

**THE VOCABULARY OF SUBJECT-SPECIFIC
TERMINOLOGIES: PECULIARITIES
OF COMPOSITION AND FORMATION
(BASED ON THE ENGLISH GEODETIC
TERMINOLOGY)**

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1. Introduction

English language, which is known to be an international one, is expanding its vocabulary quite rapidly, enriching it with new words of general use and also terminological units that denote new concepts, related to different subject-specific areas of human activities.

In the process of intensive development of science and modern technologies, broadening of international communication and cooperation in different areas, the study of subject-specific terminologies and their main components – terminological units becomes highly actual; these are the instruments of communication and exchange of information among specialists of different professional areas. Terms are the key elements of such terminologies and ways of expressing special concepts in the sphere of science. Terminological units of different subject fields form separate systems of terms with a definite structure and an internal organization of components. Today, the terminologists' interest focuses on the problems of terms formation, peculiarities of their structure and semantics, principles of terms classification, regulation and standardization.

This study aims to establish types of vocabulary in the structure of English geodetic terminology, to analyse the formation mechanisms of geodetic terms and to determine their productivity. The object of our investigation is the English geodetic terminology and terminological units in its composition. Few publications can be found related to this area of research and few attempts have been made to study the above-mentioned subject-specific terminology in details. The novelty of our work lies in:

- a comprehensive analysis of English geodetic terminology;
- a study of the relevant vocabulary;
- an introduction of the classification scheme of geodetic terms formation mechanisms;

– a detailed analysis of the researched vocabulary in terms of its creation.

The practical part of the present paper provides results of the analysis conducted on material taken from dictionaries, compiled by foreign (English) and native (Ukrainian) authors as well as the state (Ukrainian) standard in geodesy, whose results are presented in the table and corresponding figures. We have chosen the above-mentioned reference literature for our practical analysis since they are up-to-date publications, containing terminological units in the branch of geodesy, surveying and related sciences. It should be noted that the greater part of terms enclosed in the Dictionary of Construction, Surveying and Civil Engineering (published in the United Kingdom) are used in the professional practice of surveying, while publications compiled by Ukrainian authors enclose more terminological units in the branch of geodesy as a science and also related sciences. Since the available reference works in geodesy are not numerous, we based our analysis on the above-mentioned ones. Besides, this provided us with an opportunity to analyse both terminological units of geodesy as a science and as a practice. The present paper focuses on the study of English geodetic terminology and mechanisms of its vocabulary formation, that's why the selected material was chosen from dictionaries – reference publications in geodesy and related sciences, which contain terms used in this sphere and their definitions.

The presented article is structured as follows:

First, we will provide a brief review of the concepts “terminology”, “term”, presented in research papers of modern linguists. Secondly, we shall provide the definition of English geodetic terminology and point out types of vocabulary that it covers. Thirdly, the classification of term formation mechanisms, applied in subject-specific terminologies and terminology under study will be provided. Then the key means of geodetic terms creation are explained and discussed in detail. Finally, conclusions, concerning productivity of the studied mechanisms and perspectives for further investigations are presented.

2. Theoretical background of the research

Today's linguistics deals with an increasing interest of scientists in the study of subject-specific terminologies and, as a result, this part of linguistics – terminology – rapidly developed as a part of linguistics. The establishment of terminology (as a science) dates back to the beginning of the 20th century. Later on, this science developed a lot, which is greatly due to the studies of such scientists as Bessè, 1997, Budin, 1995, Cabrè, 1999, Danylenko, 1977, Dyakov, 2000, Faber, 2014, L'Homme, 2014, Kageura, 2002, Kudelko, 2000, Kyak, 2000, Leychyk, 2007, Oeser, 1995, Sageder, 2010, Sager, 1990, 1997, Zhuravleva, 1998 and others.

2.1. The concept of “terminology” in the research works of modern linguists

As far as the research field of the present paper covers subject specific terminology (geodetic) and its vocabulary, first of all we should define the concepts “terminology” and “term” from a theoretical perspective.

Representatives of foreign linguistics express two positions concerning the concept of “terminology”. From one point of view, it is regarded as a separate scientific discipline with its own theory, within which the dynamics of terminology (term growth and terminological formation) can be described (Sageder 2010: 126-127). From another one, it is considered to be a practice, or the process of compiling, describing, processing and presenting the terms of special subject fields with the aim of optimizing communication among specialists and professionals concerned with the standardization of language (Sageder 2010: 126).

According to Cabrè, we consider that “terminology is closely linked to the special subject fields. Terminology is not an end in itself, nor can terminological work be concerned with simply providing compilations of a series of concepts with their corresponding names. Terminology is at the service of science, technology and communication; as a result, it must work within the limits of providing a service to other disciplines. Subject specialists and general and applied terminologists work together to carry out the ordering and standardization of concepts and terms for each special field” (Cabrè 1999: 11). The scientist: “terminology can only be understood in relation to special languages and communication and addresses a variety of purposes, all of which are related to communication and information. For subject field specialists, terminology is the formal reflection of the conceptual organization of a special subject and a necessary medium of expression and professional communication” (Cabrè 1999: 11).

