

Ambiguity in the Russian terminology of the energy industry

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Abstract

This article is devoted to the study of the formation and characteristics of ambiguous (polysemous) words in modern Russian terminology of the energy industry. In this article formation and development of terminology in Russia, the role of terminology in the XX and XXI centuries, the concept of terms and terminology in modern Russian linguistics, and the essence of polysemous terms in the energy industry are considered. This study is carried out by the lexico-semantic approach, observation, collecting and analysis of data. As the result of the collected data analysis, it can be concluded that 1) a number of ambiguous (polysemous) terms is found in the terminology of the energy industry; 2) those terms are widely used in different scientific texts, discourses and research; 3) some of them can be found with the similar or different meanings in various scientific fields; 4) the intended meaning of a polysemous term can be identified according to the context. The results of this article can be used in teaching and learning the Russian language as a native or a foreign language, in the development of training courses for professional communications, for translation of scientific texts and in the creation of dictionaries.

Key words: ambiguity, context, energy industry, polysemy, term, terminology

Introduction

Due to globalization and the growth of scientific and technological progress in the modern world, much attention is paid to terminology, the role of terminology in the system of humanities and natural sciences, the formation, designation, features and functions of terms, linguistic and extralinguistic factors affecting the terminological system, etc.

The purpose of this study is to study the ambiguity (Polysemy) of terms in the terminology of the energy industry as a consequence of the evolution of the characteristics of the term in accordance with the development of terminology as a separate discipline in the modern Russian language.

The object of the article is to discuss terms in the energy industry, especially in the terminology of oil and gas, coal, electric power and nuclear energy. The subject of this study is the terminological variation on the example of terms of the energy industry.

To achieve the goal of the research, the following tasks are needed to be solved:

- 1) selecting terms in a specific area of the energy industry;
- 2) finding the definition of the selected terms in various dictionaries of the modern Russian language;
- 3) making an analysis in order to identify the number of ambiguous terms in the selected areas.

A static analysis is carried out on the basis of 300 single-component terms, including 100 oil and gas terms, 35 coal terms, 100 electric power terms and 65 nuclear energy terms in order to prove the presence of ambiguous terms. Besides, a lexico-semantic analysis is implemented to clarify the dependence of terms on the context.

The scientific novelty of the research consists in the fact that in work for the first time, one-component terms from different fields of energy, often found in technical and terminological dictionaries and scientific texts, are considered and analyzed. The findings of this study can be used 1) in further scientific and practical research on the variability of terms, on the use of ambiguous terms in different scientific contexts, on the definition and concept of the term in various areas of professional communication;

2) in the educational process in order to expand the glossaries and the language and scientific knowledge of students.

Formation and development of terminology in Russia

In the modern civilized world, the study of the language for special purposes as a functional variety of an ordinary language attracts special attention not only from specialists in this field of professional communication but also linguists, translators, journalists and teachers of native and foreign languages. Khakimova (2012), Akhmetova (2014), Kabakova (2016), Ermakova (2018) and other researchers describe the fact in their articles that the formation of terminology in Russia on the basis of lexicology as a science began in the 1930s with the studies of the famous scientist Lotte on the problems of unification and standardization of technical terminology “*The next tasks of scientific and technical terminology*” (Lotte, 1931) and “*Ordering of technical terminology*” (Lotte, 1932).

According to Leychik (2007), the terminology has gone through four stages of formation:

- the preparatory stage (from the beginning of the XVIII century until 1920), where terms are the subject of side consideration by philosophers, logicians and linguists in order to create a specific terminological system (i.e., the formation of terminological dictionaries;
- the stage of accumulation of specific terminological material, attributed to the 30-60s of the XX century, where the term is considered as a special word, is associated with outstanding linguists and founders of terminology: Lotte, Drezen, Wuster, etc.;
- the stage of comprehension, which turned out to be transitional and was characterized by the recognition of terminology as an independent discipline, under which studies of many sectoral sets of terms in their paradigmatic and syntagmatic are carried out;
- the stage of maturity of terminology in the 1970-1980s was characterized by publications of textbooks on terminology and dictionaries of terms in a particular field, like “*Term, terminology, nomenclature*” (Khayutina, 1972); “*Russian terminology: The experience of linguistic analysis*” (Danilenka, 1977); “*Semantics and motivation of terms*” (Kandelaki, 1977); “*On methods and principles of constructing terminological systems*” (Leychik, 1979) and “*The subject, methods and structure of terminology*” (Leychik, 1989); “*Linguistic foundations of the doctrine of terms*” (Golovin, Kobrin, 1987); “*General terminology. Questions of theory.*” (Superanskaya, Podolsky, Vasiliev, 1989) etc.

Due to the sustainable progress in the process of the formation of terminology, the first terminological dictionary of scientific terms “*Dictionaire or Recheniar, according to the alphabet of Russian words, about different growths, that is, trees, herbs, flowers, seeds, garden and field roots, and other epics and minerals*” by Kondratovich (1780) was published in Russia. However, the process of studying terms for the formation of dictionaries in various fields of science, issues and disputes in the implementation of the terminological system were widely engaged in the Renaissance (the beginning of the XVIII century until 1920).

In the XVIII century, many terms in Russian terminology were formed by loan words and phrases from foreign languages. Russian scientist Lomonosov made a great contribution to the formation of scientific terminology based on the native Russian language. He revealed the concept of a term originating from another language and considered literal translation as a way to recreate the Russian terminological system. Due to his effort, Russian terminology has been steadily developing, a terminological system based on Russian lexical units has begun, and many modern terminological dictionaries have appeared, including modern Russian terminological dictionaries like “*Explosive Business: Russian-English Terminological Dictionary*” (Kovalevsky,

2018); “*Borehole drilling: Russian-English and English-Russian Dictionary*” (Nutskov, 2018); “*Electric power engineering and Electromechanics: Russian-English Terminological Dictionary*” (Shpenst, 2018); “*Culture of speech: A Russian-English terminological dictionary*” (Shchukina, 2018); “*Geology of Oil and Gas: Russian-English Terminological Dictionary*” (Blinkova, 2019) etc.

Technologies are developing in accordance with the time, places and circumstances of the scientific fields, and the characteristics and functions of modern terminologies can also be changed. Since science has become cross-disciplinary, using of one lexical unit in different fields should be taken into account. And thus, linguists and scientists are considering the presence of ambiguous words in terminology, although the rule of semantic unambiguity of a term exists.

The concept of the term and terminology in modern Russian

The term (from the Latin word “terminus” which means “border, limit, end”) is a special word or phrase denoting a specific concept of a certain professional sphere of communication. The Latin term “terminus” was mentioned in 1550. However, the word “term” was introduced in the Russian language in the XIX century. Danilenko and Kandelaki defined the meaning of “term” in 1977. A term is a word or phrase with a special concept for use in scientific fields that requires definition (Danilenko, 1977: 15). According to Kandelaki (1977: 7) believes that a term is a word or a lexicalized phrase that requires the construction of a definition in order to establish its meaning in the corresponding system of concepts.

Lotte (1961) claims that under the uniquely open and dynamic self-developing system of the general literary language, special lexicons formed by word-formation methods violate some basic norms of terms and measures of unification of the terminological system of different branches of science. The main characteristic features of the term include clarity, brevity, intersectoral unambiguity and certain associativity.

Terms are the subjects of the scientific apparatus of theories and concepts describing these areas of knowledge and activity, along with other means of cognition: scientific instruments and instruments, as well as such symbolic means as nomenclature, proper names, symbols, indexes, as well as their combinations in verbal formulations, symbolic formulas, schemes, etc. He argues that terms, like other linguistic means, on the one hand, consolidate existing knowledge, expressing concepts, categories and – within judgments and conclusions – the laws of a certain field of knowledge and (or) activity. On the other hand, terms, along with other linguistic ones, contribute to the discovery of new knowledge (Leychik, 2007: 21).

