

*Koval N. O.,
Candidate of philological Sciences, PhD,
Head of Foreign Languages Department
National University "Odesa Polytechnic"*

*Tomenko M. V.,
Senior Lecturer of Foreign Languages Department
National University "Odesa Polytechnic"*

*Mikeshova G. P.,
Senior Lecturer of Foreign Languages Department
National University "Odesa Polytechnic"*

TYPES OF GRAMMATICAL CONNECTIONS IN VERBAL WORD-GROUP MODELS (ON THE BASIS OF ENGINEERING TEXTS)

Summary. The presented article examines the results of the analysis of verbal word-groups in order to determine the nature of the syntactic connections between the elements of these word-groups. The material for the work was the texts on the specialty "Radio Electronics" taken from the scientific articles in journals published in the UK and the USA. The size of the text corpus is 250 thousand tokens. The list of verbal units that were analyzed consists of 52 most frequent verbs found in the text corpus.

The purpose of the article is to register verbal word-groups functioning in the "Radio Electronics" texts within an elementary sentence. Consideration of combinatorics taking into account the language-speech dichotomy made it possible, on the one hand, to identify and describe the potential of language units in the form of a set of abstract language models, and on the other hand – to study the peculiarities of the actualization of these models in speech, i.e. identify various combinability characteristics that can only be found in speech. The use of a frequency combinability dictionary, which takes into account all compatibility models, as well as the availability of a text corpus, made it possible to carry out such a task.

When extracting verbal word-groups from the text corpus and comparing them with the models recorded in the frequency combinability dictionary, it was revealed that the texts contain models that are not taken into account in the frequency dictionary, which may affect changes in the structure of the frequency combinability dictionary and its enrichment with newly discovered models. During the research a list of six types of models was identified, which are classified according to the number of syntactic connections and working elements included in the model, ranging from a word-group with zero verbal connection and the absence of elements, that carry subordinate connections, in the model, to five syntactic connections. Models with a variable number of connections are also noted, in which the number of connections depends on the structure of the sentence in which verbal word-groups are found. The results of the study also showed that the degree of simplicity/complexity of a particular model directly depends on the number of working elements that make up the model and, accordingly, the number of connections.

Key words: system characteristics, speech features, degree of simplicity/complexity, syntactic subordinate connections, symbols.

Statement of Problem. Modern linguistics is focused on the ever-increasing demand for applied tasks – automatic text processing, intensification of teaching foreign languages, etc. That is why the linguists give preference not to individual, isolated units of speech, which are then recorded in probabilistic-statistical models of text corpora, but to patterns (models) of compatibility (combinatorics) units functioning in texts.

Moreover, if at the beginning of the development of corpus linguistics there was a sharp division between linguists who used in their research the data of the language system recorded in dictionaries, and those who believed that only data based on real texts can serve as the only confirmation of the truth of the results obtained, then at the present stage of development of linguistics, the emphasis is on a comprehensive study of linguistic phenomena, which, when conducting research, involves turning to both language and speech [1; 2], which makes it possible to study the subject in question in the dialectical unity of its systemic and functional characteristics.

It is in this aspect that the given article examines the compatibility features of English verbs which was chosen as an object of study.

Literature review. Modern linguistics is characterized by a relentless interest in the study of verbs as a central unit of the language. This can be confirmed by numerous studies in which the verb is presented from different points of view: determination of the valency of the verb on the material of texts on various topics [3; 4], semantics of verb units [5], modal verb constructions and their semantics [6], researching the English verb-terms [7] comparative analysis of verbs in German and English [8], grammatical structure of the verb in languages of various types [9; 10; 11; 12].

As we can see even in this rather modest enumeration of research topics, a wide variety of issues related to the verb are realized. Moreover practically all research works deal with the tasks at various levels of language. Such attention to verbal units is associated with the importance of this grammatical class of words in the language system in which it is defined as a dominant part of speech, which provides it with an organizing, central role in the sentence.

