of the humanities departments of that university. In 1932-1942 he created and became head of the Chair of Psychology at the Herzen Institute of Education in Leningrad and in 1942 he founded the Chair of Psychology at Moscow University and was its head until 1950. He was director of the Institute of Psychology from 1942 to 1945, in 1945 he became head of the Psychology Sector at the Institute of Philosophy under the USSR Academy of Sciences. Rubinstein was the first

psychologist in the USSR Academy of Sciences, having been elected a Corresponding Member in 1943 and Full Member of the RSFSR Academy of Pedagogy in 1945.

An important work in his scientific career was his 1934 article “Psychological Problems in the Work of Karl Marx.” It formulated the principle of the unity of consciousness and activity which provided the basis for subsequent concrete psychological research (including experimental programmes for the study of perception, speech, memory and thought) which he supervised. He used that principle to develop his view of psychology in his two major works, *The Fundamentals of Psychology* (1935) and *Fundamentals of General Psychology* (1940).

The last years of Rubinstein’s life were particularly productive in spite of the debilitating illness that afflicted him. In 1957, his book *Being and Consciousness* was published. It concentrates on the nature of the psyche and its place in the system of phenomena of the material world. The key to the solution of this problem is offered by the dialectical materialist interpretation of determinism. According to this interpretation, external causes act through inner conditions. As applied to psychology, it means that the psyche is included in the overall pattern of phenomena, and always in a dual role – as something conditioned by our life and activity and as something conditioning human behaviour in turn.

Rubinstein’s book *On Thought and Ways of Studying It* (1958) sums up his many years of experimental work on the thought processes. These experiments were concerned not with the learning of ready modes of action but with revealing the mechanisms of man’s creative activity. The deterministic principle in this theory of thought implies the recognition of the inseparable link between the inner laws and conditions of cognitive activity and the external objective conditions as well.

His 1959 book *Principles and Paths in the Development of Psychology* extends Rubinstein’s basic propositions on thought to other important areas of psychology, such as the nature of sensation, the personality and its education, consciousness, etc. In his essays on the history of psychology in the Soviet Union and abroad, which are included in the above-mentioned book, Rubinstein sets forth his views on the pattern of the development of psychology.

His last paper, entitled “Man and the World” (in *Problems of General Psychology*), published posthumously in 1973, systematises the methodological principles and philosophical problems of psychology in terms of

which the principle of the individual and the social, the problem of personality and its links to the world, become central to psychology.

Many of Rubinstein's works are available in translation.

SCHEDEVITSKY Georgy (b. 1929), Cand. Sc. (Philosophy) specialising in scientific methodology, in particular, psychology.

He received training in physics, mathematics and philosophy at Moscow University, from which he graduated in 1953. He defended a Candidate's dissertation in 1964 on "Thought in Speech and Methods of Study." He began his scientific career by studying the mechanisms of the formation of concepts in the natural sciences. Then he took up the problem of the intellectual development of preschool and school-age children, attempting to combine an analysis of the history of culture, the development of philosophy and scientific notions on the one hand, and the analysis of the way children assimilate human culture and develop intellectually on the other.

His major works are: *On the Structure of Attributive Knowledge* (1958-1960), *Study of Thought in Children with Reference to the Solution of Arithmetic Problems* (1965), *Methodological Problems in Systems Analysis* (1964), *On the System of Educational Research (Methodological Analysis)* (1971), *Primary Notions and Categorical Means in the Theory of Activity* (1975).

SKOROKHODOVA, Olga (1914-1982), Cand. Sc. (Education), senior research worker at the Institute for the Study of the Handicapped of the USSR Academy of Pedagogy. As a result of meningitis, she became completely blind and deaf in early childhood.

This chapter contains a compilation of materials about her life and work.

Olga Skorokhodova wrote numerous scientific articles and three books, among them, *How I Perceive, Imagine and Understand the Surrounding World*, which is available in translation.