The ambiguity of the term in terminology attracts the attention of scientists and linguists. In the array of printed sources, the phrase “ambiguous terms” has been expressed since 1905. From that moment on, in Russia, the ambiguity of the term became the focus of linguists' attention. According to statistics from Google Books Ngram Viewer, the expression “Многозначность термина (ambiguity of the term)” in various materials reached its apogee in 1980 (see Figure 1).

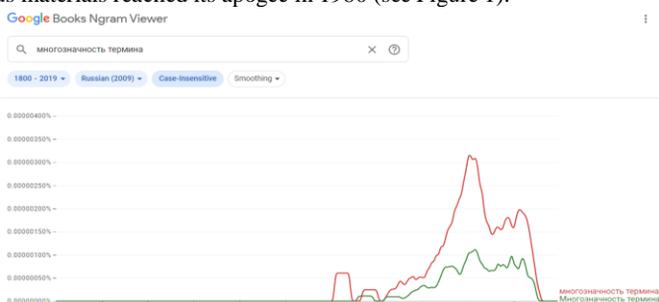


Figure 1. Statistics of "ambiguity of the term" in the XIX-XX centuries.

Linguists, especially in the 1960s and 1970s, shared the same point of view that one of the main characteristics of terminology is the lack of ambiguity in the term. Grinev (2015) writes that linguists approve of the fact that instead of ambiguity (Polysemy), there is homonymy in terminology. When a special vocabulary is used to assign several concepts in industry terminology, the meanings of this vocabulary are clearly delimited and isolated, respectively, by strict inter-industry limitations.

The essence of ambiguity in terminology has been a controversial issue that still does not have an irrefutable answer. It is obvious that in modern linguistic studies of terminology, researchers often discuss ambiguity in the terminological systems of different branches of science, among them are the followings: "*The phenomenon of ambiguity and ways of its description*" (Zaliznyak, 2004); "*Ambiguity in language and ways of its representation*" (Zaliznyak, 2006); "*Ambiguity in terminology*" (Zimova, 2010); "*Ambiguity of terminology as a problem of vocational education*" (Pitka, 2016); "*Ambiguity in terminology: on the issue of distinguishing consubstantial words and terms. Teacher of the XXI century.*" (Sokolova, 2016); "*Ambiguity of nuclear power terminology in the context of problems of applied terminography*" (Savelyev, 2018) and etc.

Golovin (1987: 7) claims that even the term "terminology" has two meanings:

- 1) terminology – a set of words and phrases naming special objects and expressing professional concepts;
- 2) terminology is a branch of linguistics that studies the aggregate of terms, their grammatical organization and laws of functioning. His statement can be assumed as proof of the presence of ambiguity or polysemy in terminology.

Polysemy or polysemy of vocabulary is the presence of several interrelated meanings in a lexical unit characterized by the commonality of one or more semantic components (Kharitonchik, 1992: 54). polysemy of linguistic phenomena is a linguistic asymmetry, which is a universal and basic component of the language system that controls the structure and functioning of the language (Kartsevsky, 1965: 56).

The essence of polysemous terms in the Russian terminology of the energy industry

The energy industry is the totality of all industries involved in the production and sale of energy, including fuel extraction, production, processing and distribution. It includes 1) fossil fuel industries (oil, gas and coal industries); 2) electric power energy; 3) nuclear power energy; 4) renewable energy industries, which include hydro-, wind-, solar- energy; 5) traditional energy.

Nowadays, the energy industry has become an inseparable part of human life in the modern world and is closely connected with various fields of human activities. The terms of the energy industry are more often used in professional and business communications, at conferences, in scientific texts, etc. Thus, some terms like *нефть* (oil), *газ* (gas), *уголь* (coal), *аккумулятор* (battery), *генератор* (generator), *давление* (pressure), *нагрузка* (load), *нейтраль* (neutral), *отклонитель* (diverter), *проводник* (conductor), *ресурс* (resource), *ядро* (core), *пласт* (reservoir), *контроллер* (controller), *выброс* (ejection), *активность* (activity), *тормоз* (brake), *проницаемость* (permeability), *твёрдость* (hardness), *кислота* (acid), *атом* (atom) etc. have become well-known for not only specialists of this scientific fields, but also for language users specialized in different subjects.

