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ADJECTIVATION OF ATTRIBUTIVE PARTICIPLES IN THE SCIENTIFIC-AND-TECHNICAL DISCOURSE TEXTS (ON THE MATERIAL OF THE TEXT CORPUS "ELECTRICAL ENGINEERING")

The proposed work is based on the text corpus of one of the areas of the scientific and technical type of discourse – "Electrical Engineering". The text corpus is based on scientific articles taken from the journals of the corresponding field published in USA and UK: Electrical Engineering, IEEE Transactions on Power Apparatus and Systems and other foreign English-language publications on the specialty "Electrical Engineering". They were processed by the method of continuous sampling. The total volume of the text corpus is 200 thousand tokens. The corpus has passed mathematical and statistical verification of linguistic phenomena encountered in the analyzed texts. Based on the compiled and verified text corpus, a probabilistic-statistical model (frequency dictionary) has been created, representing the lexical system of the specified scientific and technical field. The presence of real texts made it possible to consider one of the most complex grammatical phenomena encountered in the English language – adjectivation of attributive participles, in which the process of adjectivation is at different stages: at the beginning, at an intermediate stage, or at the end of such a process. For this purpose all units with the status of attributive participles were selected from the frequency dictionary and an appropriate contextual analysis was carried out. At the same time the authors also turned to Webster's normative dictionary, which contains adjectivized participles with a corresponding mark as words that have completely lost their verbal meaning. The results showed that in many attributive participles, when combined with some nouns, a certain semantic shift occurred. Such a shift can be observed when the attributive participles are connected to abstract nouns-terms. These terms usually denote objects that cannot perform actions inherent in the lexical-semantic variants of verbal units that are connected with them. Another important feature of verbal word forms in which a semantic shift has occurred and which confirms their belonging to adjectivized participles is the fact that they function in the studied texts with a fairly high frequency and are combined with not one, but with several nouns. This indicates the stable status of these words and the fact that they have firmly entered the language system as full-fledged adjectival units.

Key words: *frequency of use, semantic shift, syntactic position, lexical and phraseological patterns, nouns-terms, token.*

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АД'ЄКТИВАЦІЯ АТРИБУТИВНИХ ДІЄПРИКМЕТНИКІВ У ТЕКСТАХ НАУКОВО-ТЕХНІЧНОГО ДИСКУРСУ (НА МАТЕРІАЛІ ТЕКСТОВОГО КОРПУСУ СПЕЦІАЛЬНОСТІ «ЕЛЕКТРОТЕХНІКА»)

Пропонована робота ґрунтується на текстовому корпусі однієї з областей науково-технічного типу дискурсу – «Електротехніка». Основою текстового корпусу є наукові статті, взяті з журналів відповідної галузі, що видаються в США та Великобританії: Electrical Engineering, IEEE Transactions on Power Apparatus and Systems and other foreign English-language publications on the specialty "Electrical Engineering". Їх обробляли методом суцільного відбору. Загальний обсяг текстового корпусу становить 200 тис. слововживань. Корпус пройшов математичну та статистичну перевірку лінгвістичних явищ, що зустрічаються в аналізованих текстах. На основі скомпільованого та перевіреного текстового корпусу була створена імовірнісно-статистична модель (частотний словник), що представляє лексичну систему зазначеної науково-технічної галузі. Наявність реальних текстів дозволило розглянути одне з найскладніших граматичних явищ, що зустрічаються в англійській мові – ад'єктивацію атрибутивних дієприкметників, в яких процес ад'єктивації знаходиться на різних стадіях: на початку, на проміжній стадії або при завершенні такого процесу. З цією метою із частотного словника було виділено всі одиниці, що мають статус атрибутивних дієприкметників та проведено відповідний контекстуальний аналіз. При цьому автори зверталися також до нормативного словника Webster's, в якому фіксуються дієприкметники з відповідною позначкою як слова, які повністю втратили своє дієслівне значення. Результати показали, що у багатьох атрибутивних дієприкметниках при поєднанні з деякими іменниками відбувся певний семантичний зсув. Такий зсув можна спостерігати при поєднанні атрибутивних дієприкметників з абстрактними іменниками-термінами. Ці терміни зазвичай позначають предмети, які не можуть виконувати дії, закладені в лексико-семантичних варіантах віддієслівних одиниць, що з'єднуються з ними. Інший важливою особливістю дієслівних словоформ, у яких відбувся семантичний зсув і яка підтверджує їхню приналежність до ад'єктивованих дієприкметників, є той факт, що вони функціонують у досліджуваних текстах з досить високою частотою і поєднуються не з одним, а з кількома іменниками. Це свідчить про стійкий статус цих слів і про те, що вони міцно увійшли до системи повноцінними ад'єктивованими одиницями.

