"евпраксофия", "dasein", "масса", "человек массы", свобода "freedom" и свобода "liberty" в их корреляции с когнитивным и лингвофилософским истолкованием. Установлено, что эти понятия не только помогут в определении принципов и взглядов ученых на сущность человека, на его социальную жизнь, но и будут способствовать раскрытию природы Человека XXI века.

Ключевые слова: *евпраксофия, гуманизм, светский гуманизм, свобода "freedom", свобода "liberty", масса, человек массы, свобода воли.*

Moskalchuk M. N. Linguocognitive Approaches to Terminological Verification of Modern Secular Humanism.

The article deals with the study of linguocognitive approaches to the essence of concepts that are used in modern secular humanism. An analysis has been made of the content of such concepts as "eupraxophy", "dasein", "mass", "man of mass", "freedom" and "liberty" in their correlation with cognitive and linguistic-philosophical interpretation. It has been established that these concepts will not only help in determining the principles and views of scientists on the essence of a man, on his social life, but will also contribute to the disclosure of the nature of a man in the XXI century.

Keywords*: eupraxophy, humanism, secular humanism, "freedom", "liberty", mass, man of mass, freedom of will.*

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SEMANTIC AND STATISTICAL FEATURES OF THE PREFIX MORPHEMES OF NOUNS AND THEIR INTERACTION IN THE TEXTS OF SCIENTIFIC DISCOURCE (Based on the English Sublanguages "Chemical Engineering", "Automobile Engineering", "Electrical Engineering")

One of the types of word-formation units – the prefix morphemes of nouns functioning in the English texts of the fields of engineering "Chemical Engineering", "Automobile Engineering" and "Electrical Engineering" is considered in the article. The prefix inventory includes 30 units which constitutes almost the half of all prefix morphemes of the English language. The analysis of semantic and statistical prefix characteristics has shown that there is a high degree of interaction between them (characteristics), that is the statistical values of frequency of usage and productivity as well as the prevalence level of nouns with prefixes in each of the researched text corpora are directly dependent on prefix semantics.

Keywords*: contextual analysis, lexical meaning, semantic group, scientific notion system, stratification layer.*

The problems of English word-formation have been developed in details in linguistics not only by English and American grammarians [4; 10; 12; 16], but by linguists from other countries [2; 7; 8; 20] as well. At present, with the emergence of such directions as corpus linguistics, linguistics of functional styles, computer linguistics, etc., the study of word-formative elements of the text has reached a fundamentally different level, which provides, firstly, analysis of real texts; secondly, the verification of linguistic facts and conclusions by statistical and mathematical methods; thirdly, the use of probabilistic statistical modeling of various areas of discourse [3; 13 …15; 19].

It is possible to use the following fact in order to compare the difference in the approaches of linguists to the study of such issue in the word formation as prefixation. So, until recently, the opinions of the most authoritative scientists in the word formation issues were restricted due to the fact that prefixal word formation characterizes mainly the verb

system [20]. However, the assertion about the use of prefixes in general, regardless of one or another area of speech, must be confirmed by the facts based on the study of real texts of a particular type of prose, taking into account its linguistic phenomena and the principles of the functioning of its units. It also concerns such type of social activity of a person as science and technology, which is included in the general nomenclature of existence conditions in the society. It can be viewed as a separate, incomparable area where the processes of thinking differ significantly from the ordinary, related to everyday life. These processes, their implementation, as well as a description of the results obtained, are directly reflected in the texts of the scientific and technical functional style. It should be noted that all processes that relate to the field of science and technology are characterized by its own natural dynamics, that is why scientific and technical literature describes the continuous development of science and technology. It (development) is accompanied by the emergence and expansion of a bulk of general scientific, intersystem and technical terminology designed to reflect absolutely new scientific and technical concepts that have not been used before and which require language units with different shades of values [5].

Recently, linguistic statistical research of text corpus of the scientific and technical texts, formed on the basis of scientific and technical articles in various fields of technology, has been conducted. It was done in order to study the use of various units of word formation, including prefixes, to confirm or clarify the opinion of well-known scientists. The young generation of domestic and foreign linguists applies the basic principles of corpus linguistics and the statistical apparatus as a whole for description of word-forming units of various functional styles, including scientific ones, quite successfully [6; 11; 18; 22]. It is known that the basic characteristics of texts units of any functional style are their statistical features [1; 3; 17]. Thus, it is assumed that other features, including the semantics of speech units, are of secondary importance for assigning them to a particular functional style. It also applies to the issue of word formation. Therefore, linguistic research practically does not analyze the question of the interaction of word-formation morphemes semantics and their statistical characteristics – number, frequency of use and productivity.

