

## Aphasia in a Composer

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### INTRODUCTION

The relationship of the two kinds of acoustic processes, namely verbal and musical, constitutes one of the most interesting problems of cortical neurology.

Some neurologists believe that both modalities of acoustic processes are akin, and that sensory aphasia is closely associated with some disorder in the perception of musical sounds and melodies (USTVEDT 1937). Others, however, have observed a marked dissociation of both kinds of acoustic processes, and they believe that a loss of differentiation of phonemes can be observed in sensory aphasia without any disturbance in the perception of musical melodies (FEUCHTWANGER 1930; JELLINEK 1956). Numerous observations have shown that in patients with severe sensory aphasia the prosodic (melodic) organization of utterances can be preserved, and that in most cases of amusia speech remains undisturbed. In a series of cases, amusia has been the result of lesions within the right hemisphere and no trace whatsoever of speech defect was observed. But so far as we know, no case of a dissociation between musical and verbal acoustics from a cerebral lesion in an outstanding composer, has ever been described.

Over the course of three years we have had the opportunity of observing a patient who was an outstanding Russian composer, and who, after a vascular lesion of the speech zones of the left hemisphere (including the temporal lobe), while suffering from a severe and predominantly sensory aphasia, preserved his musical abilities, continued his creative work, and executed a number of outstanding compositions which were performed many times and with great success.

### CASE HISTORY

Professor V. G. Shebalin was born in 1902. He started his musical career as a pupil at a musical school. By 1928 he had already composed several quartettes, romances and compositions for the pianoforte. During his school years he composed his first symphony. In his 40th year he was elected *Professor of the Moscow Conservatoire* and directed a class of composition. Many well-known Russian composers were among his pupils. During the next few decades he composed a series of symphonies, and one of his operas was performed at the *Moscow Bolshoi Theatre*.

Aged 51 he suffered for many years from vascular hypertension. On September 14, 1953 he sustained an acute disturbance of his cerebral circulation with a slight impairment of cutaneous sensibility in the right hand, accompanied by a paresis of the right side of the face and a severe disturbance of his speech. After some weeks these symptoms disappeared and the patient was able to return to his work.

For the next 6 years he worked actively as a composer and also as a *Director of the Moscow Conservatoire*; during this time he was symptom-free. On October 9, 1959, he had a second stroke. The symptoms were similar to those of the previous stroke, but more severe. He lost consciousness for a short time, and afterwards a paresis of the right hand and leg was observed. There were severe disturbances of his speech, which will be described later. The blood pressure measured 270/135 mm Hg.

After 36 hours he recovered consciousness, but a spastic right-sided hemiparesis (predominantly in the hand) and severe aphasia remained. Paresis of the right leg and hand with slight impairment of sensitivity continued for a long period. After 6 months, the voluntary movements of the right leg had recovered, and the strength of the right hand remained only slightly disturbed. No marked changes in sensation were observed, although a slight hemiparesis with spasticity, exaggerated reflexes and pathological signs in the right side remained.

Two epileptic fits took place during 1962 and 1963. During 1963, the patient's general health became worse, his blood pressure rose, and on April 30 he had a third vascular accident, associated with a severe infarction of the myocardium. On May 29 he died from myocardial insufficiency.

*Postmortem* examination of the brain showed a massive red softening of the left hemisphere of the brain in the temporal and inferior parietal regions, with a haemorrhagic cyst of the left temporo-parietal region.

### *Dysphasia*

The day following his second vascular accident, the patient realized that he was unable to understand speech, and that he could not speak. After some days he would say only "yes" and "no", together with a few utterances. After a week he tried to articulate some sentences, but without success; only some common expressions such as "how do you do", "thank you", "good bye", "Oh, gosh", "I really don't know" were preserved. He was aware of his defect, but he could not evaluate his verbal mistakes.

Psychological analysis showed that repetition of the speech perceived was consistently severely disturbed. He could not repeat correlative phonemes (as d/t, b/p), but tended to confuse them. Many literal and verbal paraphasias occurred. He repeated the word "slabost" (weakness) as "sla . . shla . . sla . . ."; for "okrepnuts" (to recover) he said "krepnost . . okrepnost . . krepnust . . okrestno". (All these utterances possessed a common root, but they were meaningless; the last one only has a different meaning.) There were many literal and verbal paraphasias in his spontaneous speech, and these continued to appear. Trying to say "karandash" (pencil) he emitted "kharantash . . kharantash . ." and being unable to find the proper sounds said: "Here . . . I have . . . here . . . total . . . total . . . no . . . shame!" All attempts

to make an adequate formulation of a phrase were unsuccessful. In an effort to say something to his wife he came out with: "Expressive... compressive... no... suppre... no... what for a trasom have I to-day..."). We do not reproduce the original Russian utterances, preferring to give their English equivalents. It is obvious that many words were meaningless, but with roots approximating to the words needed.

At the end of two months, the patient was able to speak several words and even phrases, but literal and verbal paraphasias persisted. By that time motor speech had partially recovered but defects in perception and the understanding of speech remained. There was a marked instability of the meaning of words perceived ("alienation of word meanings") and the comprehension of phrases was very limited.

Neuro-psychological analysis of Prof. Sh.'s speech and a systematic rehabilitative treatment began 6 months after the onset of disease, and was continued throughout the ensuing  $2\frac{1}{2}$  years. Marked deterioration of the phonematic organization of speech and alienation of the word meanings was observed. The patient was able to understand a simple verbal instruction (point to your nose, ear, eye, etc.) but only for a very short time, and after 2-3 repetitions of the same verbal instructions, considerable difficulty in the comprehension of the words were observed. The patient was able to understand the meaning of phrases only from the general context, and his spontaneous speech was paragrammatical in its structure. Naming of objects was imperfect, and many literal and verbal paraphasias were present. The same paraphasias were observed in serial forms of speech (days of the week, months of the year). All these symptoms were typical of an acoustic (sensory) aphasia, with some components of defective kinaesthetic organization of motor speech.

