

Elkhonon Goldberg

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Goldberg: Well, I'm delighted to have this occasion to honor my mentor and friend and teacher, Alexander Romanovich Luria, truly a great neuropsychologist, and to use the vernacular of the day, a cognitive neuroscientist, even though this phrase had not been coined in his time. And I am honored to have this event being conducted under the auspices of the National Institutes of Health. I think that this alone is a tribute to Alexander Luria.

Farreras: I'm Ingrid Farreras and I'm working for the NIH History Office.

Mirsky: And you should mention that you are a historian as well and not just working for the office. It's people like you who make the office what it is. I should identify myself. I am Allan Mirsky. I am currently chief of the Section on Clinical and Experimental Neuropsychology in the National Institute of Mental Health, and I am honored and delighted to be able to participate in this tribute to Professor Luria and to share with you some of my experiences with him and the impact that his work had on my career.

Goldberg: And I'm Elkhonon Goldberg. I am clinical professor of neurology at New York University School of Medicine and director of the Institute of Neuropsychology and Cognitive Performance in New York.

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Farreras: You were just mentioning now that much of the tribute to Alexander Luria is usually based on his other work, maybe developmental psychology or cultural psychology. Would you like to talk about some of those other areas and segue into what it is that you're hoping to emphasize here?

Goldberg: Well, Luria's contribution to neuropsychology and to science in general is nothing short of astounding. He really contributed to many, many fields. He started out as a developmental psychologist and as a cross-cultural psychologist and made an indelible mark, left an indelible mark on these fields. But then, somewhat later in his career, he turned toward neuropsychology, which in those days did not even exist as a well-articulated discipline, and was one of the few people who are credited with actually creating this field of neuropsychology. And to that end, his contribution was unique because he was both a psychologist and a physician by training, the latter degree having been obtained somewhat later in his career. Psychology was his first calling and medicine his second calling. But that allowed him to really converge and integrate in a unique way and in an unparalleled way insights into the biology of the brain with the insights into the structure and nature of cognition, and this is what makes his contribution so seminal.

Farreras: You had mentioned the other day that he had started working with Luria on some of the more cross-cultural work with the Uzbeks and then had to

change his research toward a more neuropsychological approach. Would either of you care to . . .

Mirsky: Well, Nick, aka Elkhonon, could speak more to the issue of the incredible balancing act, from my perspective, that Luria engaged in during his years when free inquiry in the Soviet Union was really not, say, appreciated, and one had to hue the party line very carefully for fear of losing life and limb. He was able to do this and to make his monumental contributions to the field under extraordinary conditions, and I think it's -- well, it was clear that some of his contributions to developmental and cross-cultural psychology could not be published for many years after their original work had been done because it just would not have been politic, to say the least. Amazing, amazing career. I don't know that others would be able to duplicate that kind of effort.

My particular contact with Luria, if I could begin that, was roughly 1958 right here at the National Institutes of Health.

Goldberg: That was even well before my original contact with Alexander Luria.

Mirsky: Yes. He was visiting the United States as part of a tour of research facilities, and one of the laboratories that he visited was the Laboratory of Psychology, and Haldor Rosvold was at that time chief of the Section on Animal Behavior, as it was called. It was called animal behavior for probably political reasons rather than scientific reasons.

In any event, Luria toured the various investigators, various groups in the laboratory, and he came to see me. Rosvold, I recall, brought him into my office and left the two of us alone. I was obviously in great awe of this monumental figure, but he was as sweet as he could be.

I at that time was working on studying absence epilepsy and the relationship between various EEG phenomena and behavior and showed him a recording that I had done recently in a patient with absence or petit mal epilepsy. He looked at it. He got the point immediately of what I was doing and said -- I had a particularly striking example of the effect of a particular sort of EEG pattern on behavior -- and he said to me, I remember, "And people say there is no relationship between the brain and behavior. Look at your data." Of course, that stuck with me forever, and 45 years later I still remember his benign and warm comments to me.

And in this and other contexts he has made the point that psychophysiological investigation was a very significant part of neuropsychology, and there are many examples in his written work about the incorporation of psychophysiological measurement, and that was again, for me, an important stimulus and a kind of reinforcement that what I was trying to do as a neuropsychologist was within the mainstream and was appreciated, and the fact that it came from a towering figure like Luria had a tremendous impact on me and my career.

Farreras: Did you want to . . .

Goldberg: Well, of course, my original encounter with Luria took place much later and under totally different circumstances. I was a student of his, first an undergraduate, then a graduate student, then a postgraduate student of his. And then at some point I came to the United States, and the one thing which left me in awe was the awareness, once I came here, of the degree to which he was known and respected here, because familiarity breeds casual attitude. And while I was his student, his associate, and we used to work together on a daily basis, this perspective was absent of his impact on science worldwide. And when I came here, the magnitude of this impact became very obvious. At the risk of offending, possibly, other people, let me just say that of all the Soviet \_\_\_\_\_ psychological luminaries of the time, he was the only one well known in the West, certainly better than anybody else and probably, too, the only one who was revered in the West.

And now, more than a quarter of a century later, I remain awed by his impact by watching the influence of his ideas grow rather than recede. And that's as much as any scientist can hope for, to have his ideas and his theories to continue to exert impact well beyond his physical biological life span, and in Luria's, it's clearly the case.