SLAVINA, Liya (b. 1906), Cand. Sc. (Education), prominent Soviet psychologist, specialist in secondary education.

While in her second year at the University, she began working with Vygotsky and was a member of his team until his death.

After graduating from the Second Moscow State University in 1930, she taught at a school that trained nurses for crèches in Yaroslavl and a year later joined the psychology laboratory at the Institute of Physical Education. She worked at a school, then as junior research worker under

Leontyev at the psychology laboratory of the Krupskaya Academy of Communist Education. Later she taught adult illiterates until 1938, when she entered a graduate course at the Institute for Mother and Child Care, specialising in early childhood psychology. Slavina completed her graduate course in 1941 but was unable to defend her thesis because the war broke out. During the war she worked as an instructor at crèches and as a researcher at the Institute for Mother and Child Care in Alma-Ata.

In 1944 Slavina returned to Moscow and joined the Institute of Psychology's child psychology sector headed by Leontyev.

In 1945, she defended a Candidate's thesis on "Understanding of Oral Stories by Young Children."

When a laboratory of schoolchild psychology was set up as part of the Child Psychology Sector and Bozhovich became head of that laboratory, Slavina joined her in doing research on the motives for learning, the role of the family in shaping the attitudes of schoolchildren toward learning, and psychological analysis of marks as motivation for learning.

Her major works are *The Handling of Low Achieving and Undisciplined Pupils* (1958, translated into Spanish), *Children with Affected Behaviour* (1966, written jointly with Bozhovich), *Know the Child to Educate It* (1976), and *Mental Development and Education of the Schoolchild* (1979).

SMIRNOV, Anatoli (1894-1980), Dr. Sc. (Education), Professor, Member of USSR Academy of Pedagogy since 1947.

After taking a degree in history and philology at Moscow University (1916), he worked at the Institute of Psychology, then at the Academy of Social Education, at the Institute for Extra-Mural Education, and at the Moscow Institute of Education. From 1941 to 1951 he was Professor at Moscow University, and from 1957 to 1963, he was President of the Psychological Society of the USSR. He was head of the Institute of Psychology for thirty years and chief editor of the journal *Voprosy Psikhologii* for a quarter of a century.

Smirnov's experimental work was devoted to visual perception and problems of memory. He wrote papers and books on general and child psychology, psychology of education, and the history of psychology; he co-edited the two-volume work, *Psychology in the USSR*.

His major works are: *Psychology of the Child and Adolescent* (1926), *Occupational Psychology* (1927), *The Psychology of Remembering* (1948), *Problems in the Psychology of Memory* (1966) and *The Development and Present State of Psychology in the USSR* (1975).

SOKOLOV, Alexander (b. 1911), Dr. Sc. (Psychology), Professor.

After graduating from the Biological Department of the Institute of Education (1934), he completed a graduate course at the Institute of Psychology (1937) where he remains until the present time. He is now head of the Institute's Thought and Speech Laboratory.

In 1938 he defended a Candidate's thesis on "Consciousness and Habit," and in 1967 a Doctoral thesis on "Inner Speech and Thought."

He also taught at Moscow University, first in the psychological sector of the Philosophy Department and later in the Psychology Department.

His major work, *Inner Speech and Thought* (1968), was published in the USA in 1972 and reprinted in 1974.

At present, Sokolov is engaged in research on the psychophysiology of thought and the encephalographic aspects of the speech mechanisms of thought.

SOKOLYANSKY, Ivan (1889-1960). Sokolyansky was born into a Cossack peasant's family in the Kuban. He received an elementary education in his village and graduated from the Kuban Teacher's College. In 1908, after receiving a matriculation certificate, he entered the Education Department of the School of Natural History at the St. Petersburg Psychoneurological Institute, from which he graduated in 1913.

