Types of Discourse Markers: their Ethnocultural Diversity in Scientific Text

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Abstract

The paper aims to reveal the role of ethnomethodological and discursive factors that determine the direction of discursive units’ functioning in an academic text. The issue is dealt with on the basis of academic texts in the German and Russian languages belonging to geological type of academic discourse. The following functional types of discursive markers (DMs) are distinguished: 1) the markers ensuring text coherence, 2) the markers disclosing a speaker’s attitude to an utterance, and 3) the markers reflecting the process of interaction between the author and the reader. This article is devoted to consideration of the second group DMs. Comparative analysis of using DMs discloses specific ways of presenting academic knowledge and the influence of ethnomethodological models of academic discourse organization on this variety.

Keywords: Scientific discourse; discourse markers; functions of discourse markers; types of discourse markers.

1. Introduction

Linguistic items, which any scientific text consists of, can be referred to two levels of communication: primary and secondary (Clark, 2004). Linguistic items of the primary level accomplish the main informative function in scientific discourse (terminological, general scientific, and common lexis should be referred to such items). Secondary level items form the system that helps to build, expand and regulate the general communication.

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Meanwhile, this system is not the direct objective of communication, it only performs auxiliary functions such as coherence of separate passages within the scientific text.

In our research we use the term “discourse markers” for text items of the second level, following the tradition of using this term in the works (Schiffrin, 1987). Thereby we assume that the term “marker” indicates that discourse lexis is used as indicative signs which mark the structure and certain denotations in scientific discourse and fulfill certain functions which will be discussed below.

It is important to emphasize that discourse markers have trans-categorical nature, i.e. the category of discourse markers includes items referring to different parts of speech (particles, adverbs, conjunctions, parenthetical words, etc.), possessing different structure from a word, a collocation to full sentences (Kiseleva, 2003). The functional criterion is the only criterion that allows grouping discourse markers. In the present paper, we put the issue of discourse markers in broad perspective following a number of authors and we relegate all words, collocations, speech patterns, and sentences that serve an auxiliary, discourse-forming function and ensure creation, realization and perception of the discourse to the category of discourse markers.

As the investigations in the field of scientific discourse show (Pörksen, 1984; Galtung, 1985; Schröder, 1987; Clyne, 1987; Graefen, 1994; Raible, 1994; Gubareva, 2011; Kogut, 2014a, 2014b), the peculiarity of scientific texts depends on a number of factors: ethnocultural (ethnocultural traditions of communication structural arrangement), discourse, stylistic, genre (stylistic and genre principles of communication), ideostylistic, etc. Consequently, peculiarity in applying discourse items can be attributed to the joint impact of these factors.

The objectives of the analysis are scientific communication texts; their ability to vary ethnoculturally is currently under active scientific multi-disciplinary discussion. Various aspects of scientific communication unity/variation, namely, disagreement on the sphere of concepts in corresponding cultures and languages that interfere the mutual understanding among scientists (Goddar & Wierzbicka, 1997), diversity of scientific thinking styles and text structure peculiarities as reflection of these aspects of scientific knowledge and communication (Alexandrov, 2010) are getting prominent coverage in various fields of humanity – philosophy, psychology, linguistics.

The latest studies conclusively prove that scientific texts written in different languages are peculiar in terms of surface structure arrangement (Connor, 1983, 2004; Kresta, 1995; Thielmann, 2009; Gubareva, 2011 et al.). Since texts vary in means of organizing scientific discourse and ways of expressing the author's attitude to the delivered material, they demonstrate particular, nation-related scientific thinking patterns (Alexandrov, 2010).

In our previous works, we have discovered that discourse markers usage is different in scientific texts referring to different linguocultural systems. We have identified the existence of statistically significant differences in applying DMs in German and Russian texts in geology (Kogut, 2014a, 2014b): Thereby, their functional ambiguity is also demonstrated by many researchers whose works are devoted to DM analysis, and this initiates attempts to classify them according to their functional feature. Analyzing the types of DM functioning in scientific texts, we have come to the conclusion that three DM groups are crucially contradistinguished and functionally related to three basic elements of communication: Subject Matter, Speaker, Listener: 1) Markers conferring text coherence; 2) Markers rendering speaker’s attitude to the utterance; 3) Markers reflecting the process of speaker-listener interaction (Kogut, 2014a).