Such situation urgently requires a consistent and careful analysis of the word-forming units – in our case prefix morphemes – from the standpoint of interaction between two autonomous areas – semantics and statistics. This point identifies the topicality of this work.

The aim of the article is to determine the interaction of the semantic and statistical characteristics of the prefix morphemes in the nouns which function in the texts of scientific discourse.

The purpose of the work determines the range of tasks to be solved to achieve it:

– to choose three subject areas in the scientific discourse, that do not have common systems of scientific concepts, but could interact in some particular cases of their functioning, and compile three text corpora;

– to determine the inventory of prefix morphemes encountered in the analyzed texts of three scientific and technical knowledge areas;

– to choose reliable criteria for classification of prefixes due to their statistical parameters;

– to determine the statistical characteristics of prefixes – number, frequency of use and productivity;

– group prefixes into semantic groups.

It was decided to choose for further analysis the following three areas of technical knowledge – “Chemical Engineering”, “Automobile Engineering” and “Power Engineering”. The choice of three different practically unrelated to each other subject areas is due to the fact that the authors want to compare the implementation of prefix morphemes in different

technical areas and to present the facts that determine the extent of their prevalence in the texts of scientific and technical discourse and can have a generalizing characteristic and be attached to any textual object of a scientific and functional style (possibly with some statistical corrections).

The electronic text corpora of the English technical sublanguages of Chemical Engineering (CE), Automobile Engineering (AE) and Electrical Engineering (EE), based on the articles of the scientific journals of the United Kingdom and the USA, was used as a material of the research: Chemical Engineering – Chemical Engineering Progress, Chemical and Process Engineering; "Automobile Engineering" – Automobile Engineering, Auto Industry; "Power Engineering" – IEEE Transactions on Power Apparatus and Systems, Proceedings of the Institution of Electrical Engineers.

One more necessary refinement of the grammatical order. As the review of the literature on word formation, based on the material of several languages, has shown, prefixation can be considered the simplest way to form a new word [8; 9; 20; 23]. Nevertheless, in this relatively clear question there are some disagreements among linguists as to which word-building units should be considered as real prefixes. The authors allow themselves to join most of the scientists who classify related (not existing outside the word, for example, *dis-, un-, re-*), and relatively related (related to individual words, for example, *over-, out-, under-*) units as prefixes, since both form derivational series with a clear derivational value. At the same time, the standard and regularity of word-building series constructed with the participation of a prepositional element, uniformity of semantic relations with the basis were taken into account [8]. In our work all prepositional elements that are the bearers of word-formation values were considered as prefixes.

The selection of prefix morphemes occurred on the basis of the basic characteristics of prefixes, namely: the derived words in terms of their lexical meanings practically do not differ from the deriving ones; the lexical meaning of the latter is basically preserved in the derived word, and the prefix only specifies the deriver (for example, *load*, *overload*); and the fact that prefixes do not possess a transposing function and can not form nouns from other parts of speech was also taken into consideration [2; 21]. Therefore, we consider prefix nouns formed by attaching a prefix exclusively to a nominal basis, and cases where the prefix is attached to the verb or adjective stem and then transformed into a noun with the help of a suffixed morpheme were not included in the research.

The analysis of the texts of CE, AE and EE showed that about eight percent of nouns were formed with the help of prefixes. In total 30 prefixes were extracted out of prefix nouns, i.e. almost half of the existing prefix morphemes in English (according to H. Marchand's list of prefixes [10]), and their quantitative values were calculated.

It should be noted that the most difficult theoretical issue for authors was the ranging of prefix morphemes on semantic groups, since such classification is not represented in the literature on word formation in general, and on word formation in texts of technical fields of knowledge in particular. Although many linguists use the semantic classification of prefixes, presented in the work of N. V. Amosova "Etymological foundations of the vocabulary", from the point of view of our research it is very approximate and only in a few cases gives an indication of the prefixes that occur in textual corpora of scientific and technical discourse. The attempt to apply to the Internet resources [24; 25] has also produced no results, as they only offer a list of known English prefixes and their translation. Only in the resource [25] separate groups of prefixes that make up small thematic associations were identified.

