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ANTONYMY IN GERMAN TECHNICAL TEXT

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Abstract

Communication in regard to science is one of the most important areas of information exchange in the world community in connection with scientific and technical progress. However, written communication is essential. One of the most difficult and least studied aspects of synchronic term analysis is the aspect of their system organization at the level of lexical and semantic paradigmatics. Antonymy is a manifestation of linguistic paradigmatics that confirms the existence of two attributes of the opposite relationship. Based on the material of scientific and technical literature, a linguistic study is conducted, which examines the terminological units of the German language that are actively involved in the designation of opposite scientific and technical concepts, objects, phenomena, properties and characteristics. The relevance of the topic of this research is determined by its inclusion in the paradigm of modern linguistic terms research in the context of the features determination of the structural and semantic organization of the German terms-antonyms. The purpose of the analysis is to identify the features of antonymic relations in the structure of scientific and technical terminology. The problems of the terms origin, their structure and translation are still relevant. In this connection, the semantic and structural classifications of antonyms are considered.

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1. Introduction

The scientific and technical sphere is positioned in a special place in social communication. Communication, broadly speaking, refers to the exchange of information between individuals through a common system of symbols (signs), language signs in particular. Scientific and technical communication is primarily provided by terminology. If in most spheres of communication any communication is carried out mainly through oral channels, then for the scientific sphere it is the written channel that is the most important. Thus, scientific and technical literature is the most significant way of transmitting information.

Scientific and technical texts are created in order to form a certain system of reality reflection – descriptions of objects, phenomena and their relationships. One of the types of relations in which objects and phenomena of the real world are located is the relation of the opposite. Words that are connected by the relation of opposites and express these opposites by their meaning are called antonyms (from the Greek *anti* - *against* and *ónyma* - *name*.)

Antonymy is based on association by contrast, which reflects significant differences in objects, phenomena, actions, qualities, and attributes that are similar in nature. Antonymy is one of the most important linguistic universals, one of the essential dimensions of the lexical and semantic system of various languages.

In terminology, antonymy is a means of expressing the phenomena of science and technology. The appearance of one concept is often accompanied by the appearance of another, opposite in content. As a result, antonymy in terminology is a means of expressing the opposite of conceptual content. Thus, antonyms not only do not hinder the exchange of special information, but, on the contrary, they support the system of terminology and help the term to perform its communicative function.

The study of antonymy began with the logic of the ancient Greek philosopher Aristotle. His works were the basis for the development of the modern theory of opposites. However, antonyms have been the subject of linguistic analysis relatively recently – since the mid-twentieth century. This problem was mainly dealt with by Russian scientists (L'vov, 1985; Novikov, 1973), Apresyan (1974), Danilenko (1977). German linguists who have studied antonymy are primarily (Agricola & Agricola, 1977; Cruse, 2002; Fleischer & Barz, 1995). Based on the works of these authors, the linguists Shumaylova (2008), Bagana and Velichkova (2012), and Gilimyanova (2015) conducted their research in the field of antonymy. The practical material was the terminological units selected on the basis of a continuous review of special literature, reference and dictionary publications (Baier, 1974; Boguslavskij, 1984; Conrad, 1972; Nemetsko-russkijpolitechnicheskij slovar' 100 000 terminov, 1979; Shramkov, 1962).

2. Problem Statement

The research involves solving a number of specific tasks:

- 2.1. to classify antonyms from the point of view of their semantics;
- 2.2. to establish the most productive ways of formation of terms-antonyms;
- 2.3. identifying semantic links between the individual bases of complex terms.

3. Research Questions

The article suggests the following issues:

3.1. What do the terms “antonymy” and “antonym” mean?

3.2. How can antonyms be classified

3.3. What are derivational model terms are antonyms?

4. Purpose of the Study

The main purpose is to study the antonyms used to denote scientific and technical concepts in the German language texts, identify the semantic and structural features of these terms, and consider the issues of translating complex terms into Russian for further rational teaching to read scientific and technical literature.

5. Research Methods

Analysis of the material required the use of a set of research methods. The following traditional linguistic methods are used to solve the tasks set in the paper.

