

## SEMANTIC DIFFICULTIES OF THE ENGLISH AEROSPACE TERMINOLOGICAL SYSTEM

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### INTRODUCTION

The functioning and development of any scientific and technical field is accompanied by the emergence and gradual enrichment of its terminology. Terms from the fields of physics, chemistry, biology, aviation, mechanical engineering are included in the quite dynamic terminology system of astronomy and rocket engineering. They became the basis for the formation of authentic term units, which undergo further modifications due to the emergence of new branch concepts and the need for their nomination. The factor of rapid development of the field of astronomy and rocket engineering, as well as its terminology, often poses new challenges not only to terminologists and lexicographers, but also to translators.

Terminology is part of a special vocabulary. It represents the most dynamic lexical system of the language, since the process of emergence of new concepts and terms is permanent. Researches in this area most often show how terminology arises, develops and changes depending on the development of relevant sciences and the general style of thinking, and most often the term contains not only information about a specific object or phenomenon that it denotes, but also bears the imprint of historical era, technical and cultural level of the country within whose language this term exists, as well as the personality of the founder of the term [4, p.197; 5, p. 312].

The aerospace terminological system does not exist separately from the terminological systems of other industries. The inter-branch connections of these term systems are manifested in the fact that aerospace terminology is constantly replenished with terms from other scientific fields, such as mathematics, biology, ecology, mechanical engineering, aviation, electronics, cybernetics, telecommunications, etc., interaction with which determines the development of the aerospace industry and, accordingly, terminological base as a whole.

The relevance of the problem under consideration is connected with the lack of scientific works with a systematic and thorough coverage of the terminology of this field. An advanced study of the specialized astronomical and rocket engineering vocabulary will contribute to a more complete

disclosure of the leading trends in the development of national terminology, and the study of the peculiarities and difficulties of its translation will allow to determine modern functional and stylistic trends within the given field and predict its future.

## **OBJECTIVE AND TASKS**

The purpose of the research is to describe the modern system of astronomical and rocket engineering terminology and to investigate the peculiarities of the translation of the relevant terms into the Ukrainian language.

## **MATERIALS AND METHODS**

Research methods: theoretical study and analysis of literary sources on the problem of research; methods of linguistic analysis: descriptive and comparative methods, methods of classification and systematization.

## **RESULTS**

Aerospace terminology, like the terminology of any professional terminological system, has its own characteristics, in particular the English-speaking one, because English-speaking countries are among the leaders in the world in the direction of aviation and space development. The Ukrainian and English languages, of course, differ in their structure, so when translating, it is often necessary to use grammatical and lexical-semantic transformations, including in cases when there are no equivalent concepts in the translated language, denoting little-known latest developments, so translators resort to borrowing.

Depending on the degree of specialization, the terms are divided into three groups:

1. General scientific terms that are used in almost all branch terminology, for example: system, tendency, concept, theory, analysis, synthesis, etc. It should be noted that such terms can specify their meaning within certain terminology. This category also includes general technical terminology: machine, appliance, aggregate.

2. Interdisciplinary terms are terms that are used in several related or distant fields (economic science has a common terminology with other social and natural sciences), for example: amortization, ecological taxation, sanitation, technopolis, reflection, real time.

3. Highly specialized terms are words or phrases that denote concepts that reflect the peculiarities of a specific field, in particular aerospace, for example: upper atmosphere research satellite, meteor, lunar module.

Like any other terminology, the terminology of the aerospace industry is characterized by systematicity and thematic grouping and is a complex entity, the structure of which contains separate subsystems. The systematicity of the vocabulary of the space professional language is reflected in the systematicity of the conceptual field, which consists in the fact that the meaning of lexical units does not exist in isolation, but in a certain relationship with the meaning of other units of a defined semantic field [4].

One of the most important features that distinguish a term from a commonly used word is its belonging to a certain terminological field. The terminological field is defined as an artificially defined area of existence of a term, within which it possesses all its characteristic features.

The use of semantic fields to describe terminological vocabulary is associated with the division of terminological units into certain lexical-semantic groups, which are separate microsystems within the framework of the aerospace terminology system. Modern English aerospace terminology is very diverse in terms of its lexical and semantic content.

The main semantic groups combine terms to denote general concepts of processes, actions, objects, spacecraft details, properties, equipment used for space exploration, etc. The most typical among them are the following groups of terms:

- to designate machines, mechanisms, devices: simulator – симулятор; gimbals – амортизація; aircraft carrier – трап літака; transmitter – трансмітер; engine bell – сопло-двигун; USS – авіаносець; coil – редуктор; Ascent vehicle – борт орбітального апарату; MDV – пусковий механізм;

- to indicate the details of the spacecraft's equipment and systems: helmet restraint ring – кільце для шолома; communication umbilical – системи зв'язку та вентиляції; booster – прискорювач; fuel pumps – паливні насоси; tower – заглушка; trim – обшивка; cooling system – система охолодження; overboard dump – бортова каналізація;

- to indicate the properties of aerospace engineering: supersonic velocity – надзвукова швидкість; nominal system – система, що працює в нормальному режимі; trajectory – траєкторія; relative speed – відносна швидкість; rate of turn – швидкість розвороту; high – висота; translation – показники; pitch rate – рівень підйому;