**Hypothesis.** Identifying key functional distinctions between DMs in the scientific text has given us the basis to propose a hypothesis according to which scientific texts referring to different linguocultural traditions can, to various extent, demonstrate diversity regarding different DM types.

The objective of the present paper is to indicate differences in the degree of possible influence of ethno- and linguocultural diversity on selecting and using the discourse markers of the three distinguished types and to characterize the DM group used in the scientific text using of which makes it the most ethno-specific.

**Research material.** Texts of the same discourse type (scientific), the same theme (geology), and the same genre (scientific paper) have been studied and, therefore, genre and stylistic assignment of the analyzed texts are a constant value. A variable quantity that affects the character of DM use in the material under study is the author’s ethno-linguual attribute: scientific geological texts written in the Russian and German languages have been considered. In order to exclude the influence of the ideostyle factor, texts written by different Russian, English and German authors have been involved in the analysis.
The total volume of the investigated material is about 42 thousand word usages (about 21 thousand usages in each language).

**Russian corpus.** Eight Russian scientific articles in geology were analyzed (21226 words). These articles were published in journal “Bulletin of Tomsk Polytechnic University. Earth Sciences” (Stolbova, 2002; Kucherenko, 2003; Vagina, 2011; Voroshilov, 2012) and in the geological journal of The Institute of Geology of Ufa Scientific Center of Russian Academy of Sciences (Savel’ev, 2014; Puchkov, 2014; Savko, 2014; Tregub, 2014).

**German corpus.** German corpus included seven articles by German researchers in geology (21921 words) published in the collection of scientific articles at Vienna federal Geological Survey “Abhandlungen der geologischen Bundesanstalt” (Haslinger, 2008; Felderer, 2008; Drescher-Schneider, 2008; Damm, 2008) and “Geo.Alp” (Mostler, 2011; Costantini, 2013; Holzmann, 2013)

**Research methods.** Testing the hypothesis, we apply integrated techniques including techniques of philological text analysis which serves as a basis for identifying semantic and functional types of discourse words; techniques of discourse analysis that is carried out with regard to discourse parameters of text-formation. Methods of statistic analysis are applied for data processing. We take into consideration the absolute number of items in corpus under study. However, we assume that the ratio of the three analyzed DM types to their total number of DMs is the most representative, as well as the proportion of total number of words in the text, which can be described as relative “density” of the DM types used. As noted, 321 DMs have been revealed in Russian text corpus, with the number of 21226 words, 428 – in German one, with the number of 21921 words. Further quantitative analysis establishes the DM ratio of a definite group to the total word count in the text, which we define as absolute DM density of this group, and the ratio of DMs of the given group to the total DM count, that is defined as relative DM density. Absolute and relative DM density is being observed in Russian and German texts, the existence and statistical significance of the differences in DM use is distinguished.

2. Results and discussion

As the analysis has shown, DMs of the first group that organize the scientific text, ensure its coherence and integrity are involved in the formation of the basic features of the scientific style in both languages: coherence, logic and consistency throughout the text, marking the order of presentation of author’s thoughts, they are the leading means of communicative structure of the analyzed texts.

This type comprises markers indicating the introduction to the theme (*in this article, we will focus on..., in this article we will consider...*); orders of informativity (*firstly, secondly, finally*); material arrangement on the page or in the text (*as noted above, as mentioned above, as will be discussed below*); moving towards a new theme (*let us move to the analysis...*); conclusion (*consequently, as a result, thus, therefore*); introducing new or additional information (*besides, it is worthy of note that...*); repetition of information or its concretization, explanation, paraphrasing the expressed idea (*in other words, so to say, thus, that is, namely*); contrast or deviation from the main line of the narration (*however, in contrast to, on the other hand, on the other hand, nevertheless, meanwhile, thereby*); introducing examples (*such as, for example, for instance, to illustrate...*).