Goal of the article. The goal is as follows: to present the results of the analysis of grammatical connections in verbal word-groups, which will be further called models. To achieve this goal, first of all, a text corpus was compiled in the specialty "Radio Electronics" which served as the material for the study of verbal word-groups.

The analysis includes the following actions: 1) to extract all verbal word-groups from the formed text corpus “Radio Electronics”; 2) to study the language and speech characteristics of English verbs and determine the relationship between these characteristics, as well as to describe their combinatorial properties; 3) to take subordinating (kernel) models (patterns) from the frequency dictionary of combinability [13; 14], which are fixed in this dictionary and also found in the text corpus, and add those that are not included in this dictionary; 4) to determine the degree of simplicity/complexity of models functioning in the text corpus; 5) to determine the volume of models, i.e. the presence of parts of speech that make up the model; the number of connections between elements in the models, the number of sense interpretations in models.

Base material. The basis for verbal word-groups (models) were the following most frequent verbs found in the text corpus “Radio Electronics”: *use, make, show, see, check, connect, get, operate, work, find, go, do, provide, apply, need, give, take, require, set, feed, record, read, cause, produce, know, look, mount, increase, reduce, determine, start, tune, add, change, develop, adjust, measure, replace, want, build, control, flow, include, note, design, say, come, test, call, try, short, switch.*

The description of the combinatorial properties of these verbal units involves the extraction and registration of all analyzed word-groups within an elementary sentence. Only subordinate (kernel) connections were recorded.

The selected verbal word-groups which include the lexemes, whose grammatical class was determined during the analysis of a sentence, are written in symbols that are commonly accepted for syntactic model descriptions: V – verbs in finite form; N – nouns, as well as pronouns, numerals and other parts of speech, functionally equivalent to a noun; A – adjectives and numerals in the function of preposed attribute; D – adverbs and adverbial phrases like ‘*at all, at once*’; Ving – Participle I, gerund and verbal nouns, etc. The symbol ‘prp’ denotes both simple and derived prepositions ‘*in, on, in front of*’, etc.; the symbol ‘cj’ denotes simple, complex and compound conjunctions such as ‘*as if, as well as*’, etc. In addition, for a better understanding of the complex problems of syntactic connections, the following signs are used: if it is necessary to show that two parts of speech are directly and closely connected, then the sign “-“ is applied; if two (or more) parts of speech have the remote connections, then “...” is used.

When determining the number of grammatical connections in the model, the number of elements subordinate to the verb is taken into account, as well as the connections between these elements. For example, we need to consider grammatical connections in the complex model ‘*VNNprpN*’. In it four connections can be counted: the connections between the verb, the two nouns subordinate to it ‘*V-N-N*’ and the prepositional group ‘*V...prp-N*’, as well as between the preposition itself and the noun controlled by it ‘*prp-N*’.

As a rule a verb in a sentence enters into several connections, that form a word-group, and creates several models characteristic for it (verb). For example, “The system uses open leads with vim, vtvm or tvn.” Here the verb ‘use’ forms a word-group with the words ‘system’ and ‘leads’, which, accordingly, can be written in the following models: ‘*N-V*’ – ‘the system uses’, where the verb has a subordinating relationship from the noun; ‘*V-N*’ – ‘uses open leads’, in which the noun is subordinate to the verb.

However, the verb does not always form word-groups in a sentence with syntactically related words directly. Thus, in the sentence

presented above, the verb ‘use’ is grammatically connected with prepositional groups of words ‘with vim, vtvm or tvn’, forming models of grammatical connection ‘*VprpN*’ – ‘uses with vom’; ‘*VprpN*’ – ‘uses with vtvm’; ‘*VprpN*’ – ‘uses with tvn’. This verb forms word-groups with such prepositional groups only through the object ‘leads’, thus realizing the models: ‘*VNprpN*’ – ‘uses (open) leads with vom’; ‘*VNprpN*’ – ‘uses (open) leads with vtvm’; ‘*VNprpN*’ – ‘uses (open) leads with tvn’, which essentially represent a chain of grammatical connections ‘*VN*’ – ‘uses (open) leads’ and ‘*VprpN*’ – ‘uses with vom’; ‘*VprpN*’ – ‘uses with vtvm’; ‘*VprpN*’ – ‘uses with tvn’. And since the different words included in this model are related to the verb ‘use’ by the similar relationships, the ‘*VNprpN*’ model is created three times. Consequently, the number of fixed models depends on the number of elements syntactically associated with the verb, forming word-groups with it (verb).