Today, terminology is also explained as: 1) a science of terms; 2) professional vocabulary in the structure of all words of a certain language (for example, English terminology); 3) special vocabulary, that is related to a certain sphere of science or technology (for example geodetic terminology) (Dyakov et al. 2000: 11). Zhyravleva offers the following definition: “terminology” is “related to the professional sphere of the activity system of terms, which are connected with each other on conceptual, lexical, semantic, word formation and grammatical levels” Zhyravleva (1998: 12). We regard the geodetic terminology under study as related to the system of terms in the professional sphere of activity (geodesy), which reproduce the system of concepts of the geodetic sphere and ensure the processes of nomination within it.

Thus, when it comes to the problem of terminology, it should be noted that it’s important to bear in mind different aspects of this concept. The main principles of the theory of terminology should be the basis of studying subject-specific terminologies as well as practical analysis of terms creation and functioning.

2.2. What is a “term”?

Since terms are the key components of subject-specific terminologies, the next part of the present paper is devoted to the definition of the concepts “term”, “geodetic term”, as well as to the study of lexical units in the composition of subject-specific terminologies. According to the Glossary of terms used in terminology (authors Bessé et al. 1997), “term” and “terminology” are defined as

follows: “term” – a lexical unit consisting of one or more than one word which represents a concept inside a domain; “terminology” – the vocabulary of a subject field (Bessé et al. 1997). Pitkänen-Heikkilä defines a “term” as “the established name of a concept, and it has been given through an agreement and wide acceptance in the language society of a certain subject field. Words in general language, particularly simplexes, can be arbitrary, as argued by Saussure, but the terms that name concepts in special languages typically have motivation” (Pitkänen-Heikkilä 2013: 67).

According to Danylenko a “term” is regarded as “a word or word combination of a special sphere of usage, which is the name of scientific or industrial and technological concept and which requires definition” (Danylenko 1977: 15). Based on Leychyk it is “a lexical unit of a concrete language for special purposes, which denotes general (concrete or abstract) concept of a theory of a concrete sphere of knowledge or human activity” (Leychyk 2007: 31-32).

Having summed up scientific publications devoted to the problems of a “term” definition, we define a geodetic term as a lexical unit which denotes a special concept of geodetic sphere, establishes systematic relations to other units of this sphere and is characterized by great informational content and precision. One of the main functions of geodetic terms is a nominative one, which is based on the denotation of special geodetic concepts.

2.3. Types of vocabulary in the structure of subject-specific terminologies

It's worth mentioning that any subject-specific terminology together with its terminological units does not develop separately, but is closely connected to the language it belongs to and, as a result, terms closely interact with other layers of the language vocabulary, including: general language words, general scientific and trans-disciplinary vocabulary, as well as subject-specific vocabulary. We support the statement of Budin and Oeser, who say: “individual terms constantly interact and intersect with general words because they share the same linguistic forms” (Budin and Oeser 1995). An issue arises with terminological units that intrude into the general language vocabulary and vice versa. Both general and specialized lexical items can be regarded as conceptual categories of distinct yet related meanings that exhibit typicality effects (Faber and L'Homme 2014: 144). As Kageura points out, “the division between general words and terms as empirical objects is not rigid” (Kageura 2002: 14). It's not so easy to draw a distinct line between these two language layers as they are connected. To our mind the key difference between terminological units and general language words is that terms are related to a certain sphere of knowledge or human activity, where they nominate scientific concepts and reveal their content by definition. Besides, terminological units are emotionally and stylistically neutral, are characterized by precision, informational content, system character and their tendency to monosemanticity.

When it comes to the analysis of professional vocabulary, it should be noted that the process of terminologization takes place in subject-specific terminologies. It occurs when general language words change their meaning and become terms. Such units are often referred to as semi-technical ones. We cannot but agree with Dudley-Evans and John, who state: “semi-technical vocabulary is the specialized use of general vocabulary in a given field. Therefore, the meaning of semi-technical vocabulary items is different from their meaning in general English” (Dudley-Evans and John 1998: 84).

Trying to differentiate between general language and technical vocabulary, Fainman and Tokar argue that “the general language vocabulary appears in general English, while the technical vocabulary does not. In other words, General language vocabulary can be (in a micro scale) referred to as core, and technical as non-core vocabulary. Thus, features of terms and general language vocabulary overlap in the notion of “sub-technical” vocabulary” (Fainman and Tokar 2018: 242).

We support such scientists as Bugaienko and Zhulikov who draw a line between general scientific and special terms, underlining: “since general scientific terms belong to different areas, they are used more often and represent general assembly of notions of different sciences while special terms contain the main volume of knowledge of every specific science” (Bugaienko and Zhulikov 2013: 35).

Terminologies which belong to adjacent subject-specific areas of knowledge often share the same vocabulary that is based on trans-disciplinary terms, which have the same or similar meaning in different related subject fields. In this respect, Vendrell and Fernandez-Dominguez state: “there are different fields of knowledge from which the domain may be approached. These subject fields stand as interconnected parts of the system in such a way that the units primarily linked to a given subject may appear also in some other sphere” (Vendrell and Fernandez-Dominguez 2012: 18).

Therefore, when it comes to the study of vocabulary in the structure of subject-specific terminologies, it should be noted that, in addition to professional terms, they also cover other types of lexical units from intersecting layers of the language corpora. As the research shows, English geodetic terminology includes the following types of the language vocabulary: 1) general language words (semi-technical vocabulary), e.g., *tower, cut, glass, leg*, etc.; 2) general scientific terms, e.g., *projection, value, integral, algorithm*, etc.; 3) trans-disciplinary terms, e.g., *elongation, geoid, ellipsoid, azimuth*, etc.; 4) subject-specific vocabulary (geodetic terminological units), e.g., *layout grid, leveling network, surveying peg, pitchmeter*, etc.

