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## **ROSTOHAR AS AN ANTICIPATOR OF GREAT IDEAS**

Mihajlo Rostohar lived and worked at a time, when many great and original psychological ideas appeared. It was the time of well-known pioneers such as Wilhelm Wundt, Franz Brentano, Carl Stumpf, Oswald Külpe, Karl Bühler, Alexius Meinong, Alfred Binet and many others. Rostohar visited or studied with many of them. At the same time most of great and original psychological schools, such as psychoanalysis, behaviorism and gestalt psychology, began to glitter and radiate; soon afterwards, the second wave followed, e.g. Piaget's theory of development. No wonder that Rostohar was imbued with that „Zeitgeist“ and tried to come up with his own original ideas and conceptions.

The professional field of Mihajlo Rostohar was very broad. He gave lectures on experimental, general, social and developmental (child) psychology, wrote about problems of educational and political psychology, linguistics and philosophy (especially logic), and conducted empirical investigations of synesthesiae, the development of images, concepts and fantasy, duration and fluctuation of attention, geometrical illusions, beginning reading, public opinion and attitudes. He published most of his work in the Czech and Slovenian languages, some in German, and one in French. In the last decade of his life he published in Slovenian several books and papers (1964, 1965, 1966) in which he tried to summarize and integrate his lifework.

Rostohar's most significant scholarly works were not simple replication or elaboration of already existing ideas (normal science according to T. Kuhn), but creation of new ideas (paradigmatic science according to Kuhn), though they remained crude and unwrought. Most of them were elaborated later by other authors, and as it often happens in science, the original author has been neglected and forgotten.

In this paper Rostohar's ideas about stage development, mental structures and psycholinguistics are commented on. He also used some original new approaches; e.g. he was the first European scholar to carry out a public opinion poll (1912), which has become common practice today. He was the first scholar to study complex synesthesiae (1914, 1915) since he described them decades earlier than Karwosky et al. (1942), Osgood (1953) and McKellar (1957).

One of Rostohar's main fields of research was developmental psychology. According to him mental development is not only quantitative growth, but also qualitative change. During development the human being passes through particular discrete stages. Cognition is mediated by internal schemata, images and concepts being the most important.

Rostohar (1927) used a new and original method to study images, viz. the method of successive presentation. Well-known Carmichael's (1932) and Bartlett's (1932) studies were to come later. Rostohar showed his subjects a complex, colored and schematic figure; after some minutes it was removed and the subjects had to draw it. The procedure was repeated until the reproduction was correct. In this way Rostohar was able to detect the development of images. He tested different groups of subjects, the most important feature being various age groups. He discovered that the images developed in particular phases and in two typical ways: either from a peripheral outline or from a central figure. During development the child progresses from the first to the second phase.

Rostohar did several studies about concept formation (1931, 1938). According to him concepts develop from *nazor* (it is almost impossible to translate the word). He wrote (1964): „Nazor is an image linked to former perception“. Sometimes he used the word scheme or thinking scheme, we could say „schematic image“. In early childhood schemata have only one identifying feature. In Rostohar's experiments with concrete materials it was at first location, then color, and then formal characteristics. In his lectures he often said: „For small children everything that flies is a bird, even a butterfly“. Soon afterwards a child's schemata include two, three and then more identifying features. Later the initial schemata differentiate, the result being individual, concrete and abstract concepts. The changes appear at different age periods, though the author never established exact norms. Rostohar emphasized that psychological concept formation was opposite to logical procedure. According to logic we generalize individual concepts, but in fact our individual and general concepts a result of dissection of schemata.

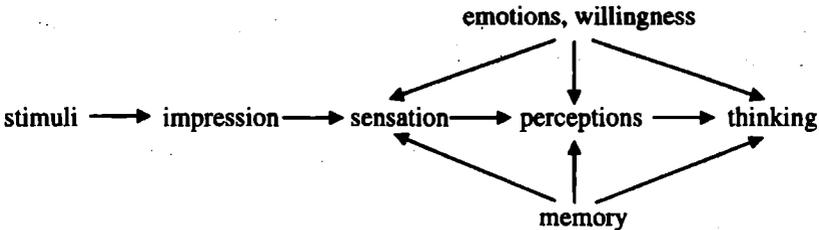
Rostohar's theory of mental development is a typical stage theory in spite of its crude form. It is not hard to find some points in common with Piaget's theory of mental development. Piaget's notion of stages, internal schemata and „protoconcepts“, which are much dependent on perceptions, are similar to Rostohar's statements, though there are also important differences (e.g. Rostohar had no idea about the principle of conservation). Rostohar published his ideas in *L'année psychologique* in 1931. At that time Piaget was one of the editors, so that he must have read and recommended Rostohar's paper for publication. Perhaps he even took some hints from it (this possibility was first mentioned by Ludvik Horvat at the symposium on Rostohar in Ljubljana in 1996).

Rostohar's last paper, presented at the 2nd Congress of Yugoslav Psychologists in Zagreb (printed in 1966), had the title *Strukture v duševnem življenju* (Structures in mental life). He wrote about mental structures as early as 1914 and 1935. In his last paper he returned to the problem he had tried to solve in his earlier years. Mental structures seem to have been one of the most important

concepts in his theoretical work. It is worthy of notice that the concept of structure is the key concept of contemporary cognitive psychology.

Rostohar's concept of mental structure is not clear enough. At some points it is very close to Gestalt psychology, at others closer to Krueger's structural psychology, and he was also influenced by Wilhelm Wundt, the Würzburg scholars, William James and Franz Brentano.