5.1. The main method is *descriptive and classifying*, which involves the collection, processing, and systematization of terminological material.

5.2. The method of *lexicographic analysis* involves determining the semantic features of terms by studying dictionary definitions.

5.3. The method of *identifying semantic features* in the meaning of terms is the basis for studying the semantic structure of complex terms.

6. Findings

The variety of terminological antonyms is fully revealed when considering the classification of antonyms. The most significant are semantic and structural classifications.

6.1. Semantic classification is based on the type of opposite expressed in terms. Depending on the nature of the denoted opposite, we distinguish the following classes of antonyms (L'vov, 1985).

6.1.1. The first class includes antonyms that express the qualitative opposite. Such antonyms are called contrary ones (from the Latin *contrarius opposite*). Contrarian antonyms are characterized by a stepwise, graded opposition, the members of which call the gradual change of the same quality, property, feature. In literary language, the gradation of a quality or attribute can be transmitted by a number of words (old – senior – middle-aged – young). In terminology, contrary antonyms are usually represented by three members of the opposition, the second of which is a “starting point”. For example: Hochvakuum *hard/high vacuum* – Feinvakuum *medium vacuum* – Grobvakuum *low vacuum*; Dauerbetrieb *continuous operation*, *continuous operation mode* – Normalbetrieb *normal mode* – Kurzbetrieb *short-time operation mode*; Unterdrehzahl *speed lower than rated* – Normaldrehzahl *rated speed* – Überdrehzahl *speed higher than rated*, Leiter *conductor* – Halbleiter *semiconductor* – Nichtleiter *non-conductor*; Hochfrequenz *high frequency* – Normalfrequenz *normal [reference, industrial] frequency* – Niederfrequenz *low frequency*;

Hochdruck *high pressure* – Normaldruck *normal [standard, rated] pressure* – Niederdruck *low pressure*; Überlast *overload* – Normallast *normal [nominal, rated] load* – Unterlast *underload*. Less often, there are two terms with the opposite meaning that only suggest the potential presence of one neutral intermediate term. For example, Maximalausschlag *maximum deviation* – <Mittelausschlag, Kleinausschlag *small deviation*> – Minimalausschlag *minimum, small deviation*.

6.1.2. The second class is the antonyms, expressing complementarity, complementarity (from lat. complementum *supplement*). Here the scale of oppositions is represented by only two opposite terms that complement each other to the whole, their opposite cannot be graded, which is why there are no intermediate steps in the form of terms. Complementary antonyms make up a small group. These include, for example, Minusfehler *negative error* – Plusfehler *positive error*, Minusthermoschenkel *negative thermoelectrode* – Plusthermoschenkel *positive thermoelectrode*.

6.1.3. The third class is formed of the antonyms that express the opposite orientation of actions, properties and characteristics. These are so-called vector antonyms. Some linguists refer to this group as converse terms that indicate the same situation from the point of view of different participants or observers (attributes like *buy – sell*). Since scientific and technical communication assumes a unified view of an object, phenomenon, or event, we prefer to focus on the term vector antonymy. For example, the following antonyms refer to words-terms denoting multidirection: Vormessung *pre – measurement* – Nachmessung *additional, repeated measurement*, Vorwärtszähler *up-counter* – Rückwärtszähler *down-counter*, Wärmung *heating* – Entwärmung *cooling*, Belastung *load* – Entlastung *load relief*, Kopplung *conjunction* – Entkopplung *disjunction*, Vorwärtsturbine *ahead turbine* – Rückwärtsturbine *backing turbine*, Direktkopplung *direct connection* – Rückkopplung *feedback connection*, Einschaltpunkt *switch-on point* – Ausschaltpunkt *cut-off point*.

6.2. In regard to the word-forming means involved in the formation of antonyms, the following groups can be distinguished.

6.2.1. The first group includes lexical antonyms, the other name is multi-rooted antonyms. These are words with the opposite meaning that are involved in the formation of terminological phrases or complex terms.

