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DEVELOPMENT OF INDUSTRY-SPECIFIC TERMINOLOGY IN THE COGNITIVE ASPECT

The article is devoted to the study of technical terminology using cognitive linguistic methods that analyze language as a reflection of cognitive processes. It means studying how language is structured, how it is used to convey meaning, and how it shapes thought and perception.

In our terminology research, the aim is to understand and standardize the language used within a specific field of building industry. Tasks involved include identifying terms, defining them, establishing relationships between terms, creating terminological databases or glossaries, and developing guidelines for consistent terminology usage.

Using a cognitive approach to terminology helps to understand how people mentally organize and process terms within analysed building terminology. Core concepts and their relationships, as well as how these concepts organized have been identified. Some cognitive processes have been analysed: how certain terms evoke specific mental images or associations. Semantic derivation analysis to visualize the relationships between terms within investigated terminology has been performed. It helps identify central concepts, related terms, and the strength of associations between them. It is obviously clear that by employing a cognitive approach, researchers can gain a deeper understanding of how terminology is mentally represented and processed. The linguistic forms of concept representation in different languages have certain peculiarities that depend on the structural nature of the language. The form of a term, reflecting the complexity of the concept behind it, is not inert; it helps to focus a specialist on certain properties of a particular object. The desire to get rid of a large number of prepositions in terminology leads to the use of a number of combinations of nouns in the common case or compound hyphenated words. In the process of nomination, each phenomenon of reality, based on the features that stand out in it, is brought under any logical category object, quality, action, etc. In this category, general concepts are distinguished that are linguistically relevant to the onomasiological basis.

Key words: *term, cognitive approach, building terminology, semantic derivation.*

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РОЗВИТОК ГАЛУЗЕВОЇ ТЕРМІНОЛОГІЇ У КОГНІТИВНОМУ АСПЕКТІ

Стаття присвячена дослідженню технічної термінології за допомогою когнітивних лінгвістичних методів, які аналізують мову як відображення когнітивних процесів. Вивчається як структурована мова, як вона використовується для передачі значення і формує мислення та сприйняття. Метою нашого дослідження є розуміння та стандартизація мови, що використовується в конкретній галузі будівельної індустрії. Завдання включають ідентифікацію термінів, їх визначення, встановлення взаємозв'язків між термінами, створення термінологічних баз даних або глосаріїв, а також розробку рекомендацій щодо послідовного використання термінології.

Використання когнітивного підходу у вивченні термінології допомагає зрозуміти як люди ментально організують і обробляють терміни в будівельній термінології. Було визначено основні поняття та їхні взаємозв'язки, а також способи організації цих понять. Проаналізовано деякі когнітивні процеси: як певні терміни викликають конкретні ментальні образи чи асоціації. Проведено семантико-дериваційний аналіз для візуалізації зв'язків між термінами в межах термінології, яка досліджується. Він допомагає виявити центральні поняття, пов'язані з ними терміни та силу асоціацій між ними. Очевидно, що за допомогою когнітивного підходу дослідники можуть отримати глибше розуміння того, як термінологія ментально репрезентується та опрацьовується. Мовні форми репрезентації понять у різних мовах мають певні особливості, які залежать від структурної природи мови. Форма терміна, відображаючи складність поняття не є інертною, вона допомагає зосередити увагу фахівця на певних властивостях конкретного об'єкта. Прагнення позбутися великої кількості прищепників у термінології призводить до використання низки поєднань іменників у загальному відмінку або складних слів через дефіс. У процесі номінації кожне явище дійсності на основі ознак, які в ньому виділяються, підводиться під будь-яку логічну категорію предмета, якості, дії тощо. У цій категорії виділяються загальні поняття, які лінгвістично релевантні ономазіологічній основі.

Ключові слова: термін, когнітивний підхід, будівельна термінологія, семантична деривація.

Problem statement. The article deals with the problem of cognitive approach application while studying terminology, the issue of terminological nomination in the cognitive and pragmatic aspects, in the context of extralinguistic factors that influence its formation.

It is absolutely necessary to review the facts that influence formation of term systems in any field. Linguists investigating different issues of terminology share the opinion that concepts, principles, and processes within the field shape the formation of terms. For example, in construction, terms related to different phases like design, planning, construction, and maintenance are essential. It is crucial to note that

advances in technology often lead to the creation of new terms to describe innovative materials, methods, and equipment used in construction, such as green building or Building Information Modeling (BIM). Some more essential factors are connected with cultural preference, regional practice and historical influence. All these factors can contribute to the development of specific terms. For instance, terms related to traditional building techniques may vary based on geographical regions. Furthermore, there are other important facts we should take a look at. In addition to the factors mentioned above, industry standards and regulations play a significant role in shaping terminology. Standardized terms ensure

clarity, consistency, and interoperability across projects and stakeholders. According to the process of science and technology development, collaboration between different disciplines such as architecture, engineering, and construction management (in our case), can lead to the adoption of common terms and the development of new terminology to bridge gaps and improve communication. Consumer demands, market trends and sustainability concerns can influence the creation of terms related to energy efficiency, eco-friendly practices, and smart building technologies. It should be also stressed that research advancements and educational programs contribute to the evolution of terminology by introducing new concepts, theories, and methodologies that require specific terms for communication and documentation. Terminological system may adapt to reflect international standards, practices, and collaborations, leading to the incorporation of terms from various languages and cultures due to the process of globalization and industrial evolution.

Research analysis. The study of the term started at the beginning of the last century and remains one of the priority areas of linguistic science today. This is due not only to the social significance of this class of nominal units as a means of linguistic representation and encoding of conceptual knowledge of specific spheres of human activity, but also to the fact that terminology is the most mobile part of the lexicon, reflecting the progressive movement of scientific and technological progress. The number of foreign linguists K. Kageura, J. Sager, S.E. Wright, as well as some local scholars O. Krymets, M. Vus, N. Shashkina, K. Sokolova, L. Druzhinina, etc. have studied terminology issues from different aspects. The formation of a term system typically involves establishing a set of specific terms and their definitions within a particular field or discipline. This process often includes defining key concepts, standardizing terminology, and ensuring clarity and consistency in communication within that field. It may involve collaboration among experts, literature review, and refinement over time to reflect evolving knowledge and practices. According to K. Kageura, 'research in the field of terminology needs to be broadened to include concrete descriptive analysis of terminology based on an explicitly stated theoretical position' (Kageura, 2002: 2).

In terminology, first of all, there is a shift in the lexical system both at the level of semantics and at the level of naming methods, since terminological nomination is inseparable from the process of scientific cognition and transformation of reality. This makes it necessary to study a term not as a self-sufficient structure, but

as an object involved in people's cognitive activity, as a means of conceptualising special information. That is why today scientists believe that the study of the processes of term system formation in general and the term systems of those branches of knowledge that are still being formed cannot be complete without the involvement of cognitive linguistics methods that have proven to be effective in the study of many aspects of term formation.

Cognitive linguistic methods refer to approaches within the field of cognitive linguistics that analyze language as a reflection of cognitive processes. These methods often involve studying how language is structured, how it is used to convey meaning, and how it shapes thought and perception. Some common cognitive linguistic methods include conceptual metaphor theory, prototype theory, and cognitive semantics, among others. These methods help researchers understand how language influences cognition and vice versa. 'The language picture and the scientific picture of the world are the products of different types of human conscience: everyday conscience and scientific conscience' (Kremets, 2015: 36).

The following study continues a series of linguistic works that examine the general and specific features of field terminology systems.

The aim of the article is to analyze the lexical composition and organisation of the terminological system, to identify trends in the formation, functioning and growth of the vocabulary of modern languages in their most dynamic and rapidly developing part – in the field of technical terminology. It is possible due to a number of interesting characteristics of different terminology systems (a noticeable coincidence of the semantic and formal structure of terms, the presence of one concept that represents a system of concepts), which allows us to draw conclusions about the ways of building field terminologies in modern languages in general.

Main material. A term reflects the world around us and is both a result and an instrument of human cognitive activity. The result of this activity, represented in the term, determines its cognitive essence. The term is the result of professional thinking, embodied in words, a significant linguistic and cognitive means of communication in the professional sphere. By considering these factors, professionals in any modern industry can develop comprehensive and effective term systems that facilitate clear communication, knowledge sharing, and innovation. The formation of a term is influenced by the language consciousness of people, which creates information about the conceptual sphere

of specialised knowledge. This leads to the need to transfer certain grammatical categories and rules of terminological nomination adopted in the system of a language. Since terminology is a part of the general literary language, the same linguistic resources are used in the process of terminological nomination as in the formation of any word of a given language. According to some scientists, 'this dynamic force, inherited from natural language, is strengthened by intersecting with general-language words in real discourse' (Kageura, 2002: 2). This applies to those terms that have arisen on the basis of commonly used words. It is known that construction terminology is one of the oldest term systems, so many terms originated on the basis of words of the common literary language. With the need to build shelters and dwellings, people had to use *stone, logs, timber, straw, reed, clay*, and later *lime, brick, tile*. The names of building materials were not yet terms those days. These were everyday words denoting ordinary objects that a person constantly used in his or her life. Familiar words begin to be used to nominate new objects of reality. According to studies, it should be noted that earlier the boundary between a word of the general literary language and a term was less clearly defined than it is now, and terminology was less autonomous. The closer we get to our time, the more and more words and terms are increasing in their composition and improving in their structure. According to these scholars, the main factor that determined term creation in the period of formation of terminology was the discrepancy between the concept and the words and some analogies. 'This tendency is accelerated because scientific and technical discourse is spreading more and more into our daily communication due to the arrival of the information age' (Kageura, 2002: 15).

The old names are associated with some already known ideas that form a new concept in the human mind. The use of familiar words for new concepts is done through semantic derivation. They have only the same sound form as common literary words. In fact, a new word is created, a semantic neologism, rather than the birth of a new meaning for an old word. The nomination was based on some similarity of objects, the presence of a common feature. Thus, the names *wool, paste, mummy, shell, head of nail, cap of screw* appeared in the studied terminology system due to their external similarity to the objects denoted by these words and the equality of the function performed. The object denoted by the term *wool* has an external similarity to the object denoted by the everyday word *wool-fibrous substance*. *Paste (of cement)* has a consistency similar to *cement paste*, etc.

Semantic derivation in building terminology refers to the process of creating new words or terms related to the construction industry by modifying existing words or combining them in different ways. It involves using prefixes, suffixes, compounds, or blending to form words that convey specific meanings

within the context of construction, architecture, or building materials. For example, *prefabrication* is derived from *prefab* and *fabrication*, indicating the process of assembling components off-site before installation. This practice allows for a more precise and specialized vocabulary within the field.

Semantic derivation (rethinking) in building terminology involves revisiting and redefining the meanings of commonly used terms to arrange better with contemporary practices or achievements in construction industry. Here are a few examples: *green building, smart home, adaptive reuse, net zero energy building*.

It is necessary to explore semantic rethinking of some terms in the context of building terminology. Traditionally, *arm* is upper limb of the human body, but *arm* in the building terminology might refer to a structural component, like the *arm of a crane* or the *arm of a piece of machinery*. The word *body* means the physical structure of a person or an animal, however, in traditional building terminology it (*body*) might refer to the main structure or a framework of a building. Through semantic rethinking, for example, a building's *body* could encompass its mechanical, electrical, and water supply system. The word *bed* in general language means a piece of furniture used for sleeping or resting. In conventional building terminology, *bed* typically refers to a foundation or base upon which something is constructed or installed, such as *a bed of concrete* for a building's footing or *a bed of gravel* for landscaping. By rethinking the semantics of these terms, the building industry terminology can adapt to evolving challenges and opportunities while fostering innovation and progress.

Any nominative act has cognitive and pragmatic elements. The choice of the motivating basis of a new word, reflecting a certain idea of a person about the world around him or her and his or her subjective and objective perception of reality, is a primary act; secondary naming in the language of science is formed on the basis of the features that a person chooses when analysing the internal form of a word. A scientific concept, which is called a term, is formed by means of logical comprehension of the most important aspects of an object, highlighting its essential and necessary motivating features. They may differ in different terminology systems, therefore to understand properly the meaning of a term, it essential to master the entire conceptual system of this field of knowledge – so called conceptsphere or sphere of concepts. For example, in term *concrete* usually refers to a hard, gray building material made from cement, sand, gravel, and water. In general literary language *concrete* means something tangible, specific, or real, as opposed to abstract or theoretical. The term *mortar* in construction terminology means mixture, and in military terminology it means mortar. The word *rate* in physical terminology means speed, and in economic terminology *rate, rate, interest*

rate, exchange rate. The logical understanding of the most important aspects of the same object in different languages may also differ.

The linguistic forms of concept representation in different languages have certain peculiarities that depend on the structural nature of the language. In the process of cognitive activity, a concept is identified and, if there are unfilled gaps in the lexical system of a language, there is a need for its verbal expression, it is designated or borrowed as a concept together with a word from another language. Thus, these foreign language terms enter the language and remain in the terminology system. Borrowing in terminology is an objective process of its evolution. In addition, it should be noted that borrowings are appropriate only when they meet the needs of life and are assimilated without violating the national specificity of terminology systems. The terminologies of many fields of knowledge in different languages use lexical and word-formation means of highly developed literary languages to form terms. In the course of their development, both English and Ukrainian have encountered many languages from which they have borrowed all sorts of words. They vary in number and proportion in the vocabulary of the languages under study. Borrowings from Greek, Italian, Dutch, Spanish, and German are due to economic, political, cultural, and other ties with the respective nations.

The word *mummy* of Arabic origin *mumiyah* was borrowed from Latin *mumia*. Latin loanwords take a significant place in English, as in other languages. The oldest of these are words associated mainly with the construction techniques of the ancient Romans, parts of which were found by the Anglo-Saxons in Britain. Some words are borrowed directly from Latin through French, for example, *cement, talc, paste*. Many Latin loanwords in English are of Greek origin. These are words that were once borrowed by Latin from Greek, and then in a Latinised form penetrated the English vocabulary *latex, basalt, asphalt, gypsum*. With the development of the construction industry, the terminology is replenished with new names of objects used as construction materials. New properties of materials have contributed to the formation of cognitive structures that reflect a more accurate understanding of the concepts reflected in the name.

The form of a term, reflecting the complexity of the concept behind it, is not inert; it helps to focus a specialist on certain properties of a particular object. And if a term is fixed in the scientific terminology in the process of socialisation, it means that the author has managed to correlate the linguistic sign with the scientific and professional needs for naming a certain area of reality in the most adequate way, and the information reflected in the form of the sign becomes objective, because it is determined by scientific knowledge. In this case, the term fulfils its pragmatic function – to promote effective scientific communication. The most

widespread and consumed materials are natural and artificial stone materials (*rock, concrete, stone*), mineral binding solutions (*cement, gypsum, clay, lime, mortar*). The need to characterise these objects from all sides explains the choice of essential and necessary features as motivating factors in the nomination of building materials. In the process of nomination, each phenomenon of reality, based on the features that stand out in it, is brought under any logical category *object, quality, action*, etc. In this category, general concepts are distinguished that are linguistically relevant to the onomasiological basis. Building materials belong to the logical category of objects, and within this category – to substances and materials. The basis of the names of building materials indicates the corresponding concepts of *substance* and *material*. The onomasiological feature specifies this conceptual class by indicating a specific material or substance.

In the composite names of building materials, the onomasiological basis is the name of the class of building materials and components with the general meaning of material: *material, substance, solution, mixture, product* – the core component. These correspond to the defining component of compound names. The feature of the object that is fixed in the word becomes the motivating feature. It can be essential and non-essential, proper and non-proprietary. The desire to reflect fully the properties of an object leads to the formation of multicomponent names – *insulated concrete forms (ICFs), interlocking hollow-core units, asphalt laying machine, double-glazed window, steel-framed building concrete slab, raised access floor*, etc. The contradiction between the tendency for an accurate term system and the brevity of terms is resulted in long terms, which convey a greater number of features of the concepts denoted by them. The desire to get rid of a large number of prepositions in terminology leads to the use of a number of combinations of nouns in the common case or compound hyphenated words: *corrugated asbestos-cement board, polypropylene fiber-reinforced concrete*. Different features of professional activity are verbally coined with objects in the structure of a phrase.

As a result, the professional designation acquires a descriptive character, and the variety of attributes is represented in it in a disaggregated form. Motivating features can express different properties of the concept. The purpose of an object and its function are reflected in the name when this object is mastered by a person. This is reflected in the names: *high-tensile alloy, dense aggregate, non-shrinking cement*. The purpose of the material is reflected in the names: *masonry stone, binding agent, architectural concrete*. The composition of a substance is very important for the choice of a building material, so the composition feature is reflected in a large number of names in the construction industry: *Portland cement concrete, cinder aggregate, non-ferrous alloy*.

Conclusions. To sum up the results of the study, the following conclusions can be drawn: the studied terms are formed by means of all typical structural methods of nomination – syntactic, morphological and semantic. The prevalence of the studied units is dominated by compound nominations – binary and multicomponent nominations formed by the syntactic method. Among one-word terms, there are semantic derivatives, derivative compounds and compound terms. Part of the one-word corpus consists of terms originating in Latin, Greek, German and French.

Terms affixal derivatives show a clear tendency to express certain single-mass categories in a wide range of word-formation models. The active use of specialised term-forming morphemes and models is explained by the need to create informatively motivated terms with predictable semantics. The cognitive approach to the study of the process of formation and functioning of terms for building materials has also allowed us to reconstruct the stages of cognitive and practical human activity, the principles of perception and categorisation of the world. The names of building materials allow us to describe the linguistic picture of this field of knowledge and activity.

The systematisation of the names of building materials in terms of cognitive linguistics makes it possible to establish what part of the knowledge about building materials is reflected in its name and what features are the basis for the nomination in each of these examples. Such important features are those of appearance, structure, purpose, and properties. The use of the onomasiological method for the analysis of terminology makes possible to:

- 1) establish how the concepts are related in the semantics of terminological units;
- 2) bring a particular name under a certain category;
- 3) identify the conceptual mechanisms of term formation and the nature of the motivation for a new name.

Thus, the formation and development of building terminology in a cognitive aspect involves understanding how language shapes our perception and comprehension of construction and architectural concepts. It explores how our mental processes categorize, interpret, and communicate ideas related to buildings, structures, and spaces. This includes examining how terminology evolves over time, influenced by cultural, technological, and societal changes, and how it reflects the cognitive frameworks we use to understand the built environment.

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