The authors formed a classification of prefix morphemes on the basis of generalized meanings, encompassing the semantics of certain groups of prefixes. Their semantics was controlled by means of contextual analysis of the texts, which is demonstrated in describing

the examples. In addition, in controversial cases concerning the formation of a particular semantic group, the authors consulted experts in particular areas of technology. For the convenience of reading the frequency of the represented prefixes usage (F) and the number of words formed with the help of this morpheme (productivity) were recorded so that readers could immediately have an idea of these quantities concerning each prefix.

Prefix morphemes that function in the studied text corpora and make up nouns have been systematized as follows:

1) a group of prefixes having the value of combining, joining, increasing the existing processes with the help of their repetition and interaction (3 prefixes) – *re-* (*restart, recycle, repair, recovery*) (F = 1014; 27 words), *co- / com-* (*co-author*, *compound*) (F = 596; 10 words), *ac- / ad-* (*account*, *advantage*) (F = 193; 7), *inter-* (*Internet, interface*) (F = 186; 14). It should be noted that the high frequency of the usage of the nouns with these prefixes was observed in all three text corpora without exception, especially the *re-* and *co- / com-* prefixes. This can be explained by the fact that the prefix *re-* reflects a certain positive dynamics in the areas of "Chemical Engineering", "Automobile Engineering" and "Electrical Engineering", implemented not only in the development of new, but also the build-up of already existing processes. Nouns with the prefix *re-, co- / com-* and *ac- / ad-* are the most frequent lexemes of the commonly used and general scientific character, which are used to describe technical phenomena, devices and equipment. E.g. a noun with the prefix *ac-* (*account*) was found in the phrase *take into account*, which has a descriptive character and is used in the vocabulary of researchers. The prefix *inter-* sticks to the nominal bases, which have the most usual common meanings, but forms scientific and technical phenomena of world significance. We can say that the prefix *inter-* has undergone noticeable changes in its lexical status. At the beginning of its appearance in the scientific literature the nouns formed with this prefix were exclusively considered as terms. Nowadays, when they entered everyday life and any member of the society knows about the Internet, the *inter-*prefix acquires a common, at the most extreme, general scientific character;

2) a group of prefixes standing in opposition to the previous group of prefixes, and which give a negative or opposite meaning to the associated nouns, and also form nouns that denote negative technical phenomena, (5 units) – *non-* (*noncondensables*, *nontransposition, nonalignment)* (F = 38; 2 words), *dis-* (*discharge*, *disadvantage*) (F = 304; 7 words), *under-* (*undervoltage*, *underload*) (F = 85; 3 words), *anti-* (*antifreeze*) (F = 42; 2), *over-* (*overlap*, *oversize, overvoltage*) (F = 259; 7). If the prefixes of the first group are characterized by the fact that they are used in all text corpora without exception, with high frequency and productivity values, then the morpheme of this group exhibits discontinuity in the presentation of a sequence of values of frequency and productivity. An example is the *anti-* prefix, which is used exclusively in the text corpora of AE. Prefixes *over-* and *under-* are very frequent in EE, and have an average frequency of usage in the texts of CE and AE. The presence of morphemes *under-* and *over-* which are opposite in their semantic value in the same group is explained by the fact that technical processes occur only in case of exact conditions and parameters, and any deviation (both decrease and increase) is followed by a negative result or a failure in the operation. When using these prefix morphemes in the texts of scientific and technical literature, there is a lack of emotional coloring, which would be characteristic to fiction or newspaper-journalistic texts. Here we can find an ordinary statement of the fact of the action or process that is taking place, the presence of a particular phenomenon, which is usually characteristic to noun-terms. The greatest difficulty in determining its lexical meaning, i.e. attribution to a certain lexical layer, represents prefix *dis-*, because when it appears on the terminological basis, it forms the term (*discharge*), and when it forms nouns with a common meaning (as in the case with *disadvantage)*, a unit of

common vocabulary is formed. In the first case, the word does not contain negative trends, because it is a term, and in the second one the author's apparent attitude to the situation described in the text is evident. The use of such common lexemes as *disadvantage* in technical texts is not an exception, since it is known that the majority of the lexical units in the texts of this type belongs to the commonly used or general scientific lexics. In the text corpora of CE, AE and EE the word "*disadvantage*" is used quite often for advertising purposes when comparing its invention with that used earlier, which explains rather high value of the prefix *dis*-;