2.4. Classification schemes of word and term formation mechanisms, presented in scientific papers of language researchers

We cannot but agree that “the on-going evolution of specialized spheres entails the parallel development of a terminology in such a way that, whenever a new concept appears in a subject field, a name is required for it” (Vendrell and Fernandez-Dominguez 2012: 23). That is why special attention in our paper is paid

to considering of the main aspects of word and term formation, that have been outlined in scientific publications of modern linguists (Cabrè, 1999, Danylenko, 1977, Dyakov, 2000, Kudelko, 2000, Kyak, 2000, Leychyk, 2007, Mantzari, 2006, Plag, 2003, Sageder, 2010, Sager, 1990, Valeontis, 2006, Zhuravleva, 1998 and others). The next part of our article covers different classification schemes related to the main word and term formation mechanisms presented in the works of the above-mentioned researchers.

The German linguist Plag differentiates the following mechanisms of word formation: 1) affixation, including prefixation, suffixation, infixation; 2) word formation without affixes, including conversion, abbreviation (“abbreviation”, “clipping”, “blending”); 3) compounding (Plag 2003: 90-207). Such scientists as Dyakov et al. distinguish three main ways of lexical unit creation: 1) usage of internal language resources: a) coinage of derivatives; b) assigning new meanings to words; c) compounding; d) formation of word combinations; 2) direct borrowing of terminological elements: a) absolute borrowing (both internal and external form); b) partial borrowing (only internal form); 3) invention of artificial words (Dyakov et al. 2000: 105-106). According to Sager, “two types of term formation can be distinguished in relation to pragmatic circumstances of their creation: primary term formation and secondary term formation” (Sager 1990: 80). They are governed by different motives and show the following differences: in the case of primary term formation of a term there is no pre-existing linguistic entity, even though appropriate term formation rules exist. With secondary term formation, there is always an already existing term, which is the term of the source language, and which can serve as the basis for secondary formation. Primary formation is quite often spontaneous, whereas secondary formation is more frequently subject to rules and can be planned (Valeontis and Mantzari 2006: 3). As the research shows, in the case with English geodetic terminology, secondary term creation is more productive than the primary one.

Let's focus on the following term formation mechanisms applied in the English language, which, as Valeontis and Mantzari claim: “are apt to be applied in other languages as well: I) creating new forms; II) using existing forms; III) translingual borrowing” (Valeontis and Mantzari 2006: 5). As the scientists explain, new forms are new lexical entities that did not exist before. Some of the mechanisms which can be used are the following: 1) derivation; 2) compounding; 3) abbreviated forms: short form, abbreviation, clipped form, initialism, acronym. New terms can be formed by using existing forms by the following procedures: conversion; terminologization (this is a general procedure through which a word or phrase from general language is transformed into a term designating a concept in a special language); transdisciplinary borrowing; semantic transfer within a special language (this is the process by which an existing term in a special language is used in order to designate a different concept, by an analogous extension) (Valeontis and Mantzari 2006: 5-8).

3. Methodological basis of the research

3.1. Scientific approaches to the analysis of vocabulary in the structure of English geodetic terminology

The methodological basis of the conducted research is determined by the object of study (English geodetic terminology together with its vocabulary) and is closely connected to the above-mentioned objective.

The analysis of the theoretical basis of our investigation is carried out employing general scientific methods, such as the study of the research works and reference resources in linguistics, lexicology, terminology, semantics in order to provide definitions of the basic terms covered in the article, to determine types of vocabulary in the composition of subject-specific terminologies, to provide classifications of the main term formation mechanisms.

The process of practical investigation of the material presented in the paper is done in the line of the structural approach. According to it English geodetic terminology is studied from a structural view as a system of interconnected terminological units. The application of linguistic and terminological approaches, including synchronic, structural and system ones, provides the opportunity to conduct synchronic analysis of individual geodetic terms, which have their proper structures, to present English geodetic terminology as a system of terms, formed with the help of certain term formation mechanisms, as highlighted in the paper, and to analyse the material under study from a terminological point of view, that is to regard terminological units of geodesy as components of geodetic terminology which have interrelations with other elements of the very subject-specific field.

3.2. The key steps of the conducted research

The methodology of the present research covers the next steps:

1. Selection of English geodetic terms from specialized dictionaries, compiled by Ukrainian and British authors ("A Dictionary of Construction, Surveying and Civil Engineering", authors: Gorse et al.; "Geodetic Encyclopedic Dictionary", editor Litynskii; "English-Ukrainian Dictionary of Geodesy", authors: Zablotskyj and Zablotska). At this stage of our investigation, we studied the contents of the above-mentioned reference works and selected terminological units concerning geodesy and geodetic measurements.

2. The structural and semantic classification of terms under study. The descriptive method is applied in order to analyse and describe the material presented in the above-mentioned publications. One of the working principles here is the taxonomical one – the selected terminological units are systematized and classified into a particular category (for example according to the mechanisms used for their creation). The analysis of term definitions is applied for the classification of vocabulary types in the structure of English geodetic terminology.