Sokolyansky received further training in the field of studies of the handicapped at the Mariinsky Educational Courses in the department for the education and instruction of deaf mutes. He took a course in experimental psychology under Professor Lazursky and Professor Bogdanov-Beresovsky. Lagovsky was also among his teachers. Sokolyansky studied education of the blind under Professor Krogus. He attended lectures by outstanding Russian physiologists Vvedensky, Bekhterev and Pavlov.

He began his career as a teacher while still an undergraduate. Between 1910 and 1919, he taught at a school for deaf mutes. He wrote his first works on special education and public education during that period.

His involvement in revolutionary activities resulted in his being blacklisted and exiled to the Vologda Region.

After the October Revolution of 1917, Sokolyansky worked with tremendous energy to set up new Soviet schools. At that time there was no educational journal or newspaper of any significance in the Ukraine to which he did not contribute.

The articles he published – “On Education” (1917), “Misfortune or Social Crime” (1920), “Handicapped Children in the System of Social Education” (1923), “On the Behaviour of the Personality” (1925), “The School and the Children’s Movement” (1925), “Dire Legacy” (1925), “The Children’s Movement, the School and the Teacher” (1925), “The Problem of Organising Behaviour” (1926) – evoked great public response.

In 1919, Sokolyansky organised a school for deaf-mute children in the town of Uman. In 1920, the Ukrainian Minister of Education appointed him Associate Professor of Education of the Deaf and Psychology at the Special Education Department of the Public Education Institute in Kiev. In 1923, he joined the Kharkov Public Education Institute, and in 1926 was appointed Professor of the Handicapped Studies Department at that Institute and Dean of the Special Education Department.

Immediately after the October Revolution, Sokolyansky became involved in work with homeless children and was appointed officer of the Ukrainian Ministry of Education and later inspector of institutions for handicapped children.

He founded a network of educational institutes for handicapped children in the Ukraine shortly after the establishment of Soviet government. On his initiative, joint medical and educational centres were set up to coordinate all the research in studies of the handicapped.

Sokolyansky was among the organisers of the Educational Research Institute in the Ukraine. In 1926 he became the director of that institute and head of the department for the study of the handicapped. In 1930, Sokolyansky became the first director of the newly organised Research Institute for the Study of the Handicapped in Kharkov.

During these years, he held other leading posts in the system of education of handicapped children and wrote articles on special education that are still relevant today: “On So-Called Lip Reading in Deaf Mutes” (1925), “Articulation Schemes in the Receptive and Effective Speech of Deaf Mutes” (1926), “On the Method of Teaching Oral Speech to Deaf Mutes” (1930), to mention but a few.

Sokolyansky’s research and educational activity in studies of the handicapped was wide-ranging. He was a major specialist in the education of deaf children. His works on the teaching deaf mutes their native language, lip-reading, and the speech regime of the deaf were very important

for the general development of the social education of deaf mutes. In these studies, he did not confine himself to specific questions of the education of deaf mutes. His work was aimed at improving the whole system of education for handicapped children. His works in education of the blind are known to those who work with the handicapped. Sokolyansky constantly took on the most difficult cases in special education. He developed individual methods of education for persons not covered by the existing system of public education. For example, he developed a manual for individual instruction of adult deaf mutes living in rural areas and a special primer for schools for adult deaf mutes. On his initiative, a school-and-clinic for deaf, dumb, and blind children was set up in Kharkov.

That institution was visited by delegates to an international congress of physiologists. According to their comments in the visitors' book, the clinic for the deaf, dumb, and blind was an outstanding research institution in Soviet and international science... "An institution like the one in Kharkov could hardly be found anywhere else in the world," they wrote.

Sokolyansky's work with deaf, dumb, and blind children attracted Gorky's attention. In his letters to Sokolyansky and Skorokhodova, the great writer stressed the significance of that work.