The conducted study has also demonstrated that this group of markers is the most numerous and most commonly used both in German and Russian articles. 159 items have been noted in Russian corpus and 275 – in German one within the analyzed texts. These absolute numbers are 0,74 % out of the total number of words in the Russian text and 49,5 % out of DM number, 1,25% and 64 % in the German text, respectively. Applying the chi-square test ($\chi^2$) has revealed the existence of a significant difference in discourse marker use within German and Russian scientific texts (result – 31,004 exceeds the critical value 6,6 of Pearson criterion with the degree of freedom 1).

It is important to emphasize that predominance of discourse markers of this group is a common characteristic and important feature of integrity in organizing German and Russian scientific geological texts.

The second DM group comprises markers which express the author’s attitude towards his/her own utterance and reality.

Among discourse items of this group we distinguish markers that indicate logical probability (*possibly, probably, it can be assumed, apparently, etc.*); increase/decrease in reliability of information (*sure, without doubt, supposing, actually, doubtfully, etc.*); various kinds of evaluation (*truly, as a rule, unfortunately, etc.*); attitude towards the
content (it is noteworthy, revealingly, etc.); as well as expressing the author’s opinion (in our view, in our opinion, from our point of view, as it seems to us, etc.).

The second DM group is considerably behind the first one in quantity and is less than 1% of the total quantity of words.

Thereby, this group in Russian geological texts significantly exceeds the number of these DMs in German scientific texts – 66 and 20 word usages, respectively.

Markers of the third group reflect the process of interaction between the author and the reader. The author uses DMs of the given group in order to direct the reader’s attention, helping the reader to highlight the key moments of the text content.

In percentage correlation, DMs of the third group were 0.6% in German and 0.45% in Russian to the total word count. In relation to other DM types, these data were 30% in Russian papers and 31% in German ones. Thus, the given DM group is the second in quantity in all the analyzed articles of Russian and German discourses.

Let us present the absolute and percentage characteristics of using DMs in German and Russian corpuses in Table 1.

Table 1. Characteristics of using DMs in German and Russian corpuses

<table>
<thead>
<tr>
<th>DM type</th>
<th>Quantity</th>
<th>% ratio to word count</th>
<th>% ratio to total number of DMs</th>
<th>chi-square test (ᵡ²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Russian</td>
<td>German</td>
<td>Russian</td>
<td>German</td>
</tr>
<tr>
<td>First type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>159</td>
<td>275</td>
<td>0.74%</td>
<td>1.25%</td>
</tr>
<tr>
<td>Second type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>66</td>
<td>20</td>
<td>0.31%</td>
<td>0.09%</td>
</tr>
<tr>
<td>Third type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>96</td>
<td>133</td>
<td>0.45%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

Statistic analysis methods (chi-square test (ᵡ²)) applied to identify the significance of ethnocultural differences in DM functioning within German and Russian scientific texts has shown the existence of statistical significance both in general, and in 2 out of three distinguished groups, difference in markers usage of the third group being less than the ultimate value of Pearson criterion 6.6349.

Let us carry out the qualitative philological analysis of using DMs of the second group. Differences in their use are statistically significant according to the Pearson criterion.

The markers of this group create a personal view in the scientific text and enable to trace the author’s principle. Being a thinker and a creator of a scientific idea, the author of a research paper also acts as the reader’s interlocutor entering into a dialogue with him/her, making follow the author’s idea. Above all, the scientific text reflects personal intentions of its creator, as well as his/her scientific, intellectual, social and moral attitudes.

Markers of this group have been observed within all analyzed scientific papers of both discourses in German and in Russian. This certainly indicates their important role in communicative structure of scientific papers. The mentioned observations correlate with the latest studies in scientific style, they emphasize that a subjective component tends to become reinforced in current scientific communication (Bolsunovskaya, Nadjina, 2015). The linguists note that emotional elements penetrate into scientific style and coexist with logical elements. On the one hand, emotiveness and evaluativity do not correspond to the nature of scientific thinking which is characterized by general abstract logical conclusions, and definitions. On the other hand, the author of an article cannot entirely keep distance from the text that he/she creates and avoid expressing his/her attitude to the subject under investigation. The subjective component is a trait of a creative personality, a way of author’s self-expression; it makes thoughts more powerful and vivid.