Further, we should note that there are models with a constant and variable number of connections. In the first case, the same number of connections is always implemented in the models – one, two, three, etc. For example, ‘*V-N*’ – ‘use a device’; ‘*V...N*’ ‘*prp-N*’ – ‘work on phase’. There are two connections here: a verb with a remote noun and a preposition with the noun it controls.

In models with a variable number of connections, there can be either one, two or three connections. For example, in the model ‘*VNN*’ – ‘show you the signal’ there are two connections: the verb with two nouns consequently subordinated to it ‘*V-N-N*’. Similarly, the model ‘*VNprpN*’ implements either two connections or three connections. For example, in the case ‘make a room out of kitchen’ we can see two connections – between a verb and a remote noun dependent on the prepositional group ‘*V...N*’ and the two nouns, one coming after the verb, but independent of it, and a noun dependent on the prepositional group ‘*N-prp-N*’. Or three connections in the case ‘use an attenuator on the output’. Here we see the same model ‘*VNprpN*’, with a different nature of connections, where there is a subordinating connection between the verb and the noun controlled by it ‘*V-N*’; between the verb and the noun dependent on the prepositional group ‘*V...N*’; between the preposition and its dependent noun ‘*prp-N*’.

A model with a variable number of connections is usually classified according to the largest number of them (connections).

This paper presents the types of compatibility models of the analyzed verbs, which are classified according to the number of syntactic connections and working elements included in the model:

1) a model in which there is no kernel connection with the verb because there are no elements that depend on it, for example, ‘*easy to build*’, ‘*fun to use*’. This type is the smallest in terms of the number of models included in it; it is represented by only one model ‘*Vo*’;

2) a model with one grammatical connection between a verb and one element dependent on it, for example, ‘*VN*’ – ‘use a device’, the connection between a verb and its subordinate noun ‘*V-N*’; ‘*VV*’ – ‘want to build’ connection between a verb and its subordinate verb ‘*V-V*’, etc.;

3) a model with a variable number of verbal connections – from one to two ones and with the three elements, for example, ‘*VNN*’ – ‘...elected him a chairman’, in which the verb has only one connection because it can influence only on the last noun. Or again three elements but two connections, for example, ‘*VNN*’, in which the verb has a subordinating connection with both the first noun ‘*V-N*’ and the second noun ‘*V...N*’ – ‘shows you the old keys-tone raster’. And the models with three elements that have

only two connections, for example, '*VprpVing*', in which the verb has a subordinating connection with the remote gerund '*V...Ving*' and the connection between the preposition and the dependent gerund '*prp-Ving*' – 'start by moving';

4) a model with three connections and four working elements (parts of speech), for example, '*VNprpN*' – 'receive the signal from the transmitter', where the verb has a subordinating connection with the noun immediately following it '*V-N*', and the noun that comes after the preposition '*V...N*', and there is also a subordinating connection within the prepositional group, i.e. between the preposition and the noun '*prp-N*';

5) a model with a variable number of connections – from two to four (but classified as a model with four connections) and five working elements, for example, '*VprpNprpN*' – 'check from case to ground with an ohmmeter', in which there are subordinating connections between the verb and two prepositional groups '*V-prpN-prpN*'; and then two connections inside these two prepositional groups '*prp-N*' and '*prp-N*' between the prepositions and the nouns. And also the model '*VNNprpN*' – 'that will give us the data in the least possible time', which presents the following syntactic connections: two subordinating connections between the verb and the two subsequent nouns subordinate to it '*V-N-N*'; and a subordinating connection between the verb and the complex – the preposition and the noun '*V...prp-N*', and also the connection inside the prepositional group – between the preposition and the noun, which is in the position dependent on the preposition '*prp-N*';