According to Rostohar our experience has a holistic character. The sensations are no elements, because they do not determine perception; in fact the reverse is true. This statement is in accordance with Gestalt psychology. Yet Gestalt psychology states that our experiences are holistic from the beginning of cognition. Contrary to this Rostohar (1966) wrote about the „subconscious integration of sensations“, about „their gradual organization“ and their „intentionality“. He used an archaic Slovenian term *dojem*, which is hard to translate either. *Dojem* means something less than sensation. The closest English word would be impression. Rostohar himself related *dojem* to Leibniz' „dark monades“. It is also similar to *set* or *Einstellung* and to the states of consciousness which were conceived by the Würzburg psychologists. Human cognition runs according to the following model (constructed by this author on the basis of Rostohar):



The model reminds us of the contemporary models of human information processing (e.g. of Atkinson's in 1968). Impressions and sensations correspond to Atkinson's sensory register, perceptions and thinking to working memory, and memory to long-term memory. The main deficiency of Rostohar's model is that phases are not temporally limited.

Rostohar distinguished many kinds of mental structures: figures („*liki*“) are structures, in which elements are totally fused into wholes; in complexes the elements partly preserve their characteristics. Dispositions are nervous structures (similar to Köhler's physiological configurations). The structures are hierarchically organized, the highest structure being personality, who is „dispositional cause of all concrete holistic experiences and their laws“ (1964). The center of personality is human self, which is „the bearer of consciousness“ (1964). All mental processes, including sensations and perceptions, belong to the personality. Child structures, which are adjustable, develop through distinct stages. Rostohar even wrote about animal structures. But he was not a relativist. Like William James he emphasized that human personality remains basically the same in spite of all changes.

Rostohar wrote extensively about language and the relation between language and thinking. He also created his psychological grammar. His conclusions were presented in his paper *Stavek in misel* (Thought and sentence, 1953).

Rostohar distinguished between thought and sentence expressing the thought. In his book *Osnove obče psihologije* (The basis of general psychology; 205) he wrote „Thought is not equal to sentence. The essence of sentence is expression of thought and not its form, which could be different, although expressing the same thought.“ But both have a similar structure, viz. the subject and the predicate. Rostohar continues (206): „Each thought has a subject and a predicate and nothing else... Such sentences as the farmer plough and sows, the pupil is diligent and scrupulous, the dog is alert and dangerous, are composed sentences. From the grammatical point of view they are single sentences, but from the psychological point of view they express composed thoughts, each of them having its particular subject and predicate. For example, the sentence The father and the son mow states that the father mows and the son mows. The sentence contains also the judgment that father's work is equal to son's work. The sentence consists of three judgments, which are united into a thinking whole.“

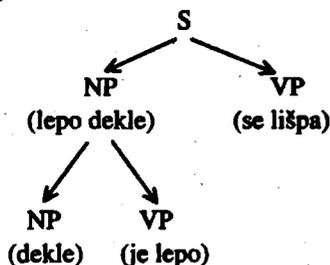
It is quite obvious that Rostohar's linguistic ideas are very similar to Chomsky's (1957) generative grammar, though less elaborated and formalized. Thought and sentence stand for deep and surface structures, and the subject and predicate for noun and verb phrases. Even their formulas representing compound sentences are similar. Here is an example:

Sentence: LEPO DEKLE SE LIŠPA (a beautiful girl primps herself)

Rostohar's formula would be:

(S1 → 1) → (S2 → P2)  
 (dekle je lepo) (dekle se lišpa)

Chomsky's formula would be:



Rostohar anticipated also generative semantics, which evolved later on the basis of generative grammar (the main representatives are Bever and Fodor), saying that thoughts and sentences originate from perception.

Rostohar studied mostly cognition, but he presented some original ideas about other mental processes too. According to him (1964) human behavior is governed by will and drives; the latter are subconscious and purposive reactions to external and internal stimuli. The basic drive is the drive for self-survival (Rostohar used the archaic Slovenian words *samoohranitveni gon*); it is the source of all other drives and also many emotions, self-consciousness and even religion. In some chapters he briefly mentioned a generation-survival drive (Slovene *rodoohranitveni gon*), which preserves one's lineage. These ideas appear strongly speculative, but they are close to contemporary theory of the self-gene, sociobiology and evolutionary psychology.

Rostohar's ideas were the precursors of many contemporary psychological theories. He was Piaget before Piaget, Chomsky before Chomsky, Atkinson before Atkinson, and much more. Yet his ideas were mostly ignored by the scientific community. One reason was that his writing was not clear and precise; e.g. he used the same terms in different ways. Therefore the ideas remained crude. Another reason was that he wrote mostly in the languages of two small nations. Writing in German, English or French would have been much more perspective. But the main reason was that his ideas came too early. The scientific community was not yet prepared to accept them.

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### ABSTRACT

Mihajlo Rostohar lived and worked at a time when many great and original ideas appeared. Although he was not famous as their originator, he nevertheless anticipated many of them. From this point of view he was an exceedingly productive scholar who came up with some of the most trailblazing ideas of this century. He was the first scholar to study complex synesthesiae, and the first to carry out a public opinion pool in Europe; his conception of structure is close to contemporary cognitivism. Some of his ideas resemble Piaget's theory of development and Chomsky's psycholinguistics. In the Slovenian Encyclopedia he is considered to be „Piaget before Piaget and Chomsky before Chomsky«. Yet his ideas remained crude and are often not clear enough, though mostly empirically supported. It was one of the reasons for the neglect of his work, another being that this ideas came too early, when the scientific community was not yet prepared to accept them.