Ключові слова: *частота вживання, семантичний зсув, синтаксична позиція, лексико-фразеологічні закономірності, іменники-терміни, слововживання.*

Introduction. Actuality of the subject. According to linguists (Fludernik, 2002; Semino, 2004) there is currently a sharp increase in demand for research products that linguistics can offer to perform applied tasks: 1/ development of lexicographic resources based on the study of real text corpora in various areas of discourse, examples of such resources can be found on the Internet (The Course, 2014; Benson, Wouden, 1992; Yorkey, 1969; Kjellmer, 1994; Tkachenko, 1972); 2/ the use of computational linguistics for educational and scientific purposes; 3/ the formation of corpus linguistics to perform the tasks for the development of national languages (Ramesh Krishnamurthy, 2006; Tyschenko, Rudyj, 2004).

The execution of the above tasks was facilitated by the factors with the help of which research on discourse studies is not only actually carried out, but also reached a higher level – firstly, the contextual processing of real texts; secondly, verification of linguistic facts and conclusions by statistical and mathe-

matical methods; thirdly, probabilistic-statistical simulation of various areas of discourse (Nevreva, 1986; Nevreva, 2016; Dyachenko, 1984; Tomasevich, 1984; Shapa, 1989).

The presented work is directly related to all these factors, since it is based on the text corpus of one of the areas of the scientific and technical type of discourse ("Electrical Engineering"), and also has passed the mathematical and statistical verification of linguistic phenomena found in the texts. The text corpus is based on scientific articles taken from the journals of the corresponding field published in USA and UK: Electrical Engineering, IEEE Transactions on Power Apparatus and Systems and other foreign English-language publications on the specialty "Electrical Engineering". They were processed by the method of continuous sampling. The total volume of the text corpus is 200 thousand tokens. On the basis of this corpus a probabilistic-statistical model (frequency dictionary) of this technical specialty was compiled.

And, finally, on the basis of the simulated and verified text corpus, a probabilistic-statistical model (frequency dictionary) has been created representing the lexical system of the specified scientific and technical field.

Statistical processing of the text corpus made it possible to single out one of the most complex linguistic phenomena encountered in the texts of scientific and technical discourse – adjectivation of attributive participles.

Why is there a need to analyze this problem? Firstly, the intermediate task of one of the studies carried out on the basis of the created text corpus was the selection of adjective names from the frequency list of lexemes of the list of adjectives as one of the classes of words functioning in texts. Therefore, the question arose about the possible adjectivation of some attributive participles that could be introduced into this list. Secondly, the presence of a ready-made text corpus based on real texts made it possible to single out attributive participles in which adjectivation is at various stages: at the beginning, at an intermediate stage, or at the end of such a process.

Since, until now, in the course of the theoretical and practical development of this problem, as in many other cases, individual fragmentary sentences were used as material, which were not included in the general set of texts that form the corpus, or if there was a compiled text corpus the results of the analysis of texts extracted from fiction (Raevskaya, 1982; Falkova, 1981).

Goal. In order to identify attributive participles in which the process of adjectivation of meanings and the weakening of abstract meanings inherent in verbs (action) has been completed or is close to completion, all units with the status of attributive participles were selected from the created frequency dictionary of the specialty "Electrical Engineering" and analyzed.

Results and discussion. It is known that the potential ability of a word to acquire the meaning and status of another part of speech is manifested primarily in polyfunctionality, which is the initial stage of this process. The long-term functioning of a word in a syntactic position characteristic of units of another class of words can, to some extent, prepare the realization of this potential ability, since entails the appearing in the word of shades and meanings inherent in such a position. That is, polyfunctionality in this way, in addition to morphological and syntactic changes, leads sometimes to certain semantic shifts, to a change in the volume of the semantic structure of lexical units. In this case, the meanings of polyfunctional units may differ so much that it is already possible to speak of the emergence of homonyms.