In 1939, at the invitation of the RSFSR Ministry of Education, Sokolyansky came to work at the Moscow Special Schools Research Institute (now the Institute for the Study of the Handicapped of the USSR Academy of Pedagogy), where he resumed his work on the problems of teaching the deaf, dumb, and blind.

It was characteristic of Sokolyansky's activities as a scholar and educator that he constantly used the latest technical achievements in the instruction of deaf, dumb, and blind, deaf-mute, and blind children. He had himself invented some valuable technical equipment for use in these fields: the Braille screen for deaf mutes (1941), the mechanical primer and others. He developed an ordinary-script reading machine for blind, and deaf, dumb, and blind persons. See his articles: "The Blind Can Read Any Book" (1936), "A New Method of Reading for the Blind," "On the Reading of Flat Script by the Blind and Deaf, Dumb and Blind" (1956). Various teletactors designed and suggested by him are now indispensable instruments in the instruction of the deaf, dumb, and blind. Sokolyansky worked fruitfully in that field until his last days.

TSVETKOVA, Lyubov (b. 1929), Dr. Sc. (Psychology), Professor. She began work in neuropsychology under Luria in 1958 and defended her Candidate's thesis (1962) and Doctoral thesis (1970) on this problem. After defending her Candidate's thesis she became head of a research team studying speech disorders and rehabilitation techniques at the neuropsychology chair headed by Luria. After defending her Doctoral thesis she became head of the Laboratory of Neuropsychology and Rehabilitation of Higher Psychic Functions set up at the Nervous Diseases Clinic of the Sechenov First Medical Institute in Moscow and continues to work in this capacity.

Tsvetkova has worked under Luria's guidance for many years, starting in 1958. The main task of her laboratory is to develop her teacher's ideas in neuropsychology. She supervises research in the development of the theory and scientific methods for restoring not only speech in aphasics but also other mental processes, such as memory, thought and perception.

Tsvetkova has written more than 130 scientific works, including five monographs, and has edited two collections put out by the laboratory. One of her monographs, *Neuropsychological Analysis of Problem Solving* was co-authored with Luria. Her book *Rehabilitation and Training of Patients with Localised Brain Damage* won her the Lomonosov Prize.

YAROSHEVSKY, Mikhail (b. 1915), Dr. Sc. (Psychology), Professor.

After graduating from the Institute of Education in Leningrad in 1937 he worked as a secondary-school teacher and later as a lecturer at an Institute of Education. He completed a graduate course at Moscow University and in 1945 defended a Candidate's dissertation on the theme "Potebnya's Teaching on Language and Consciousness." Between 1945 and 1951 he was a researcher at the Institute of Philosophy and between 1951 and 1964, head of the Chair of Psychology at the Institute of Education in Dushanbe (Tajikistan). Since 1964 he has headed a sector at the Institute of the History of the Natural Sciences and Technology of the USSR Academy of Sciences.

His Doctoral dissertation, defended in 1961, was published as a monograph entitled *Problems of Determinism in the Nineteenth-Century Psychophysiology*.

Yaroshevsky's other works include: *History of Psychology* (1966; revised edition, 1976), *Ivan Mikhailovich Sechenov* (1968), *Psychology in the Twentieth*

Century (1971; revised edition, 1974), *The Development and Present State of Western Psychology* (1974).

ZAPOROZHETS, Alexander (1905-1981). Dr. Sc. (Psychology), Full Member of the USSR Academy of Pedagogy, Director of the Preschool Education Research Institute of the USSR Academy of Pedagogy, he made major contributions to the development of the main problems of Soviet psychology, to asserting the principle of activity in the approach to the study of the nature of the psychic processes, the problems of mental development in children, and the building of the Soviet system of pre-school education.