3) the prefixes of this group are used mainly in terms that denote attitudes (actions) that promote both the increase and the reduction of some process or the exchange process, which also provides decrease or increase (2 morphemes) – *trans*-, (*transformer, transposition*) (F = 591; 6 words), *ex*- (*exchanger*) (F = 150; 1 word). The prefix *ex*- in these text corpora is not used with the meaning of "*ex*", which is usually fixed in the lists of English prefixes, and allows the noun-terms, which it is combined with, to describe the exchange processes. It is used predominantly in the texts of CE, which can explain its rather low values of frequency and productivity in comparison with the prefix *trans*-, which functions in two corpora – AE and EE;

4) prefix morphemes, which are close in their importance to the morphemes of the first group, are presented separately, because they give to the nouns they are attached to not just the meaning of the increase or the set of features, but features and sets that exceed the level of the phenomena expressed in the prefix nouns of the first group (2 morphemes) – *ultra*- (*ultrafiltration*) (F = 38; 2), *super* - (*superferrite*) (F = 19; 1). One can observe the lack of emotional coloring in the words with the prefixes of this group, although in colloquial speech or in newspaper and journalistic prose they could sound very emotionally. However, here they express only processes that occur under certain conditions, or a substance with certain properties. In the scientific and technical literature, the authors encountered a few descriptions of phenomena that could be represented using nouns with the prefixes *ultra*- and *super*-. This can be explained by the very cautious usage of such terms, which certainly require detailed proof of the presence of any extreme characteristics. Therefore, the values of the frequency and productivity of the prefixes *ultra*- and *super*- are rather low;

5) prefixes that give the combined with them nouns the meaning of the quantity and value (4 prefixes) – *uni*- (*uniform*) (F = 16; 1), *di*- / *dia*- (*dielectric, dioxide*, *diameter*) (F = 555; 8), *micro*- (*micrometer, microfiber*) (F = 73; 3), *poly*- (*polypropylene, polyamide, polyester*) (F = 97; 5). All these prefixes were borrowed from the Greek language to denote the chemical elements characteristic to the "Chemical Engineering" corpora, and *dia*- (prefix *di*- variant) is often found in the "Electrical Engineering" corpora for calculating the cross section of conductors. Functioning in two corpora explains high frequency and productivity. In AE texts they were used much less often. The prefixes *micro*-, *poly*- are also often reflected in the nouns of the investigated text corpus. As you can see from the examples, they also form nouns, denoting chemical material or chemical inorganic elements. All nouns with these prefix morphemes refer to the terminological layer of the vocabulary. The prefix *uni*- does not reflect the basic concepts of these specialties and is not an element of the terminological system for specialties in chemical engineering, automobile and electrical engineering. The noun with this prefix (*uniform)* refers to the general scientific layer of the vocabulary;

6) prefix morphemes, giving the nouns the meaning of location, subordination in relation to location, fixing the direction in space and time (prior to any action) (6 prefixes) – *sur*- (*surface*) (F = 566; 3 words), *sub*- (*substream, substation*) (F = 249; 3 words), *semi*- (*semiconductor*) (F = 39; 1), *out*- (*outlet, output*) (F = 152; 3), *in*- (*inlet, input*) (F = 150; 4),

pre- (*precombustion, prefilter*) (F = 52; 12). Some objections can be caused by the insertion of the *semi-* prefix into the given group, because of its semantics it is very similar to the prefixes of item 4 of this classification. However, in electrical engineering it does not give the word *semiconductor*, which it combines with, the notion of dimension or magnitude, but designates an electrical object in which the current flows in only one direction. The morphemes *out-* and *in-* were also introduced here, although they are attached to the verb stem. However, this is the case when the verbs *input, output* have noun-homonyms, not formed with the help of suffix morphemes from the verbal stem, which according to the condition of the article were not considered as the units of the prefix inventory. *Sur-* prefix is used with a high frequency in almost all text corpora; nouns with the prefix *sur-* are terms. However, from the examples given, it is possible to refer these nouns to common lexemes, if one does not take into account their compatibility, for example, the word *surface* with the word *tension*, with which it forms the scientific concept of "*surface tension*" – a term met in automobile engoneering, or with the word *current* "*surface current*" – the one of the electrotechnical terms. The nouns with the prefix *sub-* are very characteristic for the text corpora of CE and EE, but it is used much more often in the texts on electrical engineering – 238 words versus 11 in CE. The point is in a noun *substation*, which is one of the basic terms of electrical engineering, and specifically it is a term in the field of voltage distribution for consumers, in which the substation is located in a subordinate location to a power plant. Nouns with prefixes *out-* and *in-* can be attributed to lexemes of the general scientific layer of the vocabulary, since they (*input, output*) function practically in any branch of technology and demonstrate directivity. They are used mainly in the corpora of CE and AE and are almost not used in the case of EE. Prefix *pre-* functions in the cases of CE and AE. In the texts of these areas of technology, indication of a time moment anticipating a process, or a description of the device that is used prior to any process plays an important role. In the texts on electrical engineering there is no need for such prefix. The subjects of this specialty do not deal with processes that happen at the moment fixed by the nominal stem of the word;

