

Artículo de investigación

Scientific Text Semantic Structure ModelingМоделирование семантической структуры научного текста
Texto científico Modelado de estructuras semánticas

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Karpova Tatyana⁵⁴**Abstract**

Authors proposed and substantiated the model of polytextual structural organization for a scientific text, taking into account its dependence on the content of the scientist's cognitive activity. The model is based on the concept of an epistemic situation in the unity of four aspects of knowledge: ontological, methodological, reflexive, and communicative-pragmatic. The concept of subtext is introduced as a structural-semantic unit of a scientific text. They considered the content of subtext new and old knowledge, evaluation, authorization, etc.

Key Words: the stylistics of scientific speech, scientific text, epistemic situation, new knowledge, old knowledge, scientific text model, subtext.

Аннотация

Авторами предложена и обоснована модель политекстовой структурной организации научного текста с учетом ее зависимости от содержания познавательной деятельности ученого. Модель основана на концепции эпистемической ситуации в единстве четырех аспектов знания: онтологического, методологического, рефлексивного и коммуникативно-прагматического. Понятие подтекста вводится как структурно-семантическая единица научного текста. Они рассмотрели содержание подтекста новых и старых знаний, оценки, авторизации и т. Д.

Ключевые слова: стилистика научной речи, научный текст, эпистемическая ситуация, новые знания, старые знания, модель научного текста, подтекст.

Resumen

Los autores propusieron y fundamentaron el modelo de organización estructural poltextual de un texto científico, teniendo en cuenta su dependencia del contenido de la actividad cognitiva del científico. El modelo se basa en el concepto de una situación epistémica en la unidad de cuatro aspectos del conocimiento: ontológico, metodológico, reflexivo y comunicativo-pragmático. El concepto de subtexto se introduce como una unidad estructural-semántica de un texto científico. Consideraron el contenido del subtexto conocimientos nuevos y antiguos, evaluación, autorización, etc.

Palabras clave: La estilística del discurso científico, texto científico, situación epistémica, nuevos conocimientos, antiguos conocimientos, modelo de texto científico, subtexto.

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Introduction

The study of the text architectonics and meaning in the functional stylistics is connected with the issue of the way the various communicative and cognitive processes are reflected in the linear development of the work within their wide extralinguistic context, determining its stylistic specificity. As for a scientific text, the solution of the problem presupposes the consideration of the conditions of knowledge production and functioning recorded in speech form. At that it is important that the description of the text semantic structure is possible only under the condition that the extralinguistic factors external to the text formation are understood as internal, transformed in interaction with the specific content of the presented scientific knowledge (Tikhomirova et al, 2015).

Since the content of a scientific text is verbalized knowledge, the most important role is played by the components of scientific and cognitive activity, which are generalized in the concept of an epistemic situation (the term by M.P. Kotyurovoy), among the extralinguistic factors that influence the process of text formation. The epistemic situation (ES) can be defined as a set of interrelated signs of communicative-cognitive activity in the unity of ontological, methodological, reflexive and communicative-pragmatic aspects that systematically influence the formation of scientific speech, realized in a scientific text and defining its stylistic-speech structure. The concept of ES has several aspects.

Firstly, it reflects the interaction of two most important components of the heuristic activity - subject and object. Secondly, the ES unites a complex of intellectual actions of a scientist that accompany the resolution of a problem situation and the search for new knowledge. Finally, this concept demonstrates the systemic nature of extra-linguistic factors that form the stylistic specificity of scientific speech (Kotyurova, 1996). The methodological meaning of ES concept is that it provides an opportunity to approach the text analysis “from the inside”, to cover it with a “single look”, to consider the deep and diverse influence of the cognitive situation on the development of deep (semantic) and surface-speech structure of a text. In general, the epistemic situation can be considered as a universal extralinguistic model of a scientific text, which has an invariant character and is implemented in all genres of academic writing.

The expediency of text modeling as a complex system object with a semantic and formal linguistic structure is conditioned by the fact that the model makes it possible to reveal the conventional compositional semantic scheme of a textual organization that emerged as a result of the functional style historical development, reflecting the obligatory, but flexible within its borders, meaningful and functionally invariant elements that provide the representation of the meaning and bring it to the addressee. At that it is obvious that the inexhaustibility of a text as an object of linguistic research provides also inexhaustible possibilities for the development of its models, each of which can help clarify the semantic and structural properties of a text.

Methods

The creation of useful information in a text according to the stages of scientific presentation is presented in this article taking into account the cognitive-discursive approach, which involves the study of the text from the standpoint of cognitive and discursive analysis simultaneously (Kotyurova et al, 2012; Silverstein & Urban, 1996; Van Dijk, 1997; Lee et al., 2018).

The cognitive-discursive component of the applied approach is connected with the logical mental operations of the author / reader, which allow not only to restore all the formal and semantic links in the structural-semantic space of the text, but also to approach its conceptual structures behind individual units and parts of the text, as well as behind the scientific text in general. Such an approach allows to determine the principle of a scientific text content expansion / contraction, identifying the functions of stereotypical units (terminological and non-terminological) in the construction of a scientific text, to show the intertextual connection of meanings that transmit different types of information both within one phrase and between them in the “space” of the whole scientific text (Luria, 1979).

Main Part

One of the main tasks during text structure modeling is the identification of its units. At the same time, in order to explain the truly stylistic specificity of a text as a communicative phenomenon, the text elements, i.e. functionally based units must be reflected in its model. Such units can be considered as the ES component

represented in the surface tissue of some text within the unity of its constituent aspects - ontological, methodological, reflexive and communicative-pragmatic.