He graduated from the Education Department of the Second Moscow State University (now the Lenin State Institute of Education) in 1930. Zaporozhets was initiated into scientific research while still an undergraduate when he joined a small research group. Between 1929 and 1931 he worked as a laboratory assistant and then as a junior researcher for the Chair of Psychology at the Krupskaya Academy of Communist Education. During that period he studied the problem of the origin of signs and their role in the psychic processes. In 1931, he, Leontyev and Luria, moved to Kharkov to join the newly organised psychology sector at the Ukrainian Psychoneurological Academy as a senior researcher and soon as head of the developmental psychology laboratory. There he conducted some basic experimental studies to find out the role of concrete actions in the child's mental development. In 1936 he presented this investigation as a Candidate's dissertation entitled "The Role of Activity and Speech in the Mental Development of the Child."

Simultaneously, Zaporozhets began to work for the Psychology Chair of the Kharkov State Institute of Education. In 1938, he became head of that chair. Under his guidance, the members of the chair studied the development of perception and thought in children. The most important feature of this research was that it pioneered the understanding of perception as a distinct kind of activity determined by the objective properties of the thing under consideration.

During the Second World War, he worked at a convalescence hospital on the scientific and practical aspects of restoring disrupted motor functions after injuries. This work confirmed his ideas on the structure of activity, the relationship between the motives and goals of actions, and between actions and operations. Zaporozhets invented some new devices

for work therapy. His activities during this period were summed up in the monograph *Restoration of Movements* which he co-authored with Leontyev.

In late 1943, he moved to Moscow to work at the Institute of Psychology of the RSFSR Academy of Pedagogy and simultaneously at Moscow State University. Since 1944, he was head of the laboratory of the Psychology of Preschool Children at the Psychology Institute of the RSFSR AP. The main problem which engaged him, experimentally and theoretically, was the dependence of various psychic processes on the motives and tasks of activity. Data obtained in the course of his studies in this area provided the material for his Doctoral dissertation, defended in 1958 and published as a monograph, *The Development of Voluntary Movements*.

Zaporozhets devoted much energy to training young scientists. He lectured on child psychology at the Psychology Department of Moscow University and was adviser for many Candidates' dissertations. Following the trend in Soviet psychology initiated by Vygotsky, he created an independent branch of psychology for preschool children.

In 1958 Zaporozhets was elected a Corresponding Member of the RSFSR Academy of Pedagogy and in 1960 was appointed Director of the Preschool Education Research Institute. As the director of that institute, he effected successful links between research into the psychology of infants and preschool children and theoretical and practical studies into the key questions of education and the elaboration of a system of preschool education.

Zaporozhets published more than one hundred experimental and theoretical works including monographs and scientific articles. Among them was a textbook on psychology for institutes training preschool teachers published in 1953 and reprinted twice since then. This textbook earned him the Ushinsky Prize. Many of his works were translated.

In 1968 Zaporozhets was elected Full Member of the USSR Academy of Pedagogy and a Member of its Presidium. He took part in many international psychology conferences, symposiums, and seminars on child psychology and preschool education.

ZINCHENKO Vladimir (b. 1931), Dr. Sc. (Psychology), Professor, Corresponding Member of the Academy of Pedagogy of the USSR (since 1974).

After graduating from the Philosophy Department of Moscow University (1953), where he majored in psychology, he taught logic and psy-

chology at secondary schools for five years. Simultaneously, he did a graduate work at the Institute of Psychology and in 1957 defended a Candidate's dissertation entitled "The Formation of Motor Habits." Since 1956 he has worked part-time at the Institute of Psychology, and since 1960 at Moscow State University. He has been working in industry at the same time. In 1966, Zinchenko defended his Doctoral dissertation on "Perception and Action." Zinchenko is Vice-President of the USSR Society of Psychologists.

He has written ten books and some 250 articles. His major works are *Perception and Action* (1967), also available in Japanese, *The Forming of Visual Image* (1969), also available in Czech, English, and Hungarian, *The Psychology of Perception* (1973), *The Fundamentals of Ergonomics* (1979), and *The Functional Structure of Visual Memory* (1980).

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