7) prefixes that form nouns with the meaning of different natural or temperature conditions (3 prefixes) – *hydro-* (*hydrocarbon*) (F = 57; 3 words), *aero-* (*aerospace*) (F = 24; 2 words), *thermo-* (*thermocouple*) (F = 23; 1). Noun-terms with the prefix *hydro-* are fixed mainly in texts on CE, very little of them found in the AE and they do not appear in texts on EE. As you can see from the example, the prefix *hydro-* formalizes nouns that denote chemical elements, which is one of the main directions in chemical engineering. In the automobile industry this prefix also forms nouns that describe the chemical composition of the dyes necessary for painting cars. They are used, mainly, in the texts of an advertising nature or instructions. The *aero-* prefix is used in noun-terms exclusively in the automobile industry, i.e. in one of the newest directions of the automobile industry connected with the construction of engines or hulls for aerospace vehicles. The prefix *thermo-* occurs in noun-terms only in the corpus of EE to describe thermal reactions;

8) prefixes that form nouns, which usually refer to general scientific vocabulary and designate mathematical or electrical concepts used in any technical specialty (3 prefixes) – *co- / con-* (*coefficient, concept*) (F = 885; 20 words), *pro-* (*proportion*) (F = 72; 4), *counter-* (*countercurrent*) (F = 38; 1). In its semantic features, the prefix *counter-* must be introduced into the second group, which lists prefix morphemes that form nouns with a negative tendency in meaning. But here we make a correction for the emotionless nature of the technical text, in which the term with this prefix simply indicates the opposite direction of the current. The prefix *co- / con-* (alongside with another variant – *com-)* is already represented in group 1. However, it was decided to divide it into two separate units, because in the text corpora it has different semantics corresponding to both groups 1 and 7. Perhaps,

the noun-terms, which are given as examples, demonstrating the functioning in the text corpora of the prefixes *co- / con-, pro-*, have in their etymological basis the meaning of "together", "supporting someone or something", as it is noted in most lists of prefixed morphemes. But in modern scientific and technical articles, for example, the word *coefficient* denotes the result of a mathematical ratio of the magnitude of one physical phenomenon to the one of another phenomenon; the word *concept,* which is also cited as an example, means any scientific concept in any field of scientific and technical knowledge, etc. The *pro-* prefix, of course, does not mean here "supporting someone or something", but merely points to the ratio of one value to another. The same has already been said about the prefix *counter-*;

9) a completely autonomous position is occupied by the morpheme *auto-* (*automobile, autoservice*) (F = 627; 3 words), which is used almost in all cases in the texts of the "Automobile Engineering" corpora, and only eight times in the "Electrical Engineering" corpora (1 word) , because the car has the parts that are powered by an electric drive. The prefix that forms nouns in technical texts is no longer perceived separately in the sense "*self"*, but together with a nominal basis designates a specific object or organization associated with this object that can no longer be used separately. Fairly frequent cases of applying the prefix *auto-* without attaching it to a nominal basis, but denoting the same thing that was designated by a noun with an attached one, can serve as a reliable confirmation of the mentioned above point. The history of the lexical status of the prefix *auto-* is identical to the *inter-* prefix. Its meaning has also been transformed from terminological to general or general scientific meaning.

So, all prefix morphemes are grouped into 9 groups according to their semantic meanings. As for their lexical meaning, i.e. belonging to this or that lexical layer, an attempt to classify prefix morphemes according to this characteristics can arise the certain organizational difficulties. In the presented classification there are semantic groups of prefixes where the whole list can be assigned to one or another lexical layer, for example, the prefixes of the first group are all units of the general scientific layer of vocabulary. They can be joined by groups 3, 4, 7 and 9. But the second, fifth, sixth and eighth groups have a completely different situation. Prefix *dis-* functions in the second group and forms the lexemes of the various lexical layers depending on the lexical meaning of the stem, in the fifth – prefix *uni-*, which also cannot be fitted into the common terminology block, in the sixth – *in-, out-* prefixes that are general scientific units.

