Modern methods of linguistic studies

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Abstract. The article deals with the problem of the most effective selection of methods of analysis in linguistic studies. The modern philological science offers new methods and methodologies of linguistic analysis, new technologies developed by the new interdisciplinary fields of science. In the article there are described present day methods of scientific linguistic studies based on the analysis of the text base structure within the text linguistics. The studies are carried out in the field of linguistics for the purpose of constructing a language system based on the methodological principle. Linguistics is a complicated multifactor sphere of knowledge and applications that deals with both humanities and hard sciences. Within the last years there occurred adjacent trends on the interface of these or those sciences that are actively developing owing to new theoretical and practical applications. Methods and principles of linguistic analysis are multi-aspect and variable. Separating this or that aspect of a language is often integrated with the method of its linguistic consideration. The language itself is defined as a complicated and historically movable phenomenon that is reflected in the language description model that was developed within the traditional linguistics. The structure of classic linguistics itself clearly proves that the language presents a certain system.

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Introduction

The main purpose of the linguistic analysis is acquaintance with the basic methods and principles of analyzing different-level language units in the aspect of scientific study.

Within linguistics it is necessary to develop effective methods of studying a language. Among such classic methods there can be mentioned, for example, comparative, mathematical methods, methods of modeling, outline analysis, methods of system analysis, theory of information, mathematical modeling, theory of probability and mathematical statistics, theory of decision making, and a lot of others that are actively and fruitfully used in other sciences and find their effective application in linguistics.

"Under a method there is often supposed the general methodology of sciences, a philosophic method of cognition that formulates the basic principles of theory of cognition on the whole. A linguistic method is a way with which help we recognize a language. The totality of such methods makes a system of special methods. The most general definition of a method is "…The totality of ways and operations of cognition and practical conversion of the reality" [1]. To obtain effective results using special methods of learning a language it is necessary to to use these methods correctly, to be master of them. The rules, the consistency of using linguistic methods, as well as modes they consist of is the methodology of the linguistic analysis.

Methods and methodology of the linguistic analysis are close related to the aspect and conception of scientific study.

The main part

In the modern information world linguistics widens the sphere of its interests. A language appears to be a complicated multilevel system including a lot of interconnected and mutually conditioned elements. One of the complicated components in the field of linguistics is perfecting methods of linguistic studies. Every special method of study is used in the practice of scientific work for the ways of collecting, processing and generalizing facts.

At present there is in different ways performed the language studying using various methods. For example, a lot of foreign authors, such as Z. Harris [2], W.U. Dressler, R. de Beaugrande [3], A. Spencer, A.M. Zwicky [4], Roger Bell[5], A.A. Kibrik et al. [6], Vladimir Skalicka [7] believe that the effectiveness of the studies is significantly defined by the extent of its methods readiness. In the true opinion of the author of a few home tutorials on methodology of linguistic studies I.I. Tokareva, "the definition of methodology and methods of studying is the basic starting element of any scientific work. On the correct and literate selection of the methods there depends the success, validity and evidentiary of the

out search results. The issues of how to study the language material, with what to begin a study, what stages of the analyses are to be covered, what volume of the material is needed, which aspects, qualities and characteristics of an object are to be studied and others face scientists already at the first meeting with the object" [8].

According to a lot of researchers, there were adopted a wide understanding of the term "method". For example, V.A. Zvegintsev understands a *method* as a totality (system) of research modes [9]. According to V.I. Kodukhov, a *method* is a totality of modes and rules of studying phenomenon [10]. In philosophy a *method* is a totality of modes and operations of practical and theoretical cognition of reality. N.I. Kondakov defines a *method* as a system of rules and modes of an approach to studying phenomena and laws of nature, society and thinking, a way of achieving results in cognition and practice; a mode of theoretical study or practical executing something starting from the knowledge of the objective reality and the studied object development laws, a phenomenon, a process [11].

Thus, there exist various classifications of methods that are used in scientific studies and are in a certain extent interdisciplinary not only in one field of science but in a lot of others, for example, in linguistics, psychology, pedagogy, etc.

If we consider the field of linguistics, in it there have bee developed both classic and modern methods of studying a language. For example, in this article special attention is paid to the linguistic-synergetic method. This is explained by the fact that this method characterizes the language structure rather completely owing to its probabilistic nature that is easily studied by the mathematical apparatus of theory of probability and mathematical statistics. The basis of such use is the regularity, the order of language objects.