Adjectives are more often used in this role. The qualitative features inherent in adjectives are contrasted in the following pair: grobe Messung *rough measurement* – feine Messung *precise measurement*. Since the peculiarity of the German language is the expression of concepts using complex words, there are much more complex terms with defining components-antonyms than phrases. For example, the basics of the named adjectives are involved in the formation of such complex terms as: Feinablesung *precise reading* – Grobablesung *raw reading*, Feingeber *point sensor* – Grobgeber *insensitive sensor*, Grobmessbereich *rough measurements range* – Feinmessbereich *precise measurements range*, Grobeinstellskaale *micrometer scale* – Feininstellskaale *coarse setting scale*. Other pairs of antonymous adjectives involved in the formation of complex terms with the opposite meaning: lang – kurz, ober – unter, nieder – hoch, superlative degree niedrigst- – höchst-: Langzeitstabilität *long-term stability* – Kurzzeitstabilität *short-term stability*, Langzeitmesser *device for measuring long time intervals* – Kurzzeitmesser *stopwatch*, Oberwelle *supreme harmony* – Unterwelle *lower harmony*, Niederspannungsmessgerät *low-voltage measuring device* –

Hochspannungsmessgerät *high-voltage measuring device*, Niedrigstwert minimum value – Höchstwert maximum value (measured value).

Not only German adjectives can participate in contrast, but also borrowed adjectives, for example: grob – präzise, manuell – automatisch, maximal/ höchst – minimal/ mindest: grobe Messung – präzise Messung, manuelle – automatische Arbeit, Maximalausschlag *maximum deviation* – Mindestausschlag *minimum deviation*, Maximalfehler *maximum error* – Minimalfehler *minimum error*, Maximalpegel *maximum level* – Mindestpegel *minimum level*.

Less often, the formation of complex German antonyms involves the basics of nouns: Minusfehler *negative error* – Plusfehler *positive error*, Ruhewert *initial value* – Endwert *final value*. The last pair is of interest, since the meaning of the opposite of the two terms does not follow from the values of the defining components, compare: Ruhe *rest* – is not an antonym of the word Ende *end*.

The pair Dauerbetrieb *continuous operation mode* – Kurzbetrieb *short-term operation mode* the meaning of the opposite in time is expressed by the bases of the noun *dauer-* and the adjective *kurz-*.

In a number of antonyms, the opposite defining basis is the basis of the adjective *vorder-* and the preposition *hinter-*: Vorderflanke *leading edge of the pulse* – Hinterflanke *trailing edge of the pulse*, Vorderkipper *forward-tipping dumptruck* – Hinterkipper *back-tipping dumptruck*.

The bases of the adverbs *vorwärts* and *rückwärts* are widely involved in the formation of antonyms: Vorwärtszähler *up-counter* – Rückwärtszähler *down-counter*, Vorwärtsdämpfung *forward directed attenuation* – Rückwärtsdämpfung *reverse directed attenuation*.

Separate pairs are contrasted due to verb bases: Gleitreibung *sliding friction* – Haftreibung *coupling friction*.

6.2.2. The second group of antonyms is terms that express opposing concepts with the help of prefixes. There are two subgroups.

6.2.2.1. The first subgroup includes antonyms formed from the motivating word using German and borrowed prefixes with a negative meaning: anti -, a -, de -, un- (perhaps the most productive prefix), ent-, and the element nicht-. For example: Antiblockiersystem *anti-blocking device* ← Blockiersystem *blocking device*, asynchronus ← synchron, Unebenheit *out-of-flat* ← Ebenheit *flatness*, Ungenauigkeit *inaccuracy* ← Genauigkeit *accuracy*, Entwärmung *cooling* ← Wärmung *heating*, Entkopplung *disassociation, disconnection* ← Kopplung *connection*, Entionisierung/Deionisierung *deionization* ← Ionisierung *ionization*, Nichtzehnersystem *non-decimal numeral system* ← Zehnersystem *decimal numeral system*, Nichtleiter *non-conductor* ← Leiter *conductor*.

6.2.2.2. The second subgroup is formed by those antonyms in which polar prefixes interact with the same generating (motivating) basis, for example, ein-/aus-, vor-/nach-: Einschaltzeitpunkt *switch-on point* – Ausschaltzeitpunkt *cut-off point*, Vorprüfung *preliminary test* – Nachprüfung *supplement test*.