Of course, it would be interesting to trace the interaction of lexical and semantic meanings of prefix morphemes. However, since this article is devoted to the description of semantic and statistical parameters of prefixes and their mutual influence, the authors can only state the presence of certain lexical phenomena and their dependence on the analyzed characteristics of the prefixes.

The following statistical criteria were used to determine the frequency and productivity of prefix morphemes [14]. The prefixes used in 275 or more lexemes are referred to as used with high frequency, from 25 to 27 lexemes are called mid-frequent, and low-frequent are the ones used in fewer than 24 cases. The prefixes involved in the formation of 7 or more lexemes are called productive, in formation of 2 and more lexemes – low-productive, and unproductive ones make only one lexeme.

Now, according to the accepted statistical criteria, we will determine the relationship between the semantics of prefixes and their statistical characteristics. First of all, we will calculate the total frequency of usage in each group of prefix morphemes.

Four prefixes of the first group are used in three text corpora – CE, AE and EE – 1989 times. The high-frequency prefixes are the morphemes *re-* and *co- / com-,* but *ac- / ad-* and *inter-* are mid-frequency morphemes.

Five prefix morphemes of the second group function 728 times, out of which only *dis-* is a high-frequency morpheme*, non-, under-, over-, anti-* are of mid-frequency.

In the third group, two prefixes occur in the texts 742 times. The prefix *trans-* is a high-frequency prefix, *ex-* is of mid-frequency.

In the fourth group, the two prefixes *ultra-* and *super-* have a total frequency of 57. Both prefixes are of mid-frequency, which is proved by their rather rare usage in technical texts.

In the fifth group, the four prefixes appear 741 times: *di-* / *dia-* is of high-frequency, *micro-*, *poly-*, *uni-* are used with medium frequency.

Six prefixes of the sixth group demonstrate the following frequency: *sur-* high-frequency, *sub-*, *semi-, out-, in-, pre-* mid-frequency. Their total frequency is 1208. Such significant amount of the total frequency of usage shows that for CE, AE and PE it is very important to clearly fix the location, direction and time for the implementation of technical processes.

The total frequency of the prefixes of the seventh group is 104. All of them are (*hydro-, aero-, thermo-)* of mid-frequency. Such values indicate that for the selected specialties, the terms denoting natural or temperature conditions are not typical.

In the eighth group three prefixes were used with a total frequency of 995 usages. Prefix *co- / con-* stands out particularly, it shows high-frequency of usage and it forms the main mass of the lexemes of this group, the other prefixes *pro-, counter-* are referred to the mid-frequency prefixes.

The prefix of the ninth group *auto* is used with a very high frequency, it alone forms 627 prefix units.

If we represent the frequencies in descending order, we will obtain the following sequence. Unconditional leaders are prefixes of the first group, as 1796 lexemes were formed with their help. The sixth group takes the second place, 1208; then goes group number eight, 995. The third group of prefixes has frequency of 742 usages. The difference in frequencies between prefixes of the third and fifth groups is only one unit – 742 and 741, respectively; the frequency for the second group is 728 and for the ninth – 627. The prefixes of the seventh group make 104 prefix nouns. The lowest frequency is shown by the prefixes of the fourth group and makes only 57 units.

Let us consider the same nine groups of prefixes in terms of their productivity. Firstly, we will indicate the total value, which shows the number of different words formed with the help of prefixes. Then we will consider in more details which type of productivity – productive, low-productive and unproductive – can be attributed to the individual prefixes introduced into this group.

So, the first group of prefix morphemes has a total productivity of 58 different words. In this group, absolutely all morphemes are productive, the maximum productivity goes for prefix *re-* (27 words) and the minimum for the prefix *ac- / ad-* (7 words).

The second group of prefixes creates 19 different words, i.e. their total value of productivity is very high. However, if you take each prefix separately, you can see that only two prefixes *dis-* and *over-* match the status of the productive prefixes and make up 7 different words. Unproductive prefixes include *under-* (3 words), *non-* (2 words), *anti-* (2 words).

The total productivity of the third group is 7 words, so, we can say that the group is productive, but separately considered, *trans-* has 6 formed units and is a low-productive prefix, and *ex-* forms only one word and is an unproductive prefix.

The total productivity of the prefixes of the fourth group is 3 words, one of the prefixes *ultra-* is of low productivity, *super-* is unproductive and forms only one word.

