

*Nevreva M. N.
Tsapenko L. E.
Tsinovaya M. V.*

**GENESIS OF NOMINAL SUFFIX MORPHEMES IN SCIENTIFIC COMMUNICATION TEXTS
(ON THE MATERIAL OF THE ENGLISH SUBLANGUAGES OF ELECTRICAL ENGINEERING,
CHEMICAL AND PROCESS ENGINEERING, AND MOTOR INDUSTRY)**

The results of genetic analysis of nominal suffix morphemes met in scientific communication texts are described in the paper. The inventory of native and borrowed suffix morphemes, the quantitative frequency and productiveness data of their usage in the investigated technical sublanguages as well as the peculiarities of their abstract meanings are represented.

Key words: native and borrowed suffixes, genetic analysis, frequency, scientific communication texts, abstract meaning.

Неврева М. М., Цапенко Л. Ю., Цинова М. В. Генезис іменних суфіксальних морфем у текстах наукової комунікації (на матеріалі англійських підмов електротехніки, хімічного машинобудування й автомобілебудування). – Стаття. У статті описано результати генетичного аналізу суфіксів іменників у текстах наукової комунікації. Дається інвентар рідних і позичених суфіксальних морфем, кількісні дані на частотності та продуктивність їх використання в досліджуваних підмовах техніки, а також особливості їхніх абстрактних значень.

Ключові слова: власні й запозичені суфікси, генетичний аналіз, частота, тексти наукової комунікації, абстрактне значення.

Неврева М. Н., Цапенко Л. Е., Циновья М. В. Генезис именных суффиксальных морфем в текстах научной коммуникации (на материале английских подязыков электротехники, химического машиностроения и автомобилестроения). – Статья.

В статье описываются результаты генетического анализа суффиксов имен существительных, функционирующих в текстах научной коммуникации. Приводится инвентарь исконных и заимствованных суффиксальных морфем, количественные данные о частотности и продуктивности их использования в исследуемых подязыках техники, а также особенности их абстрактных значений.

Ключевые слова: исконные и заимствованные суффиксы, генетический анализ, частота, тексты научной коммуникации, абстрактное значение.

Modern English vocabulary is a product of a variety of historical and cultural epochs, the reality of which affects significantly the composition of the language and methods of enlargement of its vocabulary. The leading process in the development of the English language vocabulary on the whole way of its historical development was derivation – conversion, affixation, compression, stem summation, abbreviation, disaffixation, isolation of meaning. However, only affixal derivation can be called permanent, because the productivity of this type of word-building is noticed throughout the recorded period of the English language history.

The problem of genesis (the etymological analysis) in affixal wordbuilding of the English language is widely represented in the scientific literature in fundamental works of N.N. Amosova [1], L.S. Kubryakova [8], P.M. Karashchuk [6], V.D. Arakin [2] and others, as well as in modern dissertations [14; 4; 7; 10], where data from dictionaries typically serve as the basic material for genetic (etymological) analysis of word-formation units, for example, 12-volume edition of Large Oxford Dictionary [7] and its appendices [10], a The Oxford Dictionary series [4], C.T. Onions dictionary, The Oxford Dictionary of English Etymology-1966 [14], various types of grammars, historical documents [7], etc.

However, in recent decades in linguistics in general, there have been noticed a gradual shift towards the

study of linguistic variation, from language to speech, from normal to customary usage [11]. Preference is given to research on theoretical and applied linguistics based on modern corpus technologies where the test corpus is a necessary tool for the analysis of the language and its units. But if text corpus develops general principles of linguistic corpus buildings using computer technologies, the theoretical linguists regard them as experimental basis for testing hypotheses and improvement of their theories. [3] Theoretical researchers are primarily interested in usage of such text elements and structures, i. e. metatext information [5], as though many grammatical structures and phenomena are revealed only when dealing with real texts [5].

The material analyzed in this paper is electronic text corpus, formed on the basis of scientific functional style. Using method of continuous sampling text corpora of scientific functional style sublanguages were formed – “Chemical Engineering” (CE), “Motor Industry” (MI) and “Electrical Engineering” (EE). Text corpora analyzed were taken from the following scientific journals: Chemical engineering progress, Chemical and process engineering, Machinery, Process engineering, Proceedings of the institution of electrical engineering.

It should be noted that the specialty “Chemical engineering”, “Motor Industry” and “Electrical Engineering” have very little in common as to their sci-

entific problems, so that was the reason for choosing these areas of knowledge exactly.