Keep in mind that Luria sort of made his mark in the day when the

science of the mind, psychology, and the science of the brain, neuroscience, were totally divorced from each other. Okay? These were the days when professors of psychology used to pride themselves of not only not knowing anything about the brain but not even caring to know anything about the brain, and at the same time, biologists, neurobiologists included, used to frown upon psychologists, people concerned with cognition, as being outside the pale of science. Okay? And then much later, with the union of these two disciplines into what today is called cognitive neuroscience -- and it wouldn't be much of a stretch to say that today almost all of psychology has become cognitive neuroscience -- and Luria would be way ahead of his time in sort of integrating, seeing both sides of the coin, the brain side and the mind side, and integrating them into one cohesive theory and approach. And so it comes as no surprise that some of the people who are credited today in this country with being the founding fathers of cognitive science, like Jerome Bruner [sp.], count themselves about Luria's disciples, and truly so.

And, of course, a totally different contribution that he made is one of the romantic sides, to use his own turn of phrase, where in addition to his very systematic and theoretically driven neuropsychology research, he also engaged in these very humane, almost poetic explorations of individual cases, and there, too, he was well ahead of his time. Today we

see a whole panoply of books devoted to the genre. But he was clearly the originator. And so, again, it comes as no surprise that people like Oliver Sachs, who's probably the single most best-known representative of the genre, counts himself as a disciple of Luria's.

And then yet another contribution that he made is in the area of neuropsychological assessment. I mean, after the years of infatuation with the strictly psychometric quantitative approach, there has been a surge of interest in this country in the so-called process approach or qualitative approach. And basically, again at the risk of possibly offending some people, I would venture to say that it basically is nothing other than the reinvention of the wheel, because this so-called process approach and qualitative approach is precisely that which Luria had practiced and, in fact, helped shape more than half a century ago.

Mirsky:

Right. It's unfortunate that his estate does not share in some of the revenue from the tests that are marketed really essentially based on his approach the assessment of patients.

It may be appropriate to talk a little bit about that, the assessment. Possibly more people know of the Luria Nebraska so-called evaluation that was developed in his name. I'm sure that Luria himself had nothing to do with it. And it represented in some ways the apotheosis, the exact opposite, of what he had proposed, namely a flexible but thorough clinical

evaluation rather than a forced questionnaire coming up with numbers which may or may not have any meaning.

I recall this personal recollection of a patient that we evaluated in our laboratory who had had two prefrontal lobotomies so that she had no frontal lobes. Nothing in front of the central sulcus was visible either on a PET scan or a CT scan. She was administered the Luria Nebraska by a competent practitioner, and the conclusion was that she was normal, without brain injury. That was the end of my association with the Luria Nebraska, not with Luria, obviously. So in his name, there have been certain -- again, at the risk of offending certain parties -- in his name, there have been tests developed based on kind of a partial grasping of what it is that he did and what he represented, and I think it's true that Edith Kaplan and others have sort of reinvented the wheel, so to speak, in the newer versions of the Wechsler scales that are called process.

Goldberg: Yeah, and they did a good job of it.

Mirsky: Yes. But it's not something . . .

Goldberg: But one should be cognizant of the literature.

Mirsky: Where it came from.

Well, it's the same idea, if I could just stray a little bit. The Wisconsin Card Sorting Test, which is marketed by many companies now and is usually associated with the name of Robert Eaton, who developed a

particular way of scoring it. But this test originally published by Grant and Berg around about 1949 is based on the work of Kurt Kostein [sp.], and it's Kostein's [sp.] principle, his notion of the impairment of the abstract attitude, which led to the development of an instrument, and that's lost, that's lost. And somehow or other, we hope that Luria's contribution, his way of approaching patients, his analysis of deficit based on a theory that he had developed, should be given the recognition that it deserves and should not be lost in history, which sometimes happens.

Goldberg: Right. But, fortunately, I think that Luria's place in the history of science is quite secure, and so we are very pleased that you are helping make it even more secure.

Farreras: Thank you.

I wanted to back up to something that you'd said earlier combined with something you'd said about how a lot of his works didn't see . . .

Goldberg: Publication.

Farreras: . . . publication for many, many years. And in the history of psychology, usually you hear this associated with a lot of \_\_\_\_\_ students. Lots of Americans who went to Europe to study under him and then brought a lot of that work here to the United States, and I'm wondering if there was any similar . . . When you're talking about Luria's work here even early on, was that pre the times that his work was published in Russian, that was

allowed to be published in Russia, or was it once it was translated into English?

Goldberg: You see, Luria's circumstances were very different from the circumstances of these European psychologists that you are alluding to. He was operating under this oppressive regime. In those circumstances, neuropsychology was one of the few fields which was allowed to blossom, at least relatively, because it was so ideologically agnostic and so ideologically neutral, and so he moved from sort of the ideological minefields. So his work in neuropsychology, I don't think that it was stifled in the Soviet Union, and his original Russian monographs were translated into English right away, more or less. So the neuropsychological aspect of his career was being introduced to the West more or less in real time, more or less right as it was unfolding in Russia.

Where his work had been stifled pertains to some other interests of his, in fact, earlier interests of his, his interest in cross-cultural psychology. And there, that was so close to these, so embedded, in fact, in these ideological minefields that in fact he was sort of prevented from continuing this work of his and then prevented from publishing his own results, and these results were published with a huge delay, delay measured in decades, not even in years. Okay?