Today synergy in linguistics presents a new generalizing trend which purpose consists of revealing common ideas, methods, laws of the language transition from one level of organization to another. A language, being in constant development and motion, is a complicated, dynamic, self-organizing system. In this connection it should be noted that linguistics is closely interconnected with synergy as a new interdisciplinary trend of studying systems consisting of a lot of components or subsystems that are interact between each other in a complicated way. Alongside with this there arise new aspects of the discussions and considering a synergetic approach to the language analysis.

The basis of synergy serves the totality of phenomena, models and methods permitting to separate the mechanisms of the order organization, i.e. a probable selection, competitiveness, and others. It means that synergy is first of all connected with the assessment of the behavioral order or entropy as a quantity measure of order.

At present the interaction of mathematics with linguistics more often finds practical use. For linguistics an important measure is the language entropy. The language entropy is a common measure of probabilistic-linguistic relations in the text of a given language. When calculating entropy, there is needed the object mathematical model. The object of study is a text that is constructed using a language system and consists of a mathematical model. Entropy is a measure of uncertainty. Therefore in any definition of entropy there is present the text mathematical calculation and its description, as well as model additional characteristics permitting to measure this uncertainty. Thus, mathematical methods were used in a scientific study and increased the accuracy of counting the results and developed a possibility to reduce tine expenses for the text entropy calculation.

Theory of information became the field of active work for linguists who tried to use some concepts and methods of theory of information for the solution of linguistic problems. Special attention was paid to the Shannon's measure of entropy as "the information if selection". The entropy measurement was considered as a possible means of the quantity description of the language processes and structure. For example, as a result of the carried out experiment there was developed a linguistic-mathematical model of information-entropy characteristics of texts constructed on the basis of the fundamental law of preserving the sum of information and entropy using the Shannon's formula.

Table 1. Entropy dynamics in Kazakh and Russian

	Kazakh					Russian				
E	SS	JS	OS	US	AS	SS	JS	OS	US	AS
H_1	=	> 0,05	> 0,07	=	> 0,06	=	< 0,05	< 0,07	=	< 0,06
H_2	< 0,6	< 0,3	< 0,07	< 0,05	< 0,2	> 0,6	> 0,3	> 0,07	> 0,05	> 0,2
H_3	> 0,6	> 0,2	> 0,1	< 0,01	=	< 0,6	< 0,2	< 0,1	> 0,01	=
H_4	< 0,06	< 0,2	< 0,06	< 0,04	> 0,1	> 0,06	> 0,2	> 0,06	> 0,04	< 0,1
H_5	> 0,12	> 0,07	> 0,04	> 0,04	> 0,03	< 0,12	< 0,07	< 0,04	< 0,04	< 0,03
H_6	> 0,11	> 0,05	=	=	> 0,01	< 0,11	< 0,05	=	=	< 0,01

In the study there was also used the comparative method based on the comparing of various genres texts and styles of the Kazakh and Russian languages for calculating the information of language texts entropy. There was carried out the comparing of the data characterizing the numerical assessment of these measures in Kazakh and Russian.

There was carried out the linguistic analysis of texts containing 500 characters of scientific, journalistic, official, unofficial and artistic styles of speech in Kazakh and Russian. To calculate the texts information there were counted the probabilities of occurring one letter, two-letter, three-letter, four-letter, five-letter and sox-letter combinations.

Thus, the studies showed that on the basis of the Kazakh and Russian texts there were obtained the letters information characteristics that are in different positions; there were obtained the alphabetic distributions of the text entropy and given the possibility to estimate quantitatively the information ratio in the text. This all permits to come to the conclusion that information entropy can be used in any language for the revealing of the information distribution in the text.

From here there can be concluded that the dynamics of the text information entropy decrease when transiting to the higher level of organization, at this there increases the text information capacity that proves the language development by the law of preserving the sum of information and entropy.

Conclusion

Thus, in the article there are presented some aspects of the experimental approach to the calculating of the text entropy in Kazakh and Russian using various methods of studying, namely: theory of information, linguistic-synergetic, mathematical, comparative.

Using the synergetic information theory there was carried out a structural analysis of arbitrary texts in the aspect of their randomness and order by the quantity and number of different letters occurrence.

The linguistic-synergetic approach to the text structure modeling as a self-organizing object is needed for the further studying of philological science. Based on the use of the arsenal of linguistic methods and concepts, it is necessary to fins algorithms permitting, with the use of theory of information and mathematical calculations, to carry out profound analytical studies in the field of language, particularly, in the text structure organization in its various aspects.

When generalizing the abovementioned, it can be made the conclusion that for perfecting the methods of linguistic studies there are needed both classic and new modern methods, modes and approaches.

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