3. Term formation analysis, which requires application of a complex methodology, is based on several approaches: structural, morphologic, etymological, and semantic ones. In the process of structural analysis, geodetic

terms are broken down into their basic parts (prefixes, roots and suffixes) in order to determine their meaning. Morphological analysis (analysis of the internal structure of a word), based on the segmentation of terminological units into smaller units, aims at the study of the morphological structure of terms and key patterns of their creation and is applied for the investigation of morphological means of terms formation. The immediate constituent analysis of a lexical unit allows to break it down into smaller pieces until it cannot be broken down again, and is accompanied by the procedure of finding morphemes – the smallest meaningful elements. The application of this analysis is of great importance for studying term-building methods. For example, the terminological unit *leveling* has two minimal elements – *level* and *leveling*. The term formation mechanism here is affixation – the suffix *-ing* is added to the stem *level* and, as a result, a new terminological unit is formed (*level* + *ing*. → *leveling*). As a result of compounding, the geodetic compound term *radiogeodesy* was formed: *radio* + *geodesy* → *radiogeodesy*. Etymological analysis enables to study the etymology of a term and, if it is borrowed, to determine the source of borrowing. For example, according to the Online Etymological Dictionary, the terminological units *latitude* and *adiabat* were borrowed from Latin and Greek respectively. Semantic analysis, based on studying the word's meaning, its definition, is applied for the investigation of the semantic means of term-building.

4. The quantitative analysis of the studied material, that grounds on describing and interpreting geodetic terms with the help of numbers, provided an opportunity to determine the productivity of term formation mechanisms. Having grouped terminological units according to their way of creation in separate documents, we used a calculation method in order to determine the number of geodetic terms formed on the basis of a certain word formation means. The calculation was done applying computer options. Our next step was to compare the results of the calculations and to define the degree of productivity of every mechanism. Data on the number and percentage of terminological units formed with the help of a particular term-building way is presented in Table 1. The results of the research are provided in the following practical part of this paper.

№	Mechanisms of geodetic terms formation	Number of terms	Percentage of formed terminological units (within term formation mechanism it belongs to)	Percentage of all analysed terms
I.	Morphologic means	3904		22,2 %
1.	<i>affixation</i>	2157	55,3 %	12,3 %
	1) suffixation	1588	73,6 %	
	2) prefixation	289	13,4 %	
	3) prefixation+suffixation	280	13,0 %	
2.	<i>compounding</i>	1093	28,0 %	6,2 %
3.	<i>shortening</i>	521	13,3 %	3,0 %
	1) abbreviations (of initial type)	213	40,9 %	
	2) term blends	172	33,0 %	
	3) ellipses	126	24,2 %	
	4) clipped forms	10	1,9 %	
4.	<i>conversion</i>	133	3,4 %	0,7 %
II.	Semantic means	1197		6,8 %
III.	Syntactic means	11912		67,7 %
	1) two-component word combinations	9813	82,4 %	
	2) three-component word combinations	1763	14,8 %	
	3) multicomponent word combinations	336	2,8 %	
IV.	Borrowings	578		3,3 %
Total number of analysed terms – 17591				

Table 1. Data on the number and percentage of geodetic terminological units formed with the help of a particular term formation mechanism

4. Results and discussion

As the research field of the article focuses on geodetic terms formation, we should understand that the above-mentioned mechanisms are characterized by different degrees of productivity. The conducted analysis shows that the most effective ones are syntactic means, i.e. the creation of terminological word combinations and morphological mechanisms, among which affixation prevails (see Fig. 1).

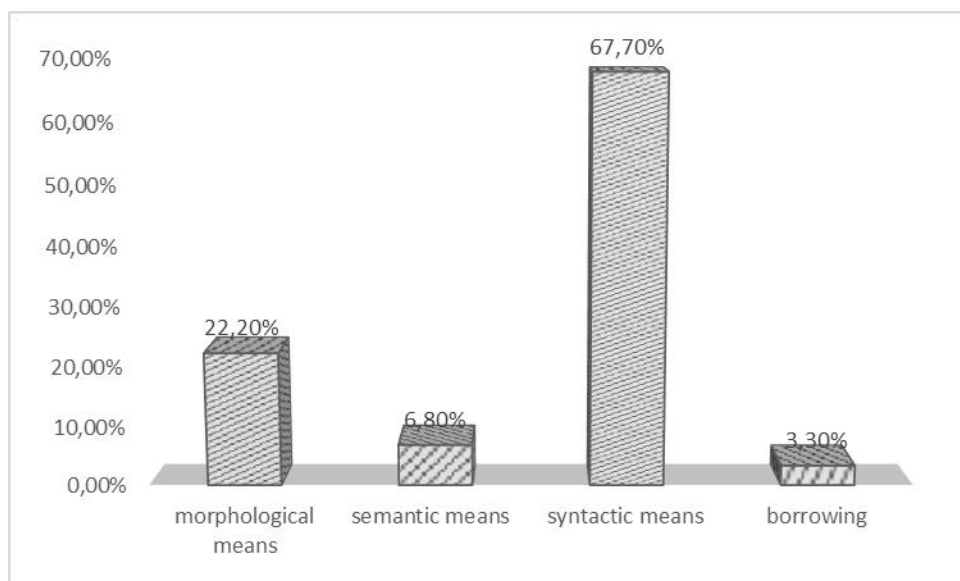


Figure 1. The productivity of term formation mechanisms in English geodetic terminology

Let us consider the classification scheme of term formation mechanisms in English geodetic terminology (see Fig. 2) and analyse these term-building methods in more detail.