It is interesting -- and it's a bit of a personal vignette -- how one of

his very first and most seminal essays on the relationship between the brain and the culture, which he wrote together with \_\_\_\_\_ Vigodsky [sp.], his friend and his mentor, through a sheer kind of a mishap, I guess, was available in English before it became available in Russian. And I was sort of drawn by Luria into a bit of a \_\_\_\_\_ related to that many years later when finally, after many years of oblivion and ostracism, Vigodsky [sp.] was embraced again in the Soviet Union in the late '60s as one of the great psychologists that he was. A decision was made to publish a multi-volume edition of his writings. Now, Luria, parenthetically, who was in a very noble and honorable way always very faithful to the memory of his friend, even during these years and decades when any mention of Vigodsky was in fact bad, Luria continued to be faithful to his memory despite the dangers associated with it. So when finally this ban was lifted, Luria and Vigodsky's [sp.] widow, Rosa Vigodsky [sp.], embarked on this project preparing his published and unpublished works for this multi-volume edition.

And then Luria found, was looking for a paper which he and Vigodsky [sp.] had done many years prior, sometime in the late '20s, which was in an embryonic form, sort of stated and \_\_\_\_\_ virtually all of their subsequent theoretical developments, okay, kind of a theoretical manifesto written by these two young men at the time as a prefiguration,

sort of like a lifelong, blueprint for a lifelong research project in psychology. And then, to his dismay, he found out that the Russian original had been lost, and he couldn't find it.

What he did find instead were the English translation of this paper, which the two of them had prepared for a meeting to have been held in New Haven, Connecticut, sometime in the late '20s, but they never actually delivered the paper. But the translation had been made in anticipation of this trip, which never took place.

And so he sort of summoned me and in his businesslike kind of fashion told me, "Listen, translate it back into Russian. \_\_\_\_\_. Make it sound like Vigodsky [sp.]. Just make it simple," which I did. And so this kind of innocent bit of forgery I think has been published and passed for Vigodsky's [sp.] original manuscript in the first volume of this multi-volume \_\_\_\_\_.

Mirsky: So this is by way of a revelation, yes. I'm sure that's going to hit the newspapers and the gossip magazines immediately. Right?

I just hesitate to add that that meeting was probably going to take place under the auspices of the Yale University Department of Psychology, so I put a plug in for my old alma mater.

Goldberg: That's right. That's way before your time.

Mirsky: Right, fortunately.

Farreras: When you talk about the work that Luria and Vigodsky were doing together and the fact that they were actually leaving the country in order to go to conferences and be able to talk about their work, around what time . . .

Goldberg: Well, they never \_\_\_\_\_ in New Haven.

Farreras: But was it allowed for them to be in the country and talk about . . . As long as it's on the neuropsychological work, were they allowed to travel outside and discuss the findings they had?

Goldberg: Well, their fates diverged. Vigodsky died very young. Vigodsky died -- I forget the exact year -- 1935 or thereabouts, being basically a man in his mid- to late twenties. He was 37 or 38 at the time of his death.

Mirsky: Was it tuberculosis?

Goldberg: Yeah. It was tuberculosis. And, in fact, I recall a conversation that I had with his widow many years later, in the mid-'60s, as I was assisting them with the preparation of these manuscripts, and she said something that first struck me as being totally \_\_\_\_\_. And then on the second thought, it made a lot of kind of \_\_\_\_\_ sense. She said, "My husband died so young, and thank God," at which point my jaw dropped, and then she continued, "because otherwise, had he lived a year or two later, he would have been slaughtered in the labor camp," which probably would have been the case.

But Luria lived a long life, unlike Vigodsky, and times had

changed very considerably during Luria's lifetime. I don't know whether Vigodsky had been able to travel during the early years of the Soviet Union. I just honestly don't know. You see, the situation changed. The political climate changed there considerably more than once. Right after the 1917 revolution, there was a period of about a decade of relative freedom, and, in fact, some degree of intellectual and cultural ferment, and people were able to travel, from what I understand. And then all the screws were tightened and borders were sealed, and for many years it was no longer possible to travel.

And then gradually, in the '60s, maybe beginning even in the late '50s and then certainly into the '60s and on, there was a certain political \_\_\_\_\_ that came, and some limited, highly controlled opportunities for travel emerged. Okay? And Luria was able to travel. By that time he was already a world-renowned figure in psychology, a world-renowned scientist, and so people like that were allowed to travel as part of the Soviet sort of window dressing, if you will, but in a highly controlled way.

For instance, Luria kept mentioning, sort of with annoyance, that it was never possible for him to travel with his wife. They always kept a hostage behind. You see what I'm saying? His wife was a prominent scientist in her own right, an oncologist, and also author of books and was a very respected and highly regarded scientist in her own right, and she

used to attend her scientific conferences, he used to attend his, but they were never allowed to travel together. So even to the extent that this relative freedom took place, the emphasis should be on relative. It was a highly controlled situation, highly restrictive, a highly oppressive situation, but less oppressive than during the '30s or '40s.

Mirsky: Well, I think it was the Soviet recognition of his eminence that allowed him to travel.

I can recall attending an international conference in 1964 and having met a very bright and charming young Russian psychiatrist named Lapin [sp.] and suggesting that he come to the NIH and that we would have a wonderful time talking about research and maybe talking about some collaboration. I think he tried for at least 10 or 15 years to get permission to travel to the United States and was never allowed, never got permission. I don't know whether it was because he was a Jew or a psychiatrist or just hadn't got the eminence that . . .

Goldberg: Well, Luria was also Jewish.

Mirsky: Yes, but his position was sort of beyond . . .

Goldberg: Luria was an extraordinarily \_\_\_\_\_.

Mirsky: \_\_\_\_\_ member of the Academy. Right, the Russian Academy?

Goldberg: He was a member of the Academy of Pedagogical Sciences. They had several academies. They had the Academy of Science and the Academy

of Medicine and the Academy of Pedagogical Sciences, and he was a member of the latter.