In the fifth group, the total productivity is 17 different words. The productive prefix is *di- / dia-* (8 words), *poly-* (5 words) and *micro-* (3 words) show low productivity and *uni-* (1 word) is unproductive.

In the sixth group, the total productivity is 26 words, which indicates the importance of morphemes *sur- sub-, semi-, out-, in-, pre-* for the texts of scientific functional style. However, only one prefix in this group can be called productive – *pre-* (12 words), most others are unproductive (three words each), *semi-* is used only with one word.

In the seventh group, even the total value of productivity does not give seven units, but only six. Two prefixes *hydro-* and *aero-* are of low productivity and one *thermo-* is unproductive.

The eighth group contains prefix morphemes with a rather high total productivity – 25 different words. This indicates the need to use morphemes *co- /con-, pro-, counter-* in the texts of CE, AE and EE corpora, especially important is morpheme *co- / con-* (9 words), which is productive and formalizes frequently used mathematical terms, *pro* - is of low productivity, *counter-* is unproductive, only one word.

And, finally, one unproductive prefix morpheme *auto-,* which makes the ninth group and functions in only three nouns.

So, which semantic groups of prefix morphemes become the most frequent and productive in the process of their functioning in all three analyzed text corpora. Let us represent the data on the total frequencies and productivity of each group in a form more convenient for conclusions (the sequence was arranged in descending order of frequency of use):

– the first group of *re-, co- / com-, ac- / ad-, inter-*: F = 1989, productivity – 58 words;
– the sixth group of *sur-, sub-, semi-, out-, in-, pre-:* F = 1208 and 26 words;
– the eighth group *co- / con-, pro-, counter-:* F = 995 and 25 words;
– the third group *ex-*, *trans-*: F = 742 and 7 different words;
– the fifth group of *uni-, di- / dia-, micro-, poly-*: F = 741 and 16 words;
– the second group of *non-, dis-, anti-, over-, under-:* F = 728 and 19 different words;
– the ninth group *auto-:* F = 628 and 1 word;
– the seventh group of *hydro-, aero-, thermo-:* F = 104 and 6 different words.
– the fourth group is *ultra-, super-:* F = 57 and 3 different words.

The most frequent and productive were the following groups of prefixes: first, second, third, fifth, sixth, eighth. The other three groups of prefixes are either of mid-frequency (low-frequency), or low productive (unproductive).

However, one can also pay attention to the following fact concerning the quantitative characteristics of prefix morphemes. Prefixes having high frequency and productivity, basically, have from three to six different prefixes on their list, i.e. sufficient inventory of units in order to obtain a significant total frequency and a large number of different words, which form high productivity. The exception is the third group, where two prefixes are used with a high frequency and have high productivity. The third, fifth and second groups are in the middle of the list, in which there is an inversely proportional representation of frequency and productivity – the lower the frequency is, the higher the productivity is, but they also show directly proportional relationship between the number of prefixes and productivity – the more prefixes are, the higher the productivity is.

In the groups of prefixes with frequencies below 700, one can see a chaotic representation of statistical quantities. For example, in the ninth group, the only unproductive *auto-* prefix is used with a very high frequency, and in the seventh group the three prefixes,

which form a group with a low total frequency, have a productivity that approaches the "productive" status. The fourth group of prefixes can be considered classical due to all statistical indicators with low value, everything is minimal there – frequency, productivity and number of prefixes.

Considering all the information given above we can come to the following conclusions.

1. In accordance with the results obtained after studying the texts of the three areas of the scientific discourse – "Chemical Engineering", "Automobile Engineering" and "Electrical Engineering", it was found that the total number of different prefix morphemes was 30 units, which is almost half of all the prefix morphemes of the English language.

2. The study showed the following interaction of the semantic and statistical features of prefix morphemes. The highest frequency and productivity are shown by the nouns which took the following groups of prefixes : 1) *re-, co- / com-, ac- / ad-, inter-,* that reveal semantic value of overlapping, joining, increasing of already existing processes by their repetition or interaction; 2) *sur-, sub-, semi-, out-, in-*, *pre-,* that give the nouns the meaning of the location, subordination in relation to the location, fixing the directions in space and time; 3) *co- / con-, pro-, counter-,* that denote mathematical or electrotechnical concepts used in any technical field. These prefix morphemes occur proportionally in all textual corpora taken for analysis, which proves that for the texts of scientific and technical discourse these three groups of morphemes are very important from the point of view of describing the phenomena, processes and devices that are of extreme importance for the further development of science and techniques.