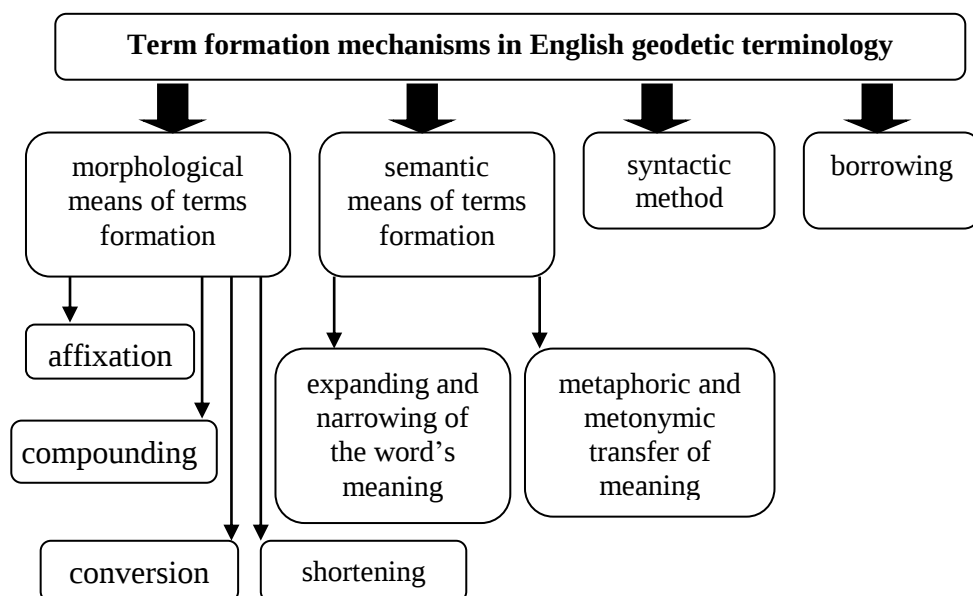


Figure 2. Classification of term formation mechanisms in English geodetic terminology

4.1. Morphological means of term building in English geodetic terminology

Morphological means of term-building are based on structural changes to a word, mostly accompanied by the application of word formation affixes (or without them). This includes affixation, compounding, abbreviation and conversion.

4.1.1. Affixation

Affixation occurs in subject-specific terminologies quite often and is based on creation of a new word (term) on the basis of words already existing in language, with the help of affixes, according to word formation means specific to every language (Akhmanova 1969: 129). Suffixation lies in the application of word formation suffixes, and is rather productive in the terminology under study. According to the definition provided by the Oxford Concise Dictionary of Linguistics, “a suffix is an affix, which goes after a word’s form, to which it is added; accordingly, suffixation is a process of adding suffixes” (Oxford Concise Dictionary of Linguistics 2003: 216). The most productive suffixes in the studied terminology include: -ion/-sion/-tion/-ation, -ing, -er/-or, -al, -ed, -ic, e.g., *to aberrate* – *aberration*, *to level* – *leveling*, *to find* – *range-finder*, *to declinate* – *declinator*, *spheroid* – *spheroidal*, *to chart* – *charted*, *a theodolite* – *theodolitic*, etc.; to less productive belong: -able, -ar, -ly, -ence, -less, e.g., *to observe* – *observable*, *angle* – *angular*, *inverse* – *vary inversely*, *correspond* – *correspondence*, *scale* – *scaleless*, etc. The next mechanism regarded in the article is prefixation, that is the formation of units with the help of prefixes. A prefix is a derivational morpheme, that precedes the root and changes its meaning. According to the Dictionary of Linguistic Terms “a prefix (or pre-stem or prefixation morpheme) is a pre-root, affixation morpheme, that is distinguished in the structure of a word form and mainly has a word formation character” (Ahmanova 1969: 352). The most productive prefixes in the structure of English geodetic terminology are: photo-, micro-, mid-, bi-, multi-, in-/ir-, inter-, iso-, un-, semi-, re-, de-, e.g., *theodolite* – *phototheodolite*, *satellite* – *microsatellite*, *troposphere* – *midtroposphere*, *focal* – *bifocal*, *channel* – *multichannel*, *sphere* – *insphere*, *regular* – *irregular*, *axis* – *interaxis*, *therm* – *isotherm*, *variate* – *unvariate data*, *circle* – *semicircle*, *to cast* – *to recast*, *to code* – *to decode*, etc. The less productive include: co-, extra-, mis-, ex-, peri-, e.g., *variance-covariance matrix*, *polation* – *extrapolation*, *closure* – *misclosure*, *meridian* – *exmeridian altitude*, *centre* – *longitude of pericentre*, etc. Rather popular in subject-specific terminologies, in particular geodetic one, is the mechanism that is based on the simultaneous application of a prefix and a suffix that are added to a word-formative stem in order to create a terminological unit with a new meaning. Most geodetic terms are formed with the help of the above-mentioned method from nominal and verbal stems with the help of the following

prefixes and suffixes: re-/ion (-tion,-ation), e.g., recompilation, reobservation; un-/ed, e.g., unadjusted, unfixed; de-/ion (-tion,-ation), e.g., deformation, delimitation; geo-/al, e.g., geometrical, geomorphological; geo-/ic, e.g., geocentric, geomagnetic; photo-/ing, e.g., aerial photomapping; photo-/ion (-tion,-ation), e.g., phototriangulation, photocomposition; re-/ment, e.g., readjustment, rearrangement, etc.