After a semantic analysis of 300 single-component terms of the energy industry, including 100 terms of oil and gas, 35 terms of coal, 100 terms of electric power and 65 terms of nuclear energy, it was found that the following are ambiguous:

- 35 out of 100 terms of oil and gas;
- 9 out of 35 terminological vocabularies of the coal industry;

- 37 out of 100 special lexical units of the electric power industry;
- 10 out of 65 terms of nuclear energy.

This result confirms the presence of ambiguous terms in the terminology of the energy industry in the modern Russian language.

It should be noted that many well-known terms in this field are formed by terminologization (transformation of commonly used lexical units of the modern Russian language into terms) and have several meanings. Those types of terms are commonly used in the energy industry and can be seen in different fields of communication to represent and express knowledge, to inform, transfer or buy and sell products. Some of them are expressed in the following table:

Vocabulary	In everyday usage	In terminology	
	Definition	Definition	Field
Вход	An entrance, a door, or a gate by which someone can enter.	A term applied to quantities (voltage, current, impedance...) or components (terminals, conductors...) related to the receipt or return of power or signal.	Electric power industry
Выход	A place through which someone can exit.	A term applied to quantities (voltage, current, impedance...) related to the receipt or return of power or signal.	Electric power industry
		The quantity of product from a process is based on specific weights of raw materials.	Oil and gas industry
Ловушка	A device or a place arranged so that someone or something would be caught in it (e.g., a trap, a mousetrap, a wolf pit, etc.).	A dispersed system in which particles of the dispersed phase form a spatial structure (grid), and a dispersed medium (usually a liquid) is located in the cells of this structure.	Oil and gas industry
Рад	About the feeling of joy, pleasure for some reason.	A unit of absorbed dose is equal to 0.01 g.	Nuclear energy
Замок	A castle or a lock (depending on the stress on the syllable).	A layer of rock that differs from each other in composition, structure, hardness and color.	Oil and gas industry
Заливка	Filling or pouring of something in- onto some places or	A reference to a boiler, a violent, spasmodic action	Oil and gas industry

Vocabulary	In everyday usage	In terminology	
	Definition	Definition	Field
	substances.	resulting in the throwing of slugs of water over with the steam, reference a pump, preliminary filling of the pump with liquid to remove vapors, hence eliminating the tendency to become vapor locked.	
Надёжность	The ability of a person or system to perform & maintain its functions in both every day and unpredictable circumstances.	A property of an object to keep in time within the established limits the values of all parameters characterizing the ability to perform the required functions in the specified modes and conditions of use, maintenance, storage and transportation.	Electric power, oil, gas, coal industries
Земля	The planet of the Solar system, the third in order from the Sun or a place where human beings and animals live and plants grow.	A reference point in an electrical circuit from which voltages are measured, a common return path for electric current, or a direct physical connection to the earth.	Electric power industry
Нагрузка	The totality of forces acting on the body or a load.	A device that consumes power or the power consumed by the device.	Oil and gas industry
Бар	A small restaurant or part of a restaurant, a snack bar where people usually drink and eat at the counter.	The main cutting part of a cutting machine and a mining combine.	Oil and gas industry
Пласт	A dense layer of something.	A geological body having a flat shape, in which its thickness is many times smaller than the size of the area of its distribution, having	Oil and gas industry

Vocabulary	In everyday usage	In terminology	
	Definition	Definition	Field
		homogeneous features and limited by more or less parallel surfaces: <i>the upper – the roof, the lower – the sole.</i>	
Гель	Gelatinous substance with some properties of solids.	A dispersed system in which particles of the dispersed phase form a spatial structure (grid), and a dispersed medium (usually a liquid) is located in the cells of this structure.	Oil and gas industry

According to the above table, it is found that polysemous terms in the terminology of the energy industry are mostly formed by the terminologization of a commonly used word. So, it is also obvious that the meanings of selected vocabulary in everyday use and in terminology are semantically related in some ways to each other. One existing difference between a special lexical unit and a commonly used word is that it has a special purpose in professional communication. The formation of a new term in science fields by terminologization helps not only specialists but also non-specialists to understand or guess the information of the discussion.