During the next six months, discrimination of speech-sounds slightly improved and articulatory defects became less. The patient became able to repeat separate sounds, but an inability to discriminate close (*i.e.* correlative) phonemes persisted, and the symptom could be observed to worsen when the number of phonemes presented increased. Perseverations and a defect in the reproduction of serial order of words were observed whenever the patient was asked to repeat a series of three or four words. Repetition of a sentence was impossible. Directed to repeat three short sentences: "The moon is shining, the house is burning, the dog is barking", he replied: "The moon is shining... and the house... no... I really don't understand!"

Similar disturbances could be observed in the patient's active speech. He tried to speak using normal phrases but was never able to finish a proposition he began; there were many literal and verbal paraphasias and paragrammatisms. "An oratorio" — he announced — "is descended... it was a long time ago... that is a kind of spiritual... oh... gradually it became... it was extended... and then... and now... gradually... ah... it became very different... how may I say... I have to recall... oh... nothing... I have thoughts... No... it is too difficult...".

In an attempt to make some comments upon his opera *Ukroscheniye Stroptivoy* after SHAKESPEARE's *Taming of the Shrew*, he said: "That is in Petruccio's house... She is running... where... here... She wants to escape... in a storm... and so on... She was brought there... no that isn't that..."

The patient was able to name separate objects and even two objects; but when three objects were presented, his naming became paraphasic, and contamination of words

appeared. He could not be assisted in this task, and was unable to finish the word when the beginning of the word was given him.

Understanding of speech remained poor throughout the whole period of observation. He tried to explain his defects by saying: "The words . . . do I really hear them? But I am sure . . . not so clear . . . I can't grasp them . . . Sometimes — yes . . . But I can't grasp the meaning. I don't know what it is". This defect was particularly obvious when the word was presented in an absence of the object in question. In such cases the patient would be quite unable to understand the meaning of the word given.

Reading was preserved, and to some extent writing, but he remained unable to write down long words, or a series of words or phrases. When fatigued he would become unable to grasp the meaning of written phrases or paragraphs.

All these defects remained stationary during the whole period he was under observation, and a syndrome of an acoustic aphasia with a severe deterioration of the whole system of speech (*cf.* LURIA 1947, 1962) remained with little if any change.

Throughout the whole three year period, no significant alteration in personality could be observed. In spite of the severe affection of speech the patient continued his work as a composer. He worked hard with his pupils, listening to their compositions, analysing and correcting them. He spent a considerable time over his own creative work. While aphasic, he finished compositions which he had started to write before he was taken ill, and he created a series of new compositions which other musicians considered to be up to standard, and which did not significantly differ from the compositions of his earlier years.

Among the creative work which he published during the years of his illness, were the following.

Op. 51 (1959–1960): Sonata for violoncello and pianoforte, C-flat; in four parts (performed by M. Rostropovitch, S. Knuchevitsky and others).

Op. 52 (1960, 1962): Three choruses on Moldavian motives (played by the Moldavian Capella).

Op. 53 (1960): The eighth quartette (played by the Borodin quartette, Moscow, recorded).

Op. 54 (1960): My Fatherland (eight songs, awarded a prize).

Op. 55 (1961): The land of Mordovia (three songs, performed by G. Vishnevskaya of the Bolshoi Theatre).

Op. 56 (1962): The fifth symphony, C-flat; for orchestra, in four parts (performed by the Orchestra of the USSR; recorded).

Op. 57 (1963): To my Grandchildren. Four choruses (in print).

Op. 58 (1963): The ninth quartette in three parts (recorded).

Op. 59 (1963): In the Middle of the Forest; seven choruses (performed by the Svechnikov chorus; in print).

Op. 60 (1963): Sonatina G-flat in three parts (played by Ivanov Kramskoi; in print).

Simultaneously he revised and re-wrote some of his earlier compositions, such as: Op. 27: Sun on the Steppe, orchestra for an opera; Op. 17: Concertino for a violoncello; Op. 22: Second suite for orchestra; and others. Some of these works were performed at a concert on October 9, 1962 in his presence.

Here are some comments made by outstanding Russian composers upon the latter compositions of Professor Shebalin.

D. SHOSTAKOVITCH: "Shebalin's *Fifth Symphony* is a brilliant creative work, filled with highest emotions, optimistic and full of life. This symphony composed during his illness is a creation of a great master".

T. KHRENNIKOV: "We can only envy the brilliant creative activity of this outstanding man, who, in spite of his illness, created the brilliant Fifth Symphony full of the young feelings and wonderful melodies".

Thus we have presented a remarkable case, perhaps even an unique one, which constitutes a proof that the two types of acoustic processes — the phonematic and the musical respectively (perception and memory) — can be dissociated as the result of a lesion of the left temporo-parietal region of the brain.

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#### SUMMARY

An outstanding composer, who developed a marked auditory aphasia after a vascular lesion of the temporal and temporo-parietal regions of the left hemisphere, preserved his musical abilities and continued his creative work as a composer, and — while still aphasic — composed a number of outstanding musical compositions which received the highest appreciation. This case proves that phonematic and musical (prosodic) organization of acoustic perception and memory are included in different systems, and have as their basis different cortical structures. It will be the task of further investigations to analyse the physiological mechanisms of these data.

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