- to indicate actions, technical processes: pre-launch test – передполітний тест; capsule ingress – вхід в капсулу; to embark – вирушати, запускати; landing – висадка; to penetrate – заходити; to abort – відмовитися, повернути назад; docking – стикування; splash-down – приземлення;

- to designate space flight control units, positions, specialties: flight controllers – керівники польотом; RETRO (Retrofire Officer) –

Пілотований модуль; FIDO (Flight Dynamics Officer) – ФІДО; Guidance – Наведення; Surgeon – бортовий лікар; EECOM (Command Service Module Electrical and Environmental Engineer) – Компресори;

- for designation of premises of special purpose buildings, their parts: flight – центр керування; launch pad – майданчик запуску корабля; Mission Control – центр керування польотом; launch control – управління запуском; pad leader – стартовий майданчик; prime recovery zone – зона приземлення; mission site – космічна база; relay probe – станція зв'язку;

- to indicate special units of measurement, standards: atom – атом; amp – ампер; sol – день; molecule – молекула;

- for designation of substances, materials: rocket fuel – ракетне паливо; lithium hydroxide – гідроксид літію; diesel – дизель;

- names of methods and programs of space exploration: manned space program – космічний політ із людьми на борту; interstellar travel – подорож до зірок; final expedition – остання експедиція; debrief – політ із поверненням до відповідної точки;

- names of space objects: star field – зіркове поле; wormhole – червоточина у просторі; black hole – чорна діра; neutron star – нейтронна зірка; collapsed star – колапсар; Solar system – Сонячна система;

- to indicate problems, breakdowns in aerospace systems: short – коротке замикання; liquid propulsion- течія; cabin pressure – розгерметизація кабіни; master alarm – тривога номер один;

- designation of physical and physiological phenomena: Moon's gravity – гравітаційне коло місяця; hibernation – анабіоз; upper atmosphere – верхні шари атмосфери; gravitational pull – гравітаційне поле; time slippage – часовий зсув.

The semantic method of term creation is the main method of creation because a commonly used lexical unit acquires the status of a term as a result of certain semantic changes in the use of this unit in the language. In general, there are two options for creating terms from commonly used words.

Words that are part of the terminological system in their basic meaning and are both well-known and special at the same time. The lexical meaning of a commonly used word "merges" with the general terminological meaning without special semantic shifts. The definition of such a term differs from the definition of a word in general literary language, for example: entry – 1) вхід (у загальноживаному значенні), 2) вхід в атмосферу (у галузі аерокосмонавтики); gap – 1) проміжок, 2) люфт.

Metaphorization of the meanings of commonly used words is based on the external or functional similarity of the named objects, for example:

branch – 1) гілка (дерева), 2) патрубок; guide – 1) провідник, 2) направляюча конструкція; tail – 1) хвіст, 2) хвостова частина (космічного корабля); nose airlock – носовий повітряний шлюз.

In the process of formation of the aerospace terminological vocabulary, metonymic transfer is also used, which is carried out on the basis of the contiguity of two things, their combination in space or time. New meanings of words appear based on the contiguity of their signs [5]. The metonymic method of transfer is not based on similarity (as in the metaphorical one), but on the contiguity of concepts, in other words, a word that is the name of one object or phenomenon is used to designate another object or phenomenon that is in relationship with the first. Therefore, the metaphor is primarily a semantic shift in meaning, and metonymy is a semantic shift in reference. Although both processes are symbolic transfers, metonymy identifies the object of its designation, and metaphor characterizes it.

## CONCLUSIONS

So, a term is a word or phrase that denotes a clearly defined concept of a certain field of knowledge or human activity. Each term is characterized by the presence of such features as: belonging to a certain terminological system; existence of a definition; ambiguity within one term system; precision; stylistic neutrality; lack of synonyms and homonyms within the same term system; lack of expressiveness, imagery, subjective–evaluative shades.

Each term, as a lexical unit, performs a number of functions: representative, significant, communicative, pragmatic.

Rocket engineering terminology is part of the English language system as one of its subsystems, subject to general language trends. Semantic–structural analysis makes it possible to understand the trends in the formation and development of terminological units, to find out the origin and connections between them. The translation of industry terminology is a complex process in which the interaction of the term with the context is essential.

The main method of translating a term is using a lexical equivalent. The following methods of translation of term units are also distinguished: descriptive translation, translation using the genitive case, translation using prepositions, literal translation, transcription, transliteration.

The most common methods of translating terms denoting astronomical objects are literal translation, translation using the genitive case, and translation using prepositions. Difficulties arise mostly when translating terms containing five or more components, and consist in determining the main

word in the term and the appropriate use of prepositions.

Among the terms denoting astronomical phenomena and processes, two-component term compounds prevail, and among the techniques used in the translation of the terms of this terminological subsystem, literal translation and translation using the genitive case prevail.

The variety of applied translation techniques depends on the number of components. Among the difficulties of translating terms of this type, it is worth to note the polysemy of individual components of term compounds.

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