3. A separate block consists of prefixes: 1) *ex-, trans-,* denoting attitudes (actions) that promote both an increase and a reduction of a process, or an exchange process, which also provides a reduction or increase; 2) *uni-, di- / dia-, micro-, poly-,* which give to the nouns they combine with the meaning of quantity and magnitude; 3) *non-, dis-, anti-, over-, under-* attach a negative or opposite meaning to the noun connected with them, and also form nouns that denote negative technical phenomena. All these prefixes have practically the same total frequency of usage in the texts considered and a high level of productivity. However, as it was already said in the explanations for each group of prefixes, they are unevenly distributed in the texts of different specialties, in terms of their statistical parameters of frequency and productivity. They with some limitation can be considered necessary for using in the description of the processes characteristic for each specialty.

4. The last group of prefixes, that has been distinguished, consists of prefixes: 1) *auto-,* which has the semantic meaning "self"; 2) *hydro, aero-, thermo-*, which form nouns with the meaning of different natural or temperature conditions; 3) *ultra-, super-,* which give the nouns they are combined with not just the value of the increase or the set of some features, but features and sets that surpass the ordinary ones in their level. While analyzing this group of prefixes, an even greater disproportion was found in their use in the text corpora of CE, AE and EE. In these prefix morphemes the characteristic which stimulates the unification of technical specialties is absent, and this is reflected in the texts of scientific and technical discourse. Their meanings turned out to be too specific to be used in all three text corpora.

5. The described interaction of the semantic and statistical characteristics of different prefix groups allows us to have one more conclusion. It is known that the statistical characteristics of speech units determine whether the text belongs to a particular functional style or not. However, as a result of our research the data were obtained showing that semantics influences the statistics of these units usage directly.

6. It should be noted that a large number of prefixes, possessing emotional characteristics in their semantics, do not attach an emotional tinge to the nouns they are combined with, which were found in the text corpora under study.

7. Analysis of the lexical characteristics of nouns, which are prefixed, showed that the number of lexeme-terms (3580 lexemes) is practically equal to the number of lexemes, which can belong to the general scientific or common layers (3612 words).

Further research involves the analysis of root and suffix morphemes in the aspect of interaction of their semantic and statistical features. In addition, in the opinion of the authors the introduction of one more parameter is of particular interest. We imply a lexical parameter, i.e. the attribution of a particular speech unit to a particular stratification layer that, along with semantics, can provide additional information on the functioning of word-formation morphemes in the texts of scientific and technical discourse.

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Неврева М. Н., Шапа Л. Н., Циновая М. В. Семантические и статистические характеристики префиксальных морфем имен существительных и их взаимодействие в научном дискурсе (на материале английских подъязыков "Химическое машиностроение", "Автомобилестроение", "Электротехника").

В статье рассматривается один из видов словообразовательных единиц – префиксальные морфемы имен существительных, функционирующих в английских текстах областей знания "Химическое машиностроение", "Автомобилестроение" и "Электротехника". Инвентарь префиксов включает 30 единиц, которые составляют почти половину всех префиксальных морфем английского языка. Анализ семантических и статистических характеристик префиксов показал, что между ними (характеристиками) наблюдается высокая степень взаимодействия, т.е. статистические величины частотности употребления и продуктивности, а также уровень распространенности префиксальных существительных в каждом из исследуемых текстовых корпусов, который зависит от семантики префикса.

Ключевые слова: *контекстуальный анализ, лексическое значение, семантическая группа, система научных понятий, стратификационный слой.*

Неврева М. М., Шапа Л. М., Цинова М. В. Семантичні й статистичні характеристики префіксальних морфем іменників та їх взаємодія у науковому дискурсі (на матеріалі англійських підмов "Хімічне машинобудування", "Автомобілебудування", "Електротехніка").

У статті розглядається один з видів словотворчих одиниць – префіксальні морфеми іменників, які функціонують в англійських текстах областей знання "Хімічне машинобудування", "Автомобілебудування" та "Електротехніка". Інвентар префіксів включає 30 одиниць, які складають майже половину з усіх префіксальних морфем англійської мови. Аналіз семантичних і статистичних характеристик префіксів показав, що між ними спостерігається високий ступінь взаємодії, тобто статистичні величини частоти вживання та продуктивності, а також рівень поширення префіксальних іменників у кожному з досліджуваних текстових корпусів, який залежить від семантики префікса.

Ключові слова: *контекстуальний аналіз, лексичне значення, семантична група, система наукових понять, стратифікаційний шар.*