7. Conclusion

The analysis suggests that antonymy is not only a characteristic, but also a necessary phenomenon of terminological organization. Antonyms in scientific and technical texts of the German language are characterized by sufficient consistency and order, which is important for mutual understanding of specialists. When implementing written communication, lexical selection in scientific and technical texts

is determined by the goals of communication, one of which is the objective transmission of real phenomena, objects, features and their opposites. The unity of opposite phenomena of reality serves as the basis for the semantic unity of their antonyms. To express the opposite, we use terms-antonyms, which from the point of view of semantics are divided into contrary, complementary, and vector antonyms. German scientific and technical texts contain antonyms of lexical and word-forming types. In multi-rooted antonyms, the meaning of the opposite is expressed by the bases of words of any part of speech (adjective, noun, verb, adverb, preposition), and in single-rooted ones-mainly by prefixes. The structural diversity of terminological antonyms reflects the word-formation models of the literary language and indicates a continuous replenishment of terms, which is associated with the tendency to differentiate, enrich and complicate the concepts expressed by terms.

References

- Agricola, Chr., & Agricola, E. (1977). *Wörter und Gegenwörter. Antonyme der deutschen Sprache*. [Words and antonyms. Antonyms of the German language]. VEB Bibliographisches Institut.
- Apresyan, Yu. D. (1974). *Lexicheskaya semantika. Sinonimicheskiye sredstva yazyka*. [Lexical semantics. Synonymous means of language.] Nauka.
- Bagana, G., & Velichkova, S. M. (2012). Antonimiya v meditsinskoi terminologii (na materiale nemetskogo yazyka) [Antonymy in medical terminology (on the material of the German language)]. *Scientific Thought of Caucasus*, 2, 180-182.
- Baier, W. (Ed.). (1974). *Elektronik Lexikon*. [Electronics Dictionary]. Frank'sche Verlagshandlung.
- Boguslavskij, P. S. (1984). *Nemetsko-russkij slovar' po izmeritel'noj tehnike* [German-Russian Dictionary of Measurement Technology]. Russkij jasyk.
- Conrad, W. (1972). *Elektronik-Funktechnik. Meyers Taschenlexikon*. [Meyers Pocket Dictionary]. VEB Bibliographisches Institut.
- Cruse, D. A. (2002). *Lexikologie/Lexicology. 1. Halbband*. Walter de Gruyter
- Danilenko, V. P. (1977). *Russkaya terminologiya: opyt lingvisticheskogo opisaniya*. [Russian terminology. The experience of linguistic description.]. Nauka.
- Fleischer, W., & Barz, I. (1995). *Wortbildung der deutschen Gegenwartssprache* [Word formation of the contemporary German language]. Max Niemeyer.
- Gilimyanova, G. N. (2015). Terminologicheskaya sinonimiya i antonimiya v lexike nemetskogo yazyka (na primere terminov gruzovogo avtomobilestroyeniya) [Terminological synonymy and antonymy in the vocabulary of the German language (based on truck industry terms)]. *Philology and Culture*, 4(42), 53-56.
- L'vov, M. P. (1985). *Slovar' antonimov russkogo yazyka (3rd ed.)*. Russkij jasyk.
- Nemetsko-russkij politechnicheskij slovar'. 110 000 terminov [German-Russian Polytechnical Dictionary. 110,000 terms]. (1979). Russkij jasyk.
- Novikov, L. A. (1973). *Antonimiya v russkom yazyke: semanticheskij analiz protivopolozhnosti v lexike* [Antonymy in Russian: a semantic analysis of the opposite in vocabulary]. MSU.
- Shramkov, E. G. (Ed.). (1962). *Meshdunarodnyj elektrotechnicheskij slovar'. Gruppy 20. Laboratornyje I technicheskije izmeritel'nyje pribory* [International Electrotechnical Dictionary. Group 20. Laboratory and technical measuring instruments]. Fizmatgiz.
- Shumaylova, M. S. (2008). Problema antonimiyi v nemetskoj terminologii Interneta [The Anthony Problem in German Internet Terminology]. *Omsk Scientific Bulletin*, 5(72), 143-145.