Besides, working out new scientific theories and concepts, shaping ideas, as well as research results are impossible without rethinking the existing knowledge, interpretation, without academic dispute, either hidden or evident, without subjective assessment and author’s attitude towards reality and his/her own utterance, i.e. without subjective modality. Explicitness of the author’s modality in the scientific text is also due to its focus on the recipient close to the author both in socio-cultural and professional terms.

Based on the analysis of scientific texts (Kogut, 2014a, 2014b), we can distinguish three main types of discourse markers that represent the category of author’s modality in the scientific texts.
Firstly, these are markers which explicitly express author’s modality through actualizing the “self”-sphere within the utterance: in my/our view, in our/my opinion, from our/my point of view, it seems to me/us, etc. 

Secondly, there are markers which reflect the author’s attitude towards the content or various kinds of assessment: certainly, needless to say, without doubt, undoubtedly, actually, truly, as a rule, unfortunately, naturally, obviously, evidently, it is of high interest, (un)surprisingly, unusually, remarkably, significantly, definitely, doubtless, without doubt, it goes without saying, etc.

Thirdly, there are DMs associated with pragmatic strategy of hedging, i.e. DMs that enable to avoid categorical statements, judgments and assessments. DMs of this subgroup can add a shade of inaccuracy, deliquescence, uncertainty, ambiguity to the utterance, tone it down: probably, likely, perhaps, apparently, evidently, supposing, one can assume (suggest, admit), doubtfully, unlikely, hardly, apparently, most likely, etc.

The data of the conducted analysis allows noting that German authors demonstrate a greater restraint in expressing the author’s individual modality in comparison with Russian ones, which is in the absence of markers of the given type in the analyzed German texts (0 vs. 7). Personal view is stronger expressed by Russian authors, namely, only Russian papers contain markers which explicitly express the author’s opinion: we think, it seems to us, in our view, we consider, etc.

1) По нашему мнению, магматогенные кольцевые структуры в большинстве случаев являются вещественным выражением вихревого движения потоков флюидов (Voroshilov, 2012).

2) Мы считаем, что указанные серии также связаны постепенным переходом (Puchkov, 2014).

On the one hand, these are passive voice constructions which do not evidently indicate the author: we think, it seems to us, in our view”, “in our opinion”, etc. are always associated in the conscience of the West-European scholar with team work and collective voice. That is why the Russian author’s own contribution into the research often remains unclear, which is doubled-valued by his German colleagues: on the one hand it is considered to be irrelevant modesty, on the other hand –lack of professional competence (Breitkopf, 2006).

In no case did the markers that explicitly represent the author’s opinion occur within German geological papers. On the contrary, occurrence of the author’s “self” in German discourse corresponds to the neutral character of scientific statement. German authors use various techniques for this purpose.

First of all, these are passive voice constructions which do not evidently indicate the author:

3) Im Rahmen dieses Forschungsprojektes wurden mehrere Fallbeispiele fossiler und aktiver Festgesteinsmassenbewegungen in Tirol bearbeitet (Zangerl, 2008).

Metonymous techniques:

4) Die vorliegende Arbeit verfolgt daher das Ziel, die im Untersuchungsgebiet relevanten Steuerungsfaktoren zu analysieren und deren Wirkung auf die Hangstabilität abzuschätzen (Damm, 2008).

Techniques which allow avoiding self citation, for instance, if the author mentions himself/herself as a member of academic community or restricted to a certain school or research area, which makes the paper more objective, reinforcing the author’s own thoughts by the authority of researchers who pursue the same approach. It is notable that such phrases as “we think”, “in our view”, etc. are always associated in the conscience of the West-European scholar with team work and collective voice. That is why the Russian author’s own contribution into the research often remains unclear, which is doubled-valued by his German colleagues: on the one hand it is considered to be irrelevant modesty, on the other hand –lack of professional competence (Breitkopf, 2006).

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First of all, these are passive voice constructions which do not evidently indicate the author:

5) Der Autor dieser Studie hat in einer autochthonen Kieselschwammfauna, die der oberjurassischen Beckenfasies angehört, fast ausschließlich phyllotriaene Skleren unterschiedlichster Bauart mit unfertigen juvenilen und voll entwickelten Pinakiden vergesellschaftet festgestellt (Motsler, 2011).