Mirsky: But his prominence, I think, was what enabled him to travel, and lesser younger persons just wouldn't have that opportunity during those years. I think that probably changed in the '90s. After the breakup of the former Soviet Union, things changed considerably, I would imagine. You yourself have returned to Russia on more than one occasion, is it?

Goldberg: That depends on what you count as Russia. I went once to Aregu, which is my hometown, which is no longer part of the Soviet Union. There is no more Soviet Union. And I went to Moscow once.

Mirsky: But I think that's a sign of the fact that things are different now, that you felt comfortable enough to return.

Goldberg: Correct.

Mirsky: Yes.

Goldberg: Moreover, I plan to go there tentatively in September to attend this Luria memorial \_\_\_\_\_. You should come, too.

Mirsky: I know I received . . .

Goldberg: And you should come.

Farreras: \_\_\_\_\_.

Mirsky: I received an invitation, and it would be wonderful to be in Moscow other than in January or February.

Goldberg: The end of September, which is actually a pleasant time of the year.

Mirsky: Right.

Farreras: Can we talk a little bit . . . You talked about how by the late '50s and early '60s, when he was considered to be such an eminent person and allowed to travel back to the United States, or to the United States . . .

Goldberg: And to Europe. He was actually traveling all over.

Farreras: And to Europe. Could we back up and talk about what led to that eminence, what type of work he was doing, the kind of progress in the research that he was doing that led him to become known?

Goldberg: Right. Well, to recede sort of chronologically, if one were to write a Luria retrospective, then sort of with the benefit of an aerial view, then one would say that he's recognized universally as someone who contributed probably more than anyone else to the design of a comprehensive theory of brain behavior \_\_\_\_\_, which tied together both the biological and the cultural and cognitive aspects. Okay? But that's kind of an aerial view and a retrospective.

If you sort of follow his career chronologically and sort of in real time, then his first important neuropsychological contribution was, \_\_\_\_\_ the first, was sort of, culminated in a huge monograph titled *Traumatic Aphasia*, which was based on the studies of penetrating gunshot wounds, and -- of course, during and right after World War II, there was no

shortage of those -- to describe various ways in which language may be impaired and to \_\_\_\_\_ this material to compile a comprehensive theory and understanding of the brain mechanisms of language. Okay? And I think that this book was translated into English, and I don't know what other languages, but I think that it made a very important impact in this country also and sort of established him in the West as a preeminent figure in neuropsychology.

And, again, a little aside. Sort of to the embarrassment of our field even today, there are almost as many taxonomies of aphasia, and, of course, aphasia is a language disorder, \_\_\_\_\_ phraseologies. So there \_\_\_\_\_ uniformity in the field, unfortunately. Okay?

And in this country, the taxonomy of aphasia as proposed by Norman \_\_\_\_\_, the late great behavioral neurologist, American behavioral neurologist, is very prominent, probably more prominent than others. But \_\_\_\_\_ taxonomies was different. Again, it sort of highlighted his background and his uniqueness, because unlike most taxonomies, which are based on some presumed hypothetical, very often speculative hypothesized anatomical mechanisms underlying these aphasias, Luria's taxonomy of aphasia was closer to the content area. It was based on cognition. Okay? And it was first spelled out in that book. And then, of course, he wrote another book, *Higher Cortical Functions*, which, if my

memory doesn't fail me, was published first in Moscow, in Russia, in 1962 or thereabouts, and I think virtually was translated into English almost English. It was published here in 1966 or thereabout. And to this day it's regarded as one of the most influential volumes in neuropsychology, to this day, even though we're almost half a century later.

And then, and in that book, that was, I would even say, the first book ever, the first monograph ever attempting, at least, to present a well-articulated, comprehensive theory of brain-behavior relations. Alan, would you say so?

Mirsky: Oh, absolutely. I would just add that after it was published in 1966, and I think Carl Premer [sp.] was very influential in getting it translated and published by Basic Books, I was asked by a journal to review it, and it was an amazing experience reading it. He had left nothing out. It was that comprehensive and detailed and provided a framework for all kinds of neuropsychological speculation and assessment. And I think after his book was published in English, I think that was the one that probably brought him into most prominence in the United States.

Goldberg: I think \_\_\_\_\_ worldwide.

Mirsky: Yes. *The Higher Cortical Function in Man*.

Goldberg: Right.

Mirsky: That book.

Goldberg: Right, absolutely. I agree completely, and it established him as the preeminent figure in neuropsychology. And, again, it was unique in that he somehow integrated both theory and political material and offered a roadmap both to the neuropsychological theory of brain behavioral relations, or what later sort of blossomed into cognitive neuroscience, and to the neuropsychological assessment because he described all these various phenomena and syndromes, and that provided a foundation of a very comprehensive and sound neuropsychological assessment.

And then there were other books: *The Working Brain*, which is sort of like a digest version of *The Higher Cortical Functions*, slightly condensed, slightly abbreviated, slightly sort of toned down in terms of sort of the intellectual kind of rigor, kind of a student version of this book, which also to this day remains popular and highly regarded, etc., etc., etc. But I think that I agree with Allan completely that he really established himself in terms of his preeminence with his book, *Higher Cortical Functions*.

Mirsky: One sort of personal note involving both you and Luria. When I first encountered you, it was at the meeting of the International Neuropsychological Society in Florida.

Goldberg: That was 1975, half a lifetime ago

Mirsky: Yes. Half a lifetime. And you presented a paper having to do with perseverative behavior in patients with frontal lesions. And I thought to myself, Luria is alive and well in Elkhonon Goldberg.

Goldberg: Well, in those days Luria was indeed alive and well. He died two years later.