One should know that the grammatical aspect is characterized by the continuous realization of one or another functional ability. Therefore, the morphological and syntactic aspect is completely independent of the specific lexical meanings of words, including the lexical and phraseological patterns of the formation of any grammatical unit. So, it is possible to form a participle from any verb, and almost any noun can be used in the position of an attribute.

However, special conditions are necessary for the functioning of adjectivized units. In this case, it is necessary to refer to the lexical patterns of the phrase, to the definition of lexical and phraseological relations between the element subjected to the process of adjectivation and the one (element) which adjectivizes. For example, let's compare two phrases in which the attribute is a form with '-ing': 'working machine' and 'working table'. The first combination is conceptually complete, since any machine has the ability to work, and the action denoted by the verb 'to work' is fully consistent with the noun 'machine'. But in the phrase 'working table' there is no such correlation – the 'table', of course, is not capable of working. In this case, the lexeme 'working' loses the idea of action inherent in the verb 'work', is somewhat rethought, which leads to a certain semantic shift.

Thus it can be assumed that the use of the participle in a fundamentally new combination leads to a possible semantic shift, a change in the lexical content and, ultimately, causes the word form to leave the verbal paradigm.

Here we should touch upon the issue related to theoretical grammar, the one which concerns

the presence/absence of the so-called lexico-phraseological connection, i.e. the ability to form a single concept, inherent in phrases in which there was a semantic shift of its constituent elements. This criterion (presence/absence of lexical-phraseological connection) directly correlates with two categories: clichédness and idiomaticity. The first is characterized by the absence of connotative colouring, for example, "amusing story". The second demonstrates phraseologically related formations, where a certain degree of metaphor or idiomaticity is assumed, i.e. non-derivation of the general meaning from the sum of the literal meanings of the parts of the combination, for example, "crying shame".

However, we must not forget that the results of this study are based on the material of scientific and technical discourse texts, which is mainly devoid of metaphor, expressiveness and is characterized by "bookishness", accuracy of expression, which does not produce units with connotative colouring. Most of the word combinations with attributes, whose meanings have undergone a certain process of adjectivization, found in the text corpus "Electrical supply", are still more typical of the type of non-idiomatic connectedness, devoid of metaphor, and probably close to clichéd.

We cannot say that phrases that include adjective participles and have metaphorical colouring are excluded from the possible implementation in scientific and technical text corpora, and specifically in our corpus. They may well occur when combined with terms. But since the frequency of their use in texts is extremely low, the cases when a free phrase clearly turns into a phraseological one can be neglected.

So in text corpus under study, first of all, indisputable cases are mentioned, which are present in normative dictionaries (in our case, Webster's, 2002) with a corresponding mark as words that have completely lost their verbal meaning. As an example, we will cite the word "interesting" (in our text corpus, the frequency of its occurring 'F' is 13 units), which has already become so lexically isolated that we can talk about the exit of this word form the paradigmatic system of the corresponding verb.

The words 'complicated' (F= 8), 'detailed' (F= 17), 'experienced' (F = 14) are the units of a slightly different type. Theoretically, from the verbs 'to complicate', 'to detail', 'to experience' one can form homonyms with adjectives-participle forms. However, in practice such attributive participles are not met in the technical literature.

The next group of adjectivized participles, which form the so-called non-idiomatic combinations with the nouns connected to them, in which the elements of the phrase do not create an idiomatic expression, but in which the process of separating the word form from the verbal paradigm can be considered complete, we can include such words as 'following' (F = 82) and 'given' (F=121). In the studied texts these words are functioning as homonyms-homographs. In some cases they are presented as word forms of the corresponding verbs, while in others, idiomatic characteristics prevail in them. Consider the examples: "These relations hold within 0.2% in *the following table*" – "The devices *following* one after another ..."; "For a given gap geometry such anomalous breakdowns consistently occur provided the gap pressure exceeds a *given value*" – "The results *given* in the table …".