6) a model including from three to five connections and six work elements, for example, '*VprpNprpNVing*' – 'speak to him on the machine operation considering the system dosing'. Here we see six elements and five connections: the verb subordinates the first group “preposition and the noun” '*V-prpN*' coming immediately after it; then the verb has a subordinating connection with the second complex “preposition and the noun” '*V...prp-N*'; and finally, the verb subordinates the gerund located on last place in this model '*V...Ving*'. However, there are two more subordinating connections within two complexes “the first preposition plus a noun” and “the second preposition plus noun”. So, we have five syntactic subordinating connections in one model with six working elements.

Conclusions. Thus the following conclusions can be drawn from the presented research results. In the nomenclature of syntactic subordinating connections six types of models are distinguished, which are classified according to the two parameters that depend on each other – working elements including in models, and subordinating connections depending on their number and nature. They have the following structure: a model without any kernel connection in the verb, with one, two, three, four and five connections.

As we can see, the degree of simplicity of the model increases with a decrease in the number of connections in it, and reaches its maximum in models in which there is no connection and in which the verb has no elements dependent on it.

The future research assumes the consideration of lexical-semantic connections in verbal word-groups and determination of their (lexical-semantic connections) probable influence on the number of syntactic subordinate connections in the models with variety number of connections.

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Коваль Н., Томенко М., Макешова Г. Види граматичних зв'язків у моделях дієслівних словосполучень (на матеріалі технічних текстів)

Анотація. У представленій статті розглядаються результати аналізу дієслівних словосполучень з метою визначення характеру синтаксичних зв'язків між елементами цих слів. Матеріалом для роботи послужили тексти зі спеціальності «Радіоелектроніка», взяті з наукових статей у журналах, що виходять у Великобританії та США. Розмір текстового корпусу становить 250 тис. слововживань. Перелік дієслівних одиниць, що аналізувалися, складається з 52 найбільш частотних дієслів, які зустрічаються в текстовому корпусі.

Мета статті – зафіксувати дієслівні групи слів та визначити природу зв'язків елементів, які функціонують у текстах «Радіоелектроніка» в межах елементарного речення. Розгляд комбінаторики з урахуванням дихотомії

мова-мовлення дав змогу, з одного боку, виявити й описати потенціал мовних одиниць у вигляді набору абстрактних мовних моделей, а з іншого – вивчити особливості актуалізації цих моделей у мовленні, тобто виявлення різноманітних ознак сполучуваності, які можна зустріти лише в мовленні. Виконати таке завдання дозволило використання частотного словника частотної сполучуваності, який враховує всі моделі сполучуваності, а також наявність текстового корпусу.

Під час виділення вербальних словосполучень із текстового корпусу та порівняння їх із моделями, зафіксованими в частотному словнику сполучуваності, виявлено наявність у текстах моделей, не врахованих у частотному словнику, що може вплинути на зміну структури частотного словника сполучуваності та його збагачення нововиявленими моделями. У ході дослідження

було виділено перелік із шести типів моделей, які класифіковані за кількістю синтаксичних зв'язків і робочих елементів, що входять до моделі, починаючи від словосполучення з нульовим словесним зв'язком і відсутністю елементів, що несуть підпорядковані зв'язки у моделі, до п'яти синтаксичних підпорядкованих зв'язків. Відзначаються також моделі зі змінною кількістю зв'язків, у яких кількість зв'язків залежить від будови речення, у якому зустрічаються дієслівні словосполучення. Результати дослідження також показали, що ступінь простоти/складності конкретної моделі безпосередньо залежить від кількості робочих елементів, з яких складається модель, і, відповідно, кількості зв'язків.

Ключові слова: характеристика системи, ознаки мовлення, ступінь простоти/складності, синтаксичні підпорядковані зв'язки, символи.