4.1.2. Compounding

English geodetic terminology is characterized by a significant productivity of compounding. According to the Linguistic Encyclopedic Dictionary, “compounding is one of the word formation mechanisms that is based on the morphological combination of two or more roots (stems). As a result, a compound word is formed. Some types of compound words approximate to word combinations and consist of the whole words” (Linguistic Encyclopaedic Dictionary 2002: 469). Valeontis and Mantzari highlight: “compounds can be complex terms, phrases or blends. In English, the roots or words making up a complex term or phrase are joined by a hyphen, or by fusing, or they are cited without any indication of joining between them” (Valeontis and Mantzari 2006: 5). It should be noted that compounding can be accompanied by suffixation. The studied terminology includes both compound terms formed as a result of compounding, for example: *network*, *rodman*, *small-scale*, *snapshot* and others and compounds formed as a result of compounding accompanied by suffixation, for example: azimuth-indicating, base-measuring, oblique-angled, range-finder, right-shaped, self-alignment, etc.

4.1.3. Shortening

The next type of morphological word formation highlighted in the paper is the creation of abbreviations (shortening), which is mainly connected with the need to reproduce multicomponent and bulky concepts with a smaller amount of language means. On the one hand, shortening serves the purpose of creating more concise forms especially for frequently used terms, while on the other hand creating names that are easy to remember for lengthy terms which are not clearly recognizable as terminological units (Valeontis and Mantzari 2006: 5). Abbreviated terms of English geodetic terminology include: abbreviations (of initial type), term blends, ellipses and clipped forms.

Abbreviations (of initial type) in the composition of geodetic terminology are divided into three groups:

1) initialisms (or alphabetisms) – abbreviations, that consist of initial letters, usually individual ones of each word, word combination or compound word, that are pronounced letter by letter, e.g., *ICRF* – *International Celestial Reference System*, *LST* – *Local Standard Time*, *TCS* – *Terrestrial Coordinate System*, etc.;

2) acronyms – abbreviated forms that are based on initial sounds of each word, word combination or component of a compound word, e.g., *MITEs* –

Miniature Interferometer Terminals for Earth Surveying, *GAT* – *Greenwich Apparent Time*, *TEO* – *Terrestrial Ephemeris Origin*, etc. Despite initialisms this type of abbreviations is spelled as one word, not letter by letter;

3) abbreviations, whose pronunciation involves the combination of letter names and words or word-like pronunciations of strings of letters. They are partially formed with the help of names of initial letters and partially with the help of initial sounds of the initial word combination, e.g., *EARSC* – *European Association of Remote Sensing Companies*, *VLBI* – *Very Long Baseline Interferometry*, *WADGPS* – *Wide Area Differential GPS*, etc.

Term blends are also formed as a result of shortening, which is an optimal alternative for the creation of a short variant of a term. The following types of term blends have been distinguished in the structure of English geodetic terminology: *transmitter* + *responder* – *transponder*; *geography* + *informatics* – *geomatics*; *ocean* + *geography* – *oceanography*; *line* + *examination* – *linearization*; *gravity* + *meter* – *gravimeter*; *transmitter* + *receiver* – *transreceiver*; *astronomical* + *photograph* – *astrograph*; *altimetric* + *geometry* – *altimetry*, etc. Shortened terms in English geodetic terminology also include ellipses, such as: *legend* ← *map legend*, *radar adjustment* ← *radar network adjustment*, *angle of vision* ← *angle of field of vision*, *sight line* ← *line of sight*, *curve radius* ← *radius of curve* and others. In the process of ellipse formation, the word combination is shortened, condensed. Clipped forms of geodetic terms are created in the process of clipping, by which the greater part of a term is present in its clipped form, e.g., *photo* ← *photograph*, *stereo* ← *stereoscopic*, *gyro* ← *gyroscope*, *gyro* ← *gyrocompass*, etc.

Having analysed all types of abbreviations in English geodetic terminology we come to the conclusion that abbreviated terms (of initial type) prevail in quantity, which is due to the need to precisely reveal the content of a geodetic term, using a minimal number of language means (see Fig.3).

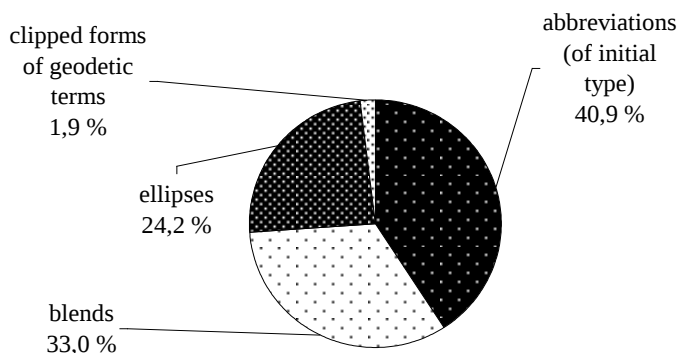


Figure 3. Different types of abbreviations in the structure of English geodetic terminology