In the above sentences, there is a clear homonymous gap between the word form of the verb and the adjective. In the adjectivized participle in the preposition the idea of the action has disappeared and a qualitative sign of the object is fixed, which is characteristic of adjectives. The participle in the postposition has temporal signs that are clearly expressed in the adverbial construction. All this indicates a lesser degree of adjectivation of the participle in the postposition and does not allow it to be taken into account when forming the list of adjectives. This type of participle can be expanded into a subordinate clause or even an independent clause. Perhaps the main grammatical condition under which such word forms demonstrate their relevance to the class of verbs is their syntactic position in the sentence – postposition. However, quite a few cases are known when postposition is also characteristic of adjectives.

Then the groups of phrases are distinguished in which the adjectivized participle is attached to nouns denoting abstract concepts or terms. In addition, they form a fundamentally different type of phrases compared to the previous one. Constructions with these participles are quite closely connected. This is manifested, first of all, in the impossibility of transforming sentences with them in such a way that an adverbial construction is formed without changing the meaning of the entire sentence and the lexical meaning of this word form, as it has been done with the words 'following' and 'given'.

The word 'fixed' (F=29) belongs to this group. In the texts of the technical field "Electrical Engineering" there are two homonyms for the word 'fixed', one of which is a verbal word form, and the other is an independent word – an adjective. As an adjective, it acts in combination with the abstract mathematical terms 'constant', 'equivalent', 'length' (i.e. the verb 'fix' is combined with the word denoting an abstract object which cannot move, i.e. cannot

perform the corresponding action). At the same time, a certain semantic shift occurs and the word form 'fixed' is rethought. If the noun that connects with it denotes a specific object, for example, 'coil', 'piston' (which can move), then in this combination 'fixed' plays the role of a participle. Here are examples for comparison: "Transmission line models employed at present consist of a number of sections representing *a fixed length* of line" – "In such a case the coil can be used as *a fixed coil* so this method may be used easily for puffer circuit breaker operation".

The rest of the units that are functioning in the studied texts as adjectivized participles do not have grammatical and lexical parallels. Their main characteristic is attachment to nouns denoting abstract concepts that do not correspond to actions expressed by verbs, which led first to a significant semantic shift, and then to the adjectivation of word forms. These are the following words:

'working' (F=17): "One of these units was found to have a high partial discharge level at 100% of nominal *working voltage*";

'limiting' (F=14): "However it will not reduce momentary currents which become the *limiting factor* when the system X/R ratio exceeds 25";

'repeated' (F=7): "As surge diverter cannot be used to protect against many *repeated peak voltages* this figure may represent the minimum sparkover setting of the d.c. side surge diverters";

'receiving' (F=17): "The characteristic parameters at the *receiving end* (P v, rqv, r) are now introduced";

'floating' (F=52): "Thus if we know the motions of the main moving parts, and of the *floating piston*, and the quantity of gas exhausted from the nozzles, we can calculate puffer pressure characteristics".

In the last example a very specific object (piston) functions in the nominal part of the construction, unlike other phrases. But the non-derivation of the general meaning from the individual meanings of the units of the combination is so obvious that 'floating' is assigned to the adjectivized participle.

Conclusion. All of the above allows us to draw the following conclusions. All of the listed units form close verbal complexes and are characterized by a non-idiomatic nature, i.e. the absence of the so-called lexico-phraseological connection, which usually implies a semantic shift in the lexeme. In this regard they do not differ from the original verbal lexical-semantic variant, can be attributed to their implementation in the text corpus, which refers to the scientific and technical discourse. Texts of this type are usually devoid of metaphor and expressiveness, which, of course, influences the possibility of the presence of lexico-phraseological connection in combinations with an adjectivized participle. However this does not affect the implementation of the semantic shift itself, since we can observe a certain degree of adjectivation of participles when combined with abstract nouns-terms. Such terms denote objects that cannot perform actions which present the lexical-semantic variants of the verbal units connected to them.

Another important feature of the verbal word forms in which a semantic shift has occurred and which confirms their belonging to adjectivized participles is the fact that they function in the studied texts with a fairly high frequency and are combined with not one but with several nouns. This indicates the stable status of these words and the fact that they have firmly entered the language system as full-fledged adjectivized units.

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