If the content of ES is presented in a holistic way within the mind of cognitive activity subject - in the form of a scientifically meaningful image of reality, then this content is reissued in the text in accordance with the specifics of the linear structure of speech and gets its own way of language nomination. For each component of ES, its own way of language nomination is chosen - lexical (by the means of a word or a phrase), propositional (by the means of a sentence) or discursive (by the means of relatively independent text). The functional and semantic commonality of language-nominations dispersed in the space of works allows to unite them into subtexts expressing the multi-aspect content of scientific knowledge. Subtexts determine the multidimensionality and compositional division of a work, ensure the development of its meaning, and ultimately form a special quality of a text — polytextuality (Bazhenova, 2001). The invariant content of ES, implemented by a complex of subtexts, determines the relative standardization of scientific work development with their variability within certain limits.

As a rule, subtexts are represented by supersyntactic units, consisting of several thematically related sentences that reveal one of the subtopics of the whole work. In other words, traditionally, the subtext is in the same row with the units of syntactic-semantic division (SFU, paragraph, etc.) that are not related (or almost not related) with the content aspect of a work, and does not explain the stylistic specificity of a text as the product of a functionally communicative speech activity. Unlike traditional ideas, we consider the subtext in its direct dependence on the extralinguistic communication factors.

In our understanding, subtext is: 1) a typical structural-semantic unit of text functionally determined by the extralinguistic factors of scientific speech; 2) the form of "projection" on the whole text of one or another ES component content; 3) a linear representation of ES holistic content. Thus, the subtext is a relatively independent structural-semantic unit of the whole scientific text, which is the means of speech implementation for ontological, methodological, reflexive or communicative-pragmatic ES component, which has its own goal setting. Interacting with each other, subtexts are integrated into a single poly-textual system,

providing the thematic deployment of a text, its semantic integrity and compositional orderliness. The combinatorics of subtexts in a particular work is determined by the logic of topic development, the course of the author's scientific thought, his plan and pragmatic attitudes.

The typical model of scientific work polytextual structure of academic genres (articles and monographs) includes seven subtexts representing the content of ES. The ontological component is implemented in the subtext of the new knowledge, which expresses the substantive content of the research, and the subtext of the old knowledge, which introduces the addressee to the prerequisites of the stated concept.

The method of ES methodological content of speech implementation is the methodological subtext, thanks to which the author's concept appears to the reader precisely as scientific knowledge. This subtext demonstrates the principles, methods and techniques of research, as well as the ways of new knowledge substantiation. In addition, it performs the function of information partitioning into the quanta of meaning with the emphasis on the main logical stages of the author's thought development.

The reflective beginning of cognitive activity is implemented through the subtext of assessment and the subtext of authorization, the first of which expresses the author's value orientation (Lopes & Oliveira, 2018), the second is the way of its reflection transition into speech.

The communicative and pragmatic content of ES is expressed in the subtext of addressing and the peripheral subtext. The subtext of addressing is connected with the devotion of scientific information to the reader: it controls the perception of the text and serves as the "author's pragmatic instruction" (Apresyan, 1988), prescribing how the addressee's attention should be distributed to learn this information in an optimal way.

A peripheral subtext is represented by a complex of informational secondary texts and text fragments, which combines abstract, preface, conclusion, bibliography and table of contents (Kotyurova, 1996). Peripheral subtext is the "projection" of the study main results and conclusions on the situation of verbal-scientific communication. Aimed at reader's needs satisfaction for promptly obtaining of proven and accurate scientific information, this subtext is

characterized by semantic compression and a generalized form of new knowledge expression with the emphasis on its effectiveness (Chernyavskaya, 2017).

Subtexts have a different nature of speech implementation - continual and discrete. The continuum structure is the sequence of statements, developing one theme, united by a common meaning and interconnected by formal means. Primarily the subtext of new knowledge has such a structure. It reveals the substantive content of the concept and reveals the text theme; its deployment is determined by the stages of the author's cognitive activity, including the problem situation, the problem, the idea, the hypothesis, the argumentation and the conclusion.

Discrete subtexts are implemented through the combination of multi-level language units, separately, i.e. outside of formal connectivity, represented on the product space, but united by semantic and functional community. They have relative semantic integrity, since there is an integral content of a certain ES component behind the externally discrete structure. The discrete way of organizing is characteristic of most of the identified subtexts (methodological, evaluative, authorization, and addressing), which form the context of new knowledge.

Each of the subtexts is represented in the work by typed speech units with semantic and functional commonality. In the process of a scientific style development, these units acquire such stability that they turn into stereotypical formulas used in the texts of various sciences and marking the quanta of standard content.

Conclusion

The model of polytextuality, reflecting the idea of text content orderliness, has a generalized character, on the one hand. On the other hand, this model makes it possible to single out the components of its substructure in the semantic structure of the text, which cannot be simply described due to its complexity. All these substructures (subtexts), firstly, represent the content of the epistemic situation, secondly, they are functionally interrelated on the basis of the author's intention embodiment, thirdly, they are characterized by systemic relationships of interdependence, hierarchy and complementarity.

Summary

The identified types of subtexts probably do not exhaust the multidimensional content of the text, which varies due to the explication (or non-explication) of individual communicative-cognitive actions of the author. However, the presented model demonstrates the typical organization of cognitive, axiological, pragmatic and other meanings of a scientific text, the combination of which allows the addressee to perceive and adequately interpret the information contained in the text.

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