In Russian corpus, authors of the scientific paper also use techniques which enable them to express their opinion staying in the background, focusing on factual information and making it neutral and objective. First of all, these are DMs in the form of impersonal constructions such as “it is thought”, “it is considered” that express the author’s opinion and do not occur in the analyzed German corpus:

6) Представляется перспективной и мало-помалу реализующейся на Урале идея В.С. Буртмана о том, что в истории развития складчато-надвиговых поясов, по мере роста их жесткости, шарьжи сменяются сдвигами (Puchkov, 2014).

7) Думается, что следует ориентироваться на указанные датировки, причем необходимо дальнейшее уточнение полученных результатов альтернативными методами (Puchkov, 2014).
It is obvious that the communicative intention of the scholar who creates a scientific text is to persuade the reader that his/her approach to the information, his/her vision of the problem is the only correct, which is achieved by using the second DM subgroup. The given DMs reflect not only the author’s viewpoint but also his/her attitude to the content and evaluation of the material delivered. It is important to note that these DMs are also more characteristic of Russian scientific geological discourse (52 vs. 5).

Beyond doubt, the Russian author is first of all reader-oriented when he expresses his/her attitude to the message, his/her own position and the system of values. He/she persuades the reader of his/her correctness, instills confidence concerning the truth of the delivered information by means of DMs.

Such DMs as: “it goes without saying”, “beyond doubt”, “undoubtedly”, “it is safe to say” that are frequently used in the Russian scientific discourse, are not observed in publications of German scholars since, on their opinion, the mentioned expressions are used when the author believes that he/she is the only holder of the true knowledge, as aggressive persuasion the reader of one’s correctness (Myers, 1989; Namsaraev, 1997; Breitkopf, 2005).

On the contrary, DM hedgings are characteristic of German scientific discourse. Our analysis has shown that they can be used by the authors of scientific texts, on the one hand, when they do not refer to true-to-fact scientific knowledge, but to new research usually characterized by fragmentarity, as well as stochastic nature. In this case lack or insufficiency of scientific data do not allow the researcher to speak about exhaustive information or to cast himself/herself as the owner of true knowledge and insistently persuade the reader of his/her correctness. The main function of DMs here is to tone down the categorical character of the author’s statements. On the other hand, it is of great importance for any scientist to be professionally recognized by his/her colleagues who can not only estimate his/her contribution to science, but also have critical or negative attitude towards his/her scientific ideas. That is why, DMs of this subgroup are also used to tone down possible criticism or to avoid it: probably, possibly, it can be assumed, etc.

According to the results of the analysis, the authors of Russian scientific texts use DM hedgings less frequently than German authors (7 vs. 13).

The reason for this fact might be that criticism against colleagues is expressed more discreetly, often covertly, rarely in explicit negative form in Russian scientific tradition. For example, praise, positive assessment, high opinion, etc. are more widespread in reviews. In contrast, objective critical comments made by scholars are considered to be absolutely common in West-European scientific tradition (Grimm, 1999). Thus, intention to avoid or tone down possible negative assessments through the use of DMs is more often observed in German scholars’ publications. Absence or rare use of the given expressions in Russian scientific texts is often perceived by German colleagues as a judgmental statement (Myers, 1989; Namsaraev, 1997; Breitkopf, 2005).

3. Conclusion

Therefore, the analysis of German and Russian scientific texts of the same theme (geology), the same genre (scientific paper) and written by different authors has made it possible to distinguish both common tendencies and specific culture-based peculiarities in using various types of DMs.

On conducting the comparison according to two variables – the ethnocultural text type and the discourse marker type, we have disclosed their mutual influence. It has been shown that “relative density” of DMs which organizes the scientific text and ensures its coherence and integrity is more significant in contrast with two other DM types. This feature – contradistinguishing the first type DM to two other types in terms of usage frequency – is typical for Russian and German texts. In our opinion, this is due to the unity of discourse target-setting. But at the same time we observe a significant difference, namely, DMs which organize scientific text, ensure its coherence and integrity, demonstrate author’s attitude to his/her own utterance and reality, which is due to different traditions of scientific communication established in various cultures.

References