The fact of usage of electronic text corpora specified the actuality and novelty of the proposed research. The subject of the article is one of the aspects of word formation – the process of genesis of nominal suffix morphemes. Since genetic analysis has not previously been considered in the study of text corpora units in technical sublanguages, it can contribute to a more detailed description of the current state of scientific communication texts and stages of historical development of scientific functional style as well.

The article identifies several objectives: 1. to represent the real inventory of nominal derivational suffixes in printed English texts of scientific communication; 2. to describe the results of brief genetic analysis of suffixes included in the inventory; 3. to determine the extent to which the difference or similarity of scientific subject area of analyzed text corpora affects the genetic component of nominal suffix morphemes.

In the research process such methodological bases as the interaction of language and speech, communicative discourse analysis, qualitative and quantitative analyses of the textual material have been involved.

In determining the origin of morphemes classifications by N.N. Amosova [1], P.M. Karashchuk [6] and data of nominative Webster dictionary [15] were used.

Based on the classification proposed by N.N. Amosova [1], all nominal suffix morphemes were divided into three groups according to their origin: Germanic, Roman and Greek. It is appropriate to present quantitative data as well, as the main characteristics of functional styles are not so much created at the expense of stylistically marked means but mostly due to different frequency of certain linguistic unit usage [3, 148].

“Chemical Engineering” sublanguage (CE) demonstrates 5 suffixes of German origin in 88 lexemes with a total frequency of usage of 3628; 19 suffixes of Roman origin in 197 lexemes with a total frequency of usage of 10049; 3 suffixes of Greek origin in 9 lexemes with a total frequency of usage of 294.

“Motor Industry” sublanguage (MI) demonstrates 5 suffixes of German origin in 106 lexemes with a total frequency of usage of 3579; 16 suffixes of Roman origin in 199 lexemes with a total frequency of usage of 8480; 1 suffix of Greek origin in 3 lexemes with a total frequency of usage of 529.

“Electrical Engineering” sublanguage (EE) demonstrates 5 suffixes of German origin in 57 lexemes with a total frequency of usage of 2221; 15 suffixes of Roman origin in 231 lexemes with a total frequency of usage of 11073; 2 suffixes of Greek origin in 3 lexemes with a total frequency of usage of 241.

Nomenclature of native suffixes in the text corpora analyzed was the same for all sublanguages: -er, -ing, -ness, -ship, -th. Numerically, they are one fourth of borrowed ones, but in terms of productivity

and frequency of usage native suffixes are not inferior to foreign ones.

One of the most productive suffixes in the English language is considered to be a native noun suffix -er. This suffix has been known since ancient times as agentive indicating the person due to his or her profession, as to the action taken or state at the time of the speech, as well as a person in a particular locality. With the development of science and technology suffix -er also acquires the abstract meaning of “instrumentalism”, producing a number of names of tools, instruments, devices that perform the actions determined by the stem of these words [1; 6].

In the text corpora studied the usage frequency of the agentive meaning of -er suffix is not high. So, in sublanguages CE and EE it formed only 4 agentive nouns: engineer, customer, designer, user; but in MI sublanguage there are 13 of them: engineer, designer, worker, partner, researcher, customer, consumer, automaker, builder, driver, dealer, passenger, owner.

The most quantity of nouns terms created by suffix -er has the abstract meaning of “instrumentalism”. For example, CE corpus reports 43 of such terms: exchanger, settler, cooler, vapouriser, atomiser, crystalliser, impeller, extruder, blower, clarifier, etc. In the case of MI sublanguage there are 39 of them: adapter, converter, cleaner, damper, holder, starter, recker, runner, bumper, analyzer, changer, etc. The texts of EE sublanguage, which has the poorest term system from this point of view reveals 29 nouns with the meaning of “instrumentalism”: autotransformer, amplifier, divider, feeder, rectifier, diverter, interrupter, recloser, etc.

The frequency of suffix -er is the highest among the suffixes of German origin. For example, the frequency of lexemes formed with -er suffix in all sublanguages considered makes more than a half out of all lexemes with traditional suffixes.

The second place in case of productivity and frequency among native suffixes is occupied by -ing suffix. In CE texts it makes 36 lexemes with the total frequency of 1076 usages. In MI texts suffix -ing forms 46 lexemes used with the frequency of 1148 and in EE – 22 lexemes with the frequency of 622.

The -ing suffix is used in the analyzed texts of scientific communication, mainly as a factor in the creation of polysemy. It occurs in nouns denoting:

- 1) a process – cracking, loading, cooling, backing, moulding, firing, welding, etc.;
- 2) an object, item or material – casing, tubing, bushing, wiring, tower-footing, building, ducting, etc.;
- 3) an abstract concept – handling, processing, saving, styling, etc.