Mirsky: Two years later.

Well, as I told you, it was the best paper of the meeting as far as I was concerned, and, well, that was the beginning of our friendship.

Goldberg: Right.

Mirsky: Personal note.

Farreras: Once these books were published, translated and published here in English, was there any reception that he was aware of? Was Luria then . . . I'm trying to think, were there any sort of dyadic relationship that began with the U.S. psychological population?

Goldberg: Very much so.

Farreras: Okay. In terms of going to work with him or in terms of changing the current scientific approach to neuropsychology here?

Goldberg: Absolutely, and it took many forms.

First of all, as his writings were becoming increasingly well known here, they were making an increasingly great impact on the evolution of American neuropsychology and Western neuropsychology in general, so

his physical presence was not even needed, so to speak. I mean, his work was being increasingly \_\_\_\_\_ and was becoming increasingly influential. But there was also an exchange. He was allowed to come here, as we discussed earlier, so he traveled frequently all over the world and sort of made a personal impact with his lectures and personal \_\_\_\_\_, and he was a very charismatic, very articulate person, multilingual, polyglot, spoke good English, very good German. German was his second childhood language. English was not, but still he spoke very good English and he spoke good French. So he was really very much attuned with the West and sort of the Western culture, and he was not an oddity. Many of these kind of Soviet types, even some prominent scientists among them, sort of looked and acted and behaved as if they were from a different planet. He was not like that. He was perceived by the Westerners as one of them in terms of his demeanor, his linguistic skills, etc., etc.

Mirsky: Or the reverse. We hoped that we would be considered one of his.

Goldberg: Right, right. And then he was developing ties with and personal, close personal \_\_\_\_\_ and sort of intellectual collaborations with a number of eminent North American scientists like Joe Bruno, I mentioned; Carl Pribram. They were very, very close friends. Michael Cole, who was, of course, much younger, but Luria was a very formative influence on Michael's whole career. And a number of . . . So there was a constant

flow of visitors.

I mentioned just some of the most prominent ones, but there were dozens of others -- less renowned but nonetheless serious and credible and well-respected scientists who visited Luria's lab there in Moscow and that came back influenced by him, \_\_\_\_\_ Christianson [sp.], Danish psychologist, who owing to Luria's influence, became a Danish neuropsychologist, and who contributed a lot to sort of making Luria's clinical work and clinical diagnostic approaches known in the West, a very highly regarded person who has been knighted by Her Queen. So when I introduce \_\_\_\_\_ in this country whenever she visits, and whenever I have an occasion to invite her to speak before my students or whatever, I introduce her by saying that my friend, Professor \_\_\_\_\_ Christianson [sp.], is both a lady and a dame, and it's true because she has been knighted by her queen.

So a number of people, scientists who became very important influences in the West, were to a considerable extent shaped by Luria.

Mirsky: I have a couple of observations to add. If you look at the state of neuropsychology in the '50s in the United States, I had occasion some time ago to look at some of the writings of the psychologists who worked with Penfield in terms of assessing his neurosurgical cases.

Goldberg: Brenda Milner [sp.], yeah.

Mirsky: Well, this is much earlier than Brenda. And one sees that the evaluation of these patients was based on something like the Rorschach and the Bender Gestalt. Those were the tests that were used, and there were a series of signs that you looked for, and if you had, I forget, seven of these signs, then you had brain damage, and if you had six, then you didn't. That was actually the approach. Whereas, with Luria, you had, rather than this kind of strange empirical approach, you had a systematic review of the patient's symptoms and behaviors on the basis of an overarching theory of how the brain was organized, and that was a revolution in American neuropsychology, that you could not get by any longer with one cockamamie or two cockamamie tests. You had to assess the person in terms of this conception you had as to the way the brain functioned, taking into account the patient's symptoms rather than this stupid blind approach based on one or two tests. That's a debt that we owe to Luria a thousand times a day in this country, I'm sure, and may not be acknowledged.

I have one other observation. My friend, Sandy Cohen, who . . .

Goldberg: \_\_\_\_\_ very well.

Mirsky: Yes . . . visited Moscow and visited Luria, and Luria -- Sandy recounted this to me several weeks ago.

Goldberg: But, of course, it would make sense to explain who Sandy Cohen is.

Mirsky: Sandy Cohen was then chairman of the Department of Psychiatry at . . .

Goldberg: Boston University.

Mirsky: Well, that was before he was chairman. He was either chairman at Louisiana State University or he was head of the psychophysiology group at Duke, but quite an eminent psychophysicologist and a psychiatrist. And Luria spoke to Sandy and Sandy told him that, among other things, he was a psychoanalyst, and Luria said, "I am a psychoanalyst as well, and I have a patient that I want you to examine." And Sandy said, "But my Russian is very rudimentary." \_\_\_\_\_. He knew a few words in Russian. And Luria said to him, "That's not necessary. By gesture, you will be able to communicate with this man, and just come with me."

And so he took Sandy onto the ward. I don't know; maybe you were there at the time.

Goldberg: What year are you talking about?

Mirsky: This was the '60s.

Goldberg: Well, I began to work with Luria, I think, in '66, it may have been '67, and stayed there until '73.

Mirsky: Well, it's possible that you overlapped. But Sandy's recollection of it was he actually was able to communicate with this patient, although he spoke very little Russian, on the basis of gestures and looking at the patient and seeing how the patient responded to him. So that was another kind of vignette, a remembrance of Luria, kind of warm, benign, in addition to his

brilliant qualities, welcoming this visitor and making him feel really at home.