Clarification of the meaning of a polysemous term used by the addressee takes place with the help of context. For example, the word “**источник**” in the following sentences selected from Russian National Corpus has different meanings:

- 1) ***Источник**, близкий к НТК, утверждает, что компания планирует инвестировать в склады и дальше.* (A source close to the scientific and technical committee (STC) claims that the company plans to invest in warehouses and further.)
- 2) *У вас имеется амперметр, вольтметр, **источник** тока и проводник неизвестного сопротивления.* (You have an ammeter, a voltmeter, a current source and a conductor of unknown resistance.)
- 3) *Это Георгий своим отворяет копьём пленный **источник**, питающий падишую плоть.* (It is George who opens with his spear the captive spring that feeds his family.)
- 4) *Юлий Суляев, старший научный сотрудник института ядерной физики имени Будкера, отмечает: “Дать человечеству неисчерпаемый **источник** электрической энергии.”* (Yuliy Sulyaev, Senior Researcher at the Budker Institute of Nuclear Physics, notes: “Give mankind an inexhaustible source of electrical energy”.)

As a result of the analysis of the above sentences, it is found that “**источник**” has the following meanings: 1) a person who has a good attitude to the STC; 2) a place where the current appears; 3) a small natural reservoir; 4) an electrical device (a thermonuclear reactor). In the first and third sentences, “**источник**” is a lexical unit of the general language, and in the second and the last ones it is a term.

Some of terms from the terminology of the energy industry can be used in different scientific fields at the same time. For example, terms like «депрессия» (depression), «ядро» (core, nucleus), «потребитель» (consumer, customer), «расширитель» (extender, dilator), «восстановитель» (reducing agent, restorer), «обмотка» (winding, coil), «генератор» (generator, oscillator), «напор» (pressure, force), «инспекция» (inspection, audit), «возбудитель» (agent, exciter), «изоляция» (insolation, insulation, segregation), «пористость» (porosity, porous), «повреждение» (harm, damage, failure), «катушка» (coil, reel, inductor), «отражатель» (reflector, deflector, speculum), «облучение» (radiation, exposure, irradiation), «калибровка» (calibration, sizing, gauge), «фракция» (fraction, faction, caucus), «элеватор» (elevator, silo), «разделитель» (separator, delimiter, terminator) etc. are used not only in the energy industry but also in other professional fields.

Conclusion

As a result of the analysis of single-component terms of the energy industry, the following conclusions can be drawn:

- 1) there is a certain number of ambiguous (polysemous) terms in the modern Russian terminology of the energy industry, including oil and gas, coal, electric and nuclear power;
- 2) a large number of ambiguous terms are found in the terminologies of the oil and gas industry and of the electric power industry.
- 3) the main reason for the formation of ambiguity in these fields is the terminologization of commonly used words;
- 4) the meaning of most polysemous terms in this industry, formed by terminologization is related to the meaning in common use;
- 5) some polysemous terms can be used in various scientific fields at the same time;
- 6) polysemy in modern terminology becomes inevitable since the language system is quite open;
- 7) the concept of polysemy depends on a special circumstance, i.e., on the context.

This study provides an opportunity for further detailed study and consideration of the issues that 1) despite the inclusion in the list of commonly used terms in the terminology dictionaries of the energy industry, some ambiguous terms, such as "input" and "output" can be really considered terms in modern Russian; 2) commonly used terms of this industry: "oil", "gas", "coal", "engine", "activity", "resource", etc. can still be included in the terminology; 3) the role of some in the formation of terms in the energy industry.

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