Thus, the two native suffixes -er and -ing form 91–94 percent of all lexemes with German suffixes and 94–96 percent of all uses of native suffixes occurring in these technical sublanguages.

Suffixes -ness, -ship, -th did not show either systemic or text activity in any sublanguage. Their fre-

quency and productivity are so low that their numerical characteristics are not considered.

In the English language, as it is known, there are more borrowed suffixes than native ones [1; 6; 8; 9]. This tendency is preserved in the texts of scientific functional style. For example, in the text body of the technical sublanguages “Chemical engineering”, “Motor Industry” and “Electrical Engineering” there are four times as many foreign suffixes as native ones.

The inventory of foreign language suffixes consists mostly of suffixes of Roman origin, as it has already been mentioned above. There are 19 of them in CE texts and 16 in MI and EE texts respectively. Out of them 14 lexemes, i.e. the majority, are common to all three sublanguages: -ion/-tion/-ation, -ity/-ty, -or, -ment, -ance/-ence/-ency, -age, -ure, -al/-ial, -ant/-ent, -ary/-ery, -y, -ive, -able, -ice.

Group suffix -ion/-tion/-ation [12, 105] takes the first position as to its productivity and frequency of usage in the inventory lists of text corpora of the scientific functional style, which is confirmed by other researchers [13, 21].

High activity of -ion/-tion/-ation suffix is probably explained due to its relatively easy comprehensibility by nouns, designed to meet the needs in expression of even bigger quantity of abstract meaning variations:

1) process – action, filtration, ionisation, preparation, etc.;

2) the state or quality – application, limitation, fluctuation, insulation, etc. ;

3) the specific action result – correction, reduction, addition, computation, reflection, utilisation, etc.

Other suffixes of Roman origin are also productive and have high usage frequency: -ity/-ty, -ment, -ance/-ence/-ency, -or, -age.

The suffix -ity/-ty occurs in nouns that function in the texts of analyzed scientific literatures with the abstract meanings:

1) state, condition – density, capability, conductivity, etc.;

2) quality, properties – property, linearity, etc.

The suffix -ment forms nouns denoting:

1) the process – measurement, movement, adjustment, etc.;

2) the state, quality or condition – requirement, acknowledgement, etc. ;

3) something particular or material – equipment, attachment, etc.

However, it is worth adding that the number of nouns with abstract meaning as “something particular”, “anything material” is small.

We can come across -ance/-ence/-ency suffix in nouns denoting:

1) the condition, quality – difference, emergency, existence, clearance, etc.

The suffix -age occurs in abstract nouns with the meaning of:

1) the results of the action – leakage, creepage, etc.;

2) measure units – percentage, mileage, etc. ;

3) specific subject – linkage, etc.

In the inventory of Roman origin suffixes operating in the text corpora of three technical sublanguages only one suffix morpheme -or was registered, which gives an abstract meaning of “agentivity” and “instrumentalism” to the nouns. In the analyzed sublanguages many nouns by adding the suffix -or got the meaning “instrumentalism” – precipitator, accumulator, resistor, simulator, insulator, etc. With “agentivity” meaning this suffix is registered only in two nouns – contractor, operator.

Suffix morphemes of Greek origin -ic, -is, -one set up a total of only six nouns, two of which are rather actively used in the analyzed text corpora as they determine the most frequently used scientific notions related to the research – “analysis” (in “Chemical Engineering” sublanguage it is registered 73 times, “Motor Industry” – 191 times, “Electrical Engineering” – 98 times); “characteristic” – 89, 163 and 119 times respectively).

Based on the facts stated above, we can come to the following conclusions:

1. The inventory of nominal suffix morphemes functioning in the analyzed text corpora of scientific functional style, has the following composition:

a) native suffixes – 5 in all three sublanguages (-er, -ing, -ness, -ship, -th);

b) suffixes of Roman origin – 19 in CE texts and 16 MI and EE texts respectively. Out of them 14 suffix morphemes are common to all three sublanguages: -ion/-tion/-ation, -ity/-ty, -or, -ment, -ance/-ence/-ency, -age, -ure, -al/-ial, -ant/-ent, -ary/-ery, -y, -ive, -able, -ice.

c) suffixes of Greek origin in all three cases – 3 (-ic, -is, -one).

2. Genetic analysis of nominal suffix morphemes encountered in the text corpora of scientific communication, showed that there are much fewer native suffixes in the English sublanguages than borrowed ones. However, they are actively involved in the formation of nouns, giving them basically the abstract meaning of “instrumentalism”. The high activity of suffixes of German origin is illustrated by the fact that one third of nouns in “Chemical Industry” and “Motor Industry” sublanguages is created with their help, and in “Electrical Engineering” sublanguage the quantity is one fifth.