Goldberg: Yeah. And just to enlarge on this subject, he was warm, benign with his patients also, which is very important, because there is more to clinical neuropsychology than giving tests and then scoring them. Much arises from this unique personal interaction between the doctor and the patient, and Luria was a true master of that. And that ability of his and this human interest of his I think helps explain this other contribution of his and this other . . .

#### SIDE B

Goldberg: . . . later. I mean, today we have a whole panoply of these popular and semi-popular books about the brain which go beyond kind of dry statistics, if you will, and kind of the usual \_\_\_\_\_ scientific presentation and try to fuse it with human insight and kind of the personal stories. Well, we have a number of very successful authors in this vein. Damasio [sp.] and Schechter [sp.] and, of course, Oliver Sachs would be the preeminent, and in the English language, the first person, the first author who developed the genre. But Luria in fact wrote two little books, *The Mind of the \_\_\_\_\_* and *The Man with the Shattered World*, which sort of prefigured this whole genre many decades prior. And so Oliver Sachs, who today, of course, is a world-renowned author and thinker and credited with

developing this whole literary genre, if you will, of kind of human neuroscience and humanistic neuroscience and \_\_\_\_\_ neuroscience, if you will, he traces his intellectual lineage to Luria, and rightly so.

Mirsky: He's recently been in the news with some finding about these slow viruses. Yes, Oliver Sachs was quoted. There was some study done -- why do I think it was in Guam? -- eating the brains . . .

Goldberg: That's right. He would go to these exotic locations.

Mirsky: So maybe he, Oliver was influenced by Luria then and Luria's trip to Uzbekistan to study a particular people there and the influence of the coming educational system on their brain or before it got to them, actually.

Goldberg: Right.

Mirsky: Yes.

Farreras: Going back, you'd mentioned his seminal works in the '60s when they were translated into English, and you were talking about how different it was here as far as the psychometric approach to clinical neurological assessment. Were there any . . . I mean, it sounds from the way you're talking about it that he published these works and they were very well received here, and then this very active exchange began with him and some other students. Was there any friction or any resistance from sort of the way it was done here to these new ideas, which would have required a shift in the way clinical neuropsychology was done here?

Goldberg: Since in those days I was still very much part of Luria's entourage in Moscow, Allan is in a much better position to give the Western perspective of that here.

Mirsky: Well, we're talking about the '50s and the early '60s. There basically was no clinical neuropsychology in this country. There was physiological psychology; there was experimental psychology; there was clinical psychology. And for most clinical psychologists, an appreciation for the central nervous system was absent. I told you earlier about this notion of the Pietrovski [sp.] signs and the Rorschach or the Bender Gestalt. To the extent that they had any sophistication whatsoever, it was to use a couple of those tests. In experimental psychology, generally speaking, the notion of things like attention, for example, was anathema. You did not talk about attention. This was some airy-fairy concept that you couldn't measure, and therefore it wasn't the proper subject of scientific psychology.

Farreras: And positivistic . . .

Mirsky: Yes, that's right. So the behaviorists had certain rules as to what you could study and what you couldn't study. And also, the notion that you would be interested in persons with brain damage, well, that wasn't part of psychology. That was neurology or medicine, and psychologists shouldn't be studying that. They should be studying the laws of learning and how

many trials it takes for a rat to traverse a maze in an errorless manner and so forth and so on, so that neuropsychology as we know it today just didn't exist. That was really frowned on.

I recall -- I think I told you in an earlier interview that when I came to the Laboratory of Psychology in 1954, the chief of the laboratory was a very eminent clinical psychologist, David Shakow, who stated publicly that he thought that psychology's interest in investigating the black box, meaning the brain, was premature, and this was really not our role nor the kind of thing that we should be spending time doing. And, of course, for a young, budding neuropsychologist, before I was called that, this was very disappointing and disheartening.

Goldberg: And, of course, that was Freud's position, too, who started as a neurologist but felt that it would take, that science was not ready to tackle the mysteries of the brain and so got involved with the mysteries of the soul instead. \_\_\_\_\_ for better or worse.

Mirsky: Yes. But, nevertheless, for whatever reasons, Shakow did provide support for the Section on Animal Behavior, which was a small part of the whole Laboratory of Psychology at that time. And, of course, now it's completely reversed and it is the Laboratory of Cognitive Science, sorry, the Laboratory of Brain and Cognition, and the rest of psychology is relegated to a very small part of the intramural research program, if it

exists at all. So there has certainly been a revolution in terms of what the proper study of psychology should be, and over the last 50 years you can see the amazing change. And it's -- to bring it back full circle, it's the kind of amazing and substantive contribution that Luria's work \_\_\_\_\_ that helped make this beneficial change.

Goldberg: Very much so.

Farreras: Did it change any of the practices at the time, once these folks were actually being read by these people?

Goldberg: It created the practices. I mean, as Allan said, there was no neuropsychology up to that point, so . . .

Mirsky: There was none, and now . . . Well, in terms of training students in neuropsychology, one has to expose them in a very systematic way to the writings and teachings of men like Luria and Goldstein, who actually studied people with brain injuries and tried to understand the way in which they were coping with the world. And there is no proper neuropsychological training now without very intensive education into the work of such men as Luria, and one cannot identify oneself as a neuropsychologist without the appropriate credentials. That's an amazing -- it's a revolution in terms of what is now . . .

Goldberg: It's a coalescence of a distinctive discipline which was not there before.

Mirsky: Right.

Farreras: When would you say that the emergence of the more psychometric approach that was competing with this more qualitative clinical approach emerged, then? You still had -- you had those early, very early maybe psychoanalytic type tests and then . . . But what about the Halstein [sp.] and Luria Nebraska tests?