4.1.4. Conversion

As it was mentioned before, morphological mechanisms of English geodetic term formation include also conversion. According to the Oxford Concise Dictionary of Linguistics, “conversion (or null derivation) – is the process by which a lexical unit, that initially belonged to one syntactic class also belongs to another one” (Oxford Concise Dictionary of Linguistics 2003: 48). The essence of this process is that, as a result of the grammatical and lexical reinterpretation of a word, its transfer from one part of a speech to another takes place. The main types of conversion, according to Plag, are the transfer of a noun to a verb, a verb to a noun, an adverb to a verb and an adverb to a verb; other types also exist, but they are not numerous (Plag 2003: 135). Six types of conversion have been differentiated in the process of English geodetic terminology analysis, namely:

Verb → Noun, e.g., *to survey – to measure an area of land to enable a scale map or plan to be produced → a survey – an examination of an area or land in order to make a map of it*;

Noun → Verb, e.g., *a level – a device for determining whether a surface is horizontal → to level – to make (a surface) horizontal*;

Noun → Adjective, e.g., *surface – outside, top layer of a land → surface – situated near the surface, related to the surface*;

Adjective → Noun, e.g., *perpendicular – not leaning to one side or the other, but exactly vertical → perpendicular – an exactly vertical position or line*;

Verb → Adjective, e.g., *to mediate – to be in a middle or intermediate position → mediate – intermediate*;

Adjective → Verb, e.g., *direct – going straight from one place to another → to direct – to aim something in a particular direction*.

The results of the present study show that affixation is the most productive morphological means of geodetic term formation (see Fig.4). This is due, first of all, to the fact that it is based on applications of different affixes that are added to already existing words, with whose help terminological units are created, that possess a new lexical meaning and denote a new concept of the geodetic sphere.

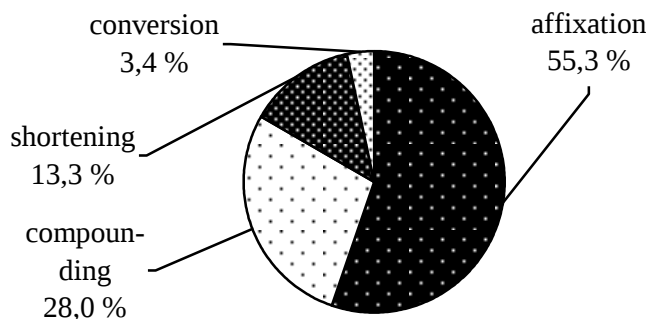


Figure 4. The productivity of the morphological means of geodetic term formation

4.2. Semantic means of geodetic term formation

The semantic analysis of English geodetic terminology has shown that some of the studied terminological units were formed with the help of semantic means, also called semantic nomination, that are based on changes connected with the word's meaning. As a result, processes such as the expansion and narrowing of meaning based on the metaphoric and metonymic transfer of meaning take place. Geodetic terms created on the basis of semantic nomination are not numerous, which can be explained first of all by the requirements of exactness and monosemanticity in respect to terms. Here belong, for example, the following terminological units: *bench mark*, *legend*, *chain*, *master instrument*, *eye work*, *threshold value*, *witness mark*, *skeleton map*, *footplate*, *bell curve*, *bulls-eye level*, *egg-shaped spheroid*, etc.

4.3. The syntactic method of term building and its productivity

The syntactic method of term-building (also called the analytical one) which results in the creation of new terminological word combinations, is the most productive one. The formation of terminological word combinations enables to increase the structure of a term and, thus, to differentiate new processes, objects or phenomena in more detail. The greater part of terminological word combinations in the terminology under study is represented by two-component word combinations, e.g., *equipotential surface*, *leveling rule*, *reference point* and others; and also three-component word combinations, e.g., *longitude degree measurement*, *geodetic building net*, *apparent zenith distance* and others. The latter consist of three categorematic words and can be supplemented by connective words or articles. The basis of three-component word combinations are often two-component word combinations or one-stem words. For example, the basis of the three-component word combination *graphic aerial triangulation* is the two-component word combination *aerial triangulation*. Based on the conducted investigation, we can state that English geodetic terminology is rich in two and three-component terminological units (see Fig. 5), that is a characteristic feature for many subject-specific terminologies. It also includes multicomponent-word combinations, for example: *simple perspective cylindrical projection*, *exploratory survey of geodetic network*, *range-finding method of satellite navigation systems*, etc., but they are bulky and, therefore, not numerous.

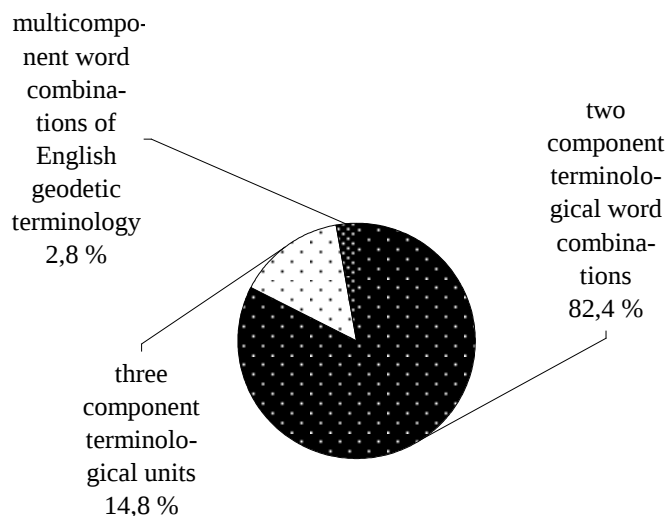


Figure 5. Classification of terminological word combinations in the structure of English geodetic terminology.