Suffixes of Roman origin dominate in the suffix derivation of nouns in the analyzed texts. They make 65–67 percent of all suffix nouns in CE and MI and 79 per cent in EE. A characteristic feature of Roman origin suffixes is their high ability to create nouns with abstract meanings “process”, “state”, “effect”.

Suffixes of Greek origin are found only in certain words.

3. Considering the possible dependence of the usage frequency of the nominal suffix morphemes of

different origin with a specific value from such extralinguistic factor as scientific subject matter, the authors concluded that dependence does exist. First of all, it is observed in the degree of influence on word formation of nouns that native suffixes have, and that it has a differentiating character. In this regard particularly outstanding is suffix of German origin -er, with the help of which most noun terms with abstract meaning of “instrumentalism” are created. That is the reason why they are a part of “Chemical engineering” and “Motor Industry” terminological systems. Specialty “Electrical Engineering” does not have a large number of objects associated with the meaning of “instrumentalism” in its system of scientific concepts, so the usage frequency of nouns with suffixes with this meaning is much lower.

The same can be said about the native suffix -ing, which has the same high usage frequency in MI and

CE sublanguages, the frequency of usage in EE sublanguage is half as much in all respects. This is explained by the fact that EE specialty does not imply the formation of a large number of electrical phenomena that would have a shade of process.

Ultimately, however, there is an integrating trend in the study of the genesis of nouns with the traditional nominal suffixes, i.e. in all three sublanguages two native suffix -er and -ing have almost the same proportion of all uses of native suffixes.

In carrying out genetic analysis of borrowed suffix morphemes the existence of integral characteristics in all three text corpora was traced.

Further study suggests the continuous development of derivational morphemes genesis operating in the functional style of scientific texts; the object of the analysis will be stem morphemes, their frequency and lexical characteristics.

References

1. Amosova N.N. Etymological basis of Modern English Language Vocabulary / N.N. Amosova. – Moscow : Librokom, 2010. – 224 p.
2. Arakin V.D. Essays on the history of the English language : [textbook] / V.D. Arakin. – Moscow : Physmatlit, 2007. – 288 p.
3. Automated processing of natural language texts and computational linguistics : [textbook] / E.I. Bolshakova, E.S. Klyshinsky, D.V. Lande et al. – Moscow : MIEM, 2011. – 272 p.
4. Gromov E.A. Diachronic changes in the vocabulary of the English language : abstract of a thesis special 10.02.04 “Germanic languages” / E.A. Gromova. – Rostov-on-Don, 2011. – 25 p.
5. Zakharov V.P. Corpus Linguistics: tutorial / V.P. Zaharov. – St. Petersburg : SpbSU, 2005. – 48 p.
6. Karashchuk P.M. English word formation / P.M. Karashchuk. – Moscow : Higher School, 1977. – 176 p.
7. Krat M.V. Direct and indirect borrowing in English / M.V. Krat [Electronic resource]. – Access mode : http://5_12-14.indd-uch_2012_V_00023.pdf.
8. Kubryakova E.S. Derivation / E.S. Kubryakova. – Moscow : Nauka, 1972. – 486 p.
9. Meshkov O.D. Composition in Modern English / O.D. Meshkov. – Moscow : Higher School, 1985. – 175 p.
10. Milyaeva L.I. Structural and semantic study of word-building options of nouns in modern English (paradigmatic aspect) : abstract of a thesis special 10.02.04 “Germanic languages” / L.I. Milyaeva. – Pyatigorsk, 1984. – 25 p.
11. Basic Research Program of the Presidium of RAS “Corpus Linguistics”. – Moscow : RAS, 2012. – [Electronic resource]. – Access mode : <http://web-corpora.net>.
12. Smirnicky A.I. English lexicology / A.I. Smirnicky. – Moscow : Publishing house of literature on foreign languages, 1956. – 260 p.
13. Tarasova E.M. Investigation of the usage of derivational suffixes in scientific style of English / E.M. Tarasova. – Leningrad : Leningrad State University, 1972. – 223 p.
14. Shevtsova N.N. Etymological and semantic structural characteristic field derivational nouns in the English language: based on the analysis of the dictionary CT Onions. The Oxford Dictionary of English Etymology : abstract of a thesis special 10.02.04 “Germanic languages” / N.N. Shevtsova. – Rostov-on-Don, 2007. – 22 p.
15. Webster’s Third New International Dictionary. – New York : Publisher Merriam Webster, 2002. – 2662 p.