Goldberg: The Luria Nebraska is a much, much later invention. Well, as Allan said, this whole idea . . . I mean, the whole enterprise of neuropsychological assessment is based on the assumption that one must, that the brain is a very heterogeneous and diverse organ where different parts do different things, and one must assess cognition in a systematic way, looking separately at distinct aspects of cognition, and by inference, by so doing, assessing the function of integrity of various brain structures. I mean, this whole proposition had not been there before the introduction of a comprehensive brain-behavioral theory. Up to that point, as Allan rightly said, the whole psychological assessment was based on kind of a tacit assumption that one variable can tell you, can sort of \_\_\_\_\_ incorporate all the knowledge about cognition, which of course is silly. Okay? So the whole . . . Regardless of how neuropsychological assessment diverged into various specific traditions in schools and sometimes engaged in \_\_\_\_\_ battles, the fundamental premise that one must assess cognition systematically and have separate measures for separate aspects of

cognition and that the design of these measures and the selection of these measures and the design of the tests based on these measures should be guided by a comprehensive neuropsychological theory owes -- this premise itself owes its existence to a very large extent to Luria's work.

Mirsky: I would agree \_\_\_\_\_.

Goldberg: And to go back again to his kind of, to the prescient kind of quality of his work in terms of more theoretical, more recent developments in the field, if -- again, at the risk of offending somebody but none of those sitting here -- if Gaul [sp.] were the intellectual forefather of this kind of a modularity fad in neuroscience, then Luria can be viewed as one, at least, of the intellectual forefathers of this different approach based on the assumption of distributed, parallel, interactive processing, because his notion of the functional system basically prefigured these understandings of the parallel distributed processing as opposed to processing by modules. Okay? And lately, after this kind of a \_\_\_\_\_ misguided, in my opinion, infatuation with this modular approach to brain organization, we're seeing a shift away from that, from kind of the modular approach, and toward this more dynamic parallel, distributed, interactive approach, which, again, had been sort of prefigured in Luria's work in his concept of the dynamic functional system many, many years ago, decades ago.

Mirsky: Absolutely, absolutely. To go back to a point I was making earlier, it's

kind of hard to believe that there was an era in the United States where people sold single tests for diagnosing brain damage. There was the Archimedes Spiral Test and there was the . . .

Goldberg: \_\_\_\_\_ Gestalt \_\_\_\_\_.

Mirsky: The Gestalt, the \_\_\_\_\_ designs in the Rorschach, and there were other individual tests that, so you \_\_\_\_\_ take the time to spend a year studying Lurian neuropsychology. You just bought this test and you could diagnose brain damage. That, for the most part, is behind us, for the most part. We're not entirely free of that kind of single-test approach, but mostly we are beyond it.

Farreras: Has there been any impact in terms of the advance in technology since the research that he's done? I'm thinking of this paper in the '70s where he's talking about PET scans or CT scans, but we have PET scans and MRIs and now FMRI's. Does the actual technology change in any way . . . I know he had \_\_\_\_\_ more sort of heuristic. The more information we collect, the more we are able to shift our theory in contrast to these cutoff scores on tests. But does technology shift or has changed his contributions in any way?

Goldberg: Well, of course, this is a very interesting question, which you as a historian of science should -- I'm sure you'll \_\_\_\_\_ very closely. And there has been an ongoing debate in your field, the field of history of

science, what drives what. Do concepts drive technology or does technology drive concepts? So you tell us what drives what. I don't know. But, of course, the \_\_\_\_\_ is a bit circular, and what's concept in one field becomes technology in another field. You see what I'm saying?

Of course, the advent of these tools have changed our field dramatically. I imagine -- and I was privileged to know Luria quite well -- I imagine that had he been alive now, he would have embraced all these technologies. He was not at all averse to technology, to gadgets. He liked that. And I'm sure that he would have welcomed them, and he was often an armchair kind of a pure-thought-experiment type of person. He was a hands-on scientist. He would have been very pleased had these technologies been available to him, and he would have found good use for them.

Mirsky: Sure. His writings are full of references to psychophysiological experiments that he encouraged and engaged in, and that's enormously full of new gadgets. I think he probably would have been very excited by, say, the 120 EEG-electrode technology now.

Goldberg: Absolutely.

Mirsky: That would have been something that would have appealed to him, and he would have written about it. And if it had to change his theory on the basis of new data, he would have \_\_\_\_\_.

Goldberg: And these technologies, particularly \_\_\_\_\_ functional imaging, are particularly resonant with his approaches, which are dynamic, this whole notion of dynamic-functional-systems organization versus \_\_\_\_\_ kind of cultural influences on functional neuroanatomy, how function is mapped into the brain. All these things had to, to the extent that you studied these things and only by looking at the effects of brain damage, many of these pronouncements have had to remain hypothetical and maybe even speculative. Okay? But it's precisely the advent of these technologies like PET, like FMRI, like SPEC, like various forms of electrophysiological analysis, which allow one to test and develop such hypotheses directly, so he would have embraced these technologies with great enthusiasm, I'm sure.

Mirsky: I'm just wondering, if he had been alive, say, when the work on apoptosis had been prominent, the gradual pruning of the brain as it relates to the development of function, he probably would have been very excited about that, and that would have fitted rather well into his theory about the dynamic changing of the brain with maturity. I would love to have heard his comments on that. Oh well.

Goldberg: Indeed.

Mirsky: Indeed.

Farreras: You had mentioned that Luria seems to be known a lot for a lot of the

other developmental, cross-cultural psychology work and that you wanted to emphasize the neuropsychological contributions.