4.4. Borrowings in English geodetic terminology

The comprehensive study of geodetic terminology has shown that the expansion of its vocabulary is accompanied by the process of borrowing. As noted by Dyakov et al. (2000: 109) “scientific terminology has a quite high capacity to perceive foreign borrowings”. As a result of the etymological analysis, we have differentiated between terms borrowed from classical languages – Latin (hereinafter L) and Greek (hereinafter Gr), as well as terminological units borrowed from modern languages – French (hereinafter Fr), Arabic (hereinafter Ar), Italian (hereinafter It), Spanish (hereinafter Sp). Examples of borrowings from classical languages in the studied terminology are as follows: *latitude* (L: “*latitudo*” – breadth, width, extent, size), *longitude* (L: “*longitudo*” – length, duration), *adiabat* (Gr: “*adiabatos*” – not to be passed through), *geodesy* (Gr: “*geodaisia*” – division of the earth), *gyro* (Gr: “*gyros*” – a ring, circle), *parallel* (Gr: “*parallelos*” – parallel) and others. Besides Latin and Greek, a quite popular source of borrowings was French, which for a long period was the language of science, technology and culture, along with Italian, Arabic, Spanish. For example: *surface* (Fr: “*surface*” – an outermost boundary, outside part), (to) *survey* (Old Fr: “*sorveoir*” – look (down) at, look upon, notice; guard, watch), *chart* (Middle Fr: “*charte*” – card, map), *align* (Old Fr: “*alignier*” – set, lay in line), *nadir* (Ar: “*nazir*” – opposite to), *azimuth* (Ar: “*as-sumut*” – the ways), *profile* (It: “*profilo*” – a drawing in outline), *demarcation* (Sp: “*de*”+“*marcar*” – to mark the boundaries of) and others.

5. Conclusions and perspectives of the research

The conducted analysis has shown that: 1) English geodetic terminology is a system of terminological units, related to this sphere, that reproduce the system of concepts of the very subject-specific field. 2) Its vocabulary is developing and interacting with the general language vocabulary it belongs to and includes the following types of lexical units: general language words; general scientific; trans-disciplinary and subject-specific vocabulary. 3) The creation of geodetic terms is based on the application of the main mechanisms of general words formation, namely morphological and semantic means, as well as the syntactic method and borrowing. As the carried-out research indicates, the most productive ones for English geodetic terminology are morphological means (12.3 % of the analysed terms), among which affixation prevails, and the formation of terminological word combinations (67.7 % of the analysed terms). Morphological mechanisms are popular in subject-specific terminologies, as far as they are based on existing language forms and are easy to apply. Affixation is quite productive in enriching the studied vocabulary, since affixes play the role of semantic modifiers, which specify new categories of the concept, denoted by the stem of a terminological unit; besides, the creation of such terms contributes to the structural systematization of terminology. A great term formation potential of the syntactic method is determined first of all by a large number of investigated phenomena, which need to be named. Terminological word combinations give an opportunity to increase the number of components in the structure of term and, accordingly, to differentiate subject-specific objects, processes and surveying measurements in more detail. With their help, it is possible to describe many concepts of geodetic terminology more precisely and to form derivative terminological units: three and multi-component term combinations are created on the basis of two-component ones. It should be noted that the latter ones are not so numerous, since they are too bulky and hard to remember. The perspectives of further investigations are to study English geodetic terms from the point of view of discourse analysis as well as to focus on problems of their translation.

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ABSTRACT

The article is dedicated to the study of English geodetic terminology. This paper aims to investigate the vocabulary of the researched terminology, to define the main mechanisms of geodetic terms creation and analyse their productivity. The carried-out investigation allows to draw the following conclusions: 1) English geodetic terminology covers such types of vocabulary: general language words, general scientific and trans-disciplinary terms, subject-specific (geodetic) words; 2) the analysed terminological units are formed on the basis of the following mechanisms: morphological means; semantic means; syntactic method and borrowing; 3) the most productive ones are the creation of terminological word combination and affixation.

Key words: terminology, geodetic terms, term formation

REZUMAT

Articolul de față este dedicat studierii terminologiei geodezice a limbii engleze. Lucrarea își propune să analizeze inventarul de termeni ai acestui domeniu, să definească principalele mecanisme ale creării termenilor geodezici și să le analizeze productivitatea. Cercetarea realizată permite formularea următoarelor concluzii: 1) terminologia geodezică a limbii engleze acoperă următoarele categorii de lexic: cuvinte din limbajul general, termeni științifici generali și transdisciplinari, termeni specifici domeniului (geodezici); 2) unitățile terminologice analizate sunt formate pe baza următoarelor mecanisme: mijloace morfologice; mijloace semantice; mijloace sintactice și împrumuturi; 3) cele mai productive sunt crearea combinațiilor terminologice și afixarea.

Cuvinte-cheie: terminologie, termeni geodezici, formarea termenilor