ISSN 0320–2372. ІНОЗЕМНА ФІЛОЛОГІЯ. 2024. Випуск 137. С. 72–81
INOZEMNA PHILOLOGIA. 2024. Issue 137. P. 72–81

UDC 811.111'374'373.46:55
DOI: http://dx.doi.org/10.30970/fpl.2024.137.4490

KNOWLEDGE SYSTEMS IN THE ENGLISH FIELD-SPECIFIC DICTIONARY

Olena Brona

Ivan Franko National University of Lviv,
1, Universytetska Str., Lviv, Ukraine, 79000
olena.brona@lnu.edu.ua

The study examines a potential for developing a concept-based dictionary of English geological terminology focusing on domain knowledge and semantic features. The results indicate that thematic structuring around domain concepts significantly enhances the representation of geological knowledge. By utilising English academic and educational corpora, the methodology incorporated cognitive linguistic theory, ontological principles, and advanced text corpus analysis. It was determined that organising terms hierarchically according to domain concepts improves the accuracy of knowledge representation. The study evaluated the impact of concept-based structuring on effective knowledge transmission, demonstrating its capacity to facilitate better communication among experts and novices. The proposed dictionary structure highlights the importance of precise and systemic organisation in capturing complex semantic relationships.

Key words: cognitive linguistics, concept-based dictionary, domain knowledge, English geological terminology, ontological structure.

Introduction. The significant increase in the number of terms, notably within science and technology, reflects the advancing civilizational development and progressive specialisation of various realms of human activities. The rapidity of this trend is captured by a non-standard, widely used and to-date anonymous term 'terminology explosion' (or its synonyms 'terminology boom', 'terminology proliferation' among others). The driving force behind this phenomenon is a practical demand for designating the output of cognitive and empirical work for the internal arrangement of recently generated knowledge and its subsequent use [2] and sharing in linguistic contexts. Another relevant consideration is the necessity to maintain communication precision [30], which either helps researchers to adequately depict reality or hinders generalisations, partly due to the misunderstandings occurring because of the over-fragmentation of knowledge for non-specialists [7].

An old saying states that knowledge is power. These words remain relevant today, as evidenced by the emergence of labels such as knowledge society [9], knowledge capital [16], knowledge engineering [13], or knowledge representation [21]. Should we share the meaning of the quote, then we acknowledge the crucial role of knowledge production, storage, and transmission in the evolutionary process. If we accept that terms embody specific forms of knowledge, we can assert that the current scenario raises terminological challenges. To address these challenges, it is essential to understand the precise scope of terms. This

ISSN 0320–2372. ІНОЗЕМНА ФІЛОЛОГІЯ. 2024. Випуск 137

prompts the question of how terms can be adequately described and effectively represented.

The article **objectifies** the rationale of thematic structuring of the dictionary around domain concepts determined based on English corpora and highlights the importance of systemic terminology organizing to accurately represent specific aspects of geological knowledge.

Previous Research in the Area. Modern academic studies have addressed cognitive, ontological and terminological aspects of linguistic representation in geology, examining how geological knowledge is structured, manipulated and transferred. Cognitive linguistics offers insights into the mental frameworks and conceptual structures that underlie terminology. For instance, Langacker identifies schemas which facilitate understanding and organisation of concepts characteristic to locational and configurational semantic domains [20], which can be applied to geological terms since many of them bear the meaning of 'where' and 'how'. Fillmore's theory of frame semantics goes in parallel focusing on mental frames, which are conceptual structures that relate elements and scenarios to the words used to describe them [14]. Through the conceptual blending theory Fauconnier and Turner [12] demonstrate how multiple cognitive spaces are combined to create comprehensive interpretations, which are vital for comprehending complex geological phenomena.

Ontological studies adopt a systematic perspective to investigate the nature and organisation of geological entities and their interrelationships [23]. Several of them have been created as per today, for instance in medicine [27], environmental science [3], agriculture [4], astronomy [17]. In English geological discourse, the development of ontologies [22; 24] focuses on establishing standardised frameworks which support data integration and information sharing as well as the nature and organization of geological entities and their interrelationships to accurately represent complex concepts ensuring consistency and clarity.

With the dynamic growth of knowledge in geology, terminological challenges gain particular relevance. Sager [26] specifically emphasises the problems of uniformity and standardisation of terms, Temmerman [28] introduces ontological perspective of the term system organisation and Faber [11] advocates for benefits of converting field-specific glossaries into knowledge data bases and the importance of managing both new and historical terms to maintain their continuity and coherence. In the context of science internalisation and Anglicisation in one respect and the desire to preserve and convey the cognitive sense of language-bound or territory-bound terms in another respect, their multiplication can potentially result in confusion and ambiguity interfering with effective communication [18]. The International Union of Geological Sciences and the Commission on Geoscience Information Management and Applications are addressing these problems by encouraging the standardisation of terminology and the compilation of comprehensive glossaries and dictionaries. From its side, the International Organization for Standardization puts efforts in developing relevant standards. ISO 704:2009 provides guidelines for principles and methods in developing terminologies, focusing on concept analysis and definition formulation. ISO 1087-1:2000 specifies the vocabulary for terminological work, defining key terms and concepts used in the field. These standards attain creating precise and unambiguous definitions, crucial for effective communication in scientific domains. ISO 860:2007, "Terminology work – Harmonization of concepts and terms", addresses the harmonization of terminological entries

across different languages and disciplines. The standard is particularly suitable for geosciences, where interdisciplinary and international collaboration is common.

Methodology. This study employs a diagnostic methodological approach to develop a concept-based English geological dictionary, integrating cognitive linguistic theory, ontological principles, and text corpus analysis. Initially, a comprehensive review of existing literature in cognitive linguistics, ontology, and terminography was conducted to establish a theoretical foundation. Provisions of frame semantics, conceptual blending, and knowledge representation frameworks were analysed for their applicability in geological terminology. The results of software-based corpus analysis of academic and educational texts were applied to ensure a representative sample of geological terminology which a field-specific dictionary is planned to be based on integrating linguistic and domain knowledge realms.

Results and Discussion. Within language users, a metaphor equates a person's stock of words to their vocabulary. A statement that someone has a rich vocabulary implies an assessment of the level of lexical competence and, consequently, a certain level of knowledge formally presented in dictionaries, encyclopaedias, thesauri etc. This metaphor remains relevant in linguistics and is the source of collocations such as 'mental vocabulary' or 'mental lexicon' [10]. This leads to the idea that there is a relationship between an individual vocabulary and a dictionary as a lexicographic product and a body of