Goldberg: Yeah.

Farreras: Is there anything more that you want to add to that? You talked about some of the earlier seminal work.

Goldberg: Well, he contributed . . . Basically, I think that in the kind of global scientific perspective, the emphases are where they should be. He's mostly -- he's recognized as a cross-cultural psychologist; he's recognized as a developmental psychologist, but he's particularly recognized as a neuropsychologist, and at least in my opinion -- and, of course, I am biased, being myself a neuropsychologist -- in my opinion he's contribution to neuropsychology is the cornerstone of his overall reputation.

But, as I said, one of the reasons why his neuropsychology was so influential and so powerful is precisely because it was informed by all these other things. Okay? By cultural considerations, by developmental considerations. I mean, there are very few people capable of producing this kind of a synthesis, and he was one of these few. So one should not consider these various contributions of his as kind of manifestations of multiple personalities, a separate \_\_\_\_\_ of multiple personalities. It was one personality where these various interests were integrated and sort of

cross-fertilized one another.

And as a neuropsychologist, he contributed to virtually every topic of neuropsychology. He was particularly well known for his kind of a grand design of general neuropsychological theory. But as I said earlier, his contribution to the understanding of language mechanisms and language presentation in the brain and aphasia is very influential.

He was one of the first people, with Goldstein and a few others, who recognized the importance of the frontal lobes and sort of put them on the neuropsychological map, and that work, toward the latter part of his career, that became one of the kind of important fields in his work.

And he studied memory. He published right before, a few years before his death, in fact. He published a two-volume monograph titled *The Neuropsychology of Memory*, which I think has been translated into English.

Mirsky: I think so.

Goldberg: Somehow it's not as well known in this country as his other monographs, but it was also a very interesting contribution. Toward the end of his life he became interested in the contribution of the right hemisphere but didn't do much along these lines because . . . But had he lived five or seven years longer, that probably would have been the next kind of theme of his agenda. So he touched every important topic in neuropsychology.

And he influenced people. He created the school, influenced personal and professional and scientific careers of many people. It's as important as anything else. He shaped careers of many people and helped shape careers of many people, from people as prominent in their own right as, I don't know, Oliver Sachs and Jerome Bruno, and too many more who are less visible but are also important and credible and worthwhile contributors who continue teaching other people and other people and other people. So his legacy survives not only through his writings but also through his personal impact on many people.

Farreras: Do you think that right now -- you were mentioning earlier how the field of psychology is going more toward at least cognitive neuroscience, and indeed if you look at jobs, there seem to be more openings for such positions than for the traditional fields within psychology. Do you think that's because of his comprehensive theory where he's able to blend not only brain studies but developmental, cross-cultural, cognitive?

Goldberg: Well, I think so. I think that the whole phrase \_\_\_\_\_ to refer to this new science, cognitive neuroscience, implies this kind of synthesis.

Farreras: Interdisciplinary. Yeah.

Goldberg: Of course. It's interdisciplinary by definition in that sense. And one can argue that he contributed to the coalescence of a synthesis more than most.

Mirsky: I would agree.

Well, we have some more discussion? I know you have to get back to New York tonight.

Goldberg: I have to go back to New York, and you have some meetings? What's going on?

Mirsky: Yes, right.

Goldberg: Did you have any more questions?

Farreras: Well, I'm not sure if there's anything else you wanted to make sure you wanted to . . . I mean, you're the ones who know his work better.

Goldberg: I think we covered it. Did we or did we not?

Mirsky: Yeah. I think so, I think so. Our field would certainly be a lot poorer. The field wouldn't exist if it hadn't been for him. And you know what Vigodsky's widow said, that it was better that he had died when he did than die and die in a labor camp? In a sense it's good for our field that he was discouraged from continuing his work in cross-cultural psychology.

Goldberg: In that kind of a twisted kind of way, it's absolutely true, because that's a very kind of ironic and astute thought. Had Luria lived in a normal environment, he probably would have never become a neuropsychologist.

Mirsky: Right.

Goldberg: He would have continued to pursue happily his interest in cross-cultural psychology and developmental psychology, psychoanalysis -- he corresponded with Freud -- and he probably would have been so busy and

so gratified doing all these things that he would not have turned to neuropsychology.

Mirsky: Yeah. We have to thank the \_\_\_\_\_ for that.

Goldberg: Say it again.

Mirsky: The \_\_\_\_\_, you know, the Russian secret service and Josef Stalin.

Goldberg: We have to thank Josef Stalin for making neuropsychology the only arena where people could, people like Luria could survive. Yes.

Mirsky: Well, maybe that would be a good note on which to conclude. Thank you very much.

Farreras: No. I want to thank you for coming and to you for flying up from New York.

Goldberg: Thank you for receiving us.

Farreras: I hope -- would you be interested in contributing some of the materials that will be at this honorary conference in September?

Goldberg: Which materials?

Farreras: Well, I imagine if there's a conference in his honor, that there will probably be either publications or maybe proceedings of . . .

Goldberg: Yeah. \_\_\_\_\_ papers, stuff like that. So you would like to see \_\_\_\_\_. Absolutely.

Farreras: Yeah. The History Office would probably want a copy. Yeah. That would be very helpful.

Goldberg: In fact, you may wish to contact Michael.

Farreras: Did you want to call him again?

Goldberg: And then maybe \_\_\_\_\_ for you to speak with him directly, because he would welcome \_\_\_\_\_ particularly welcome this idea of somehow enshrining it as part of the NIH archive.

Farreras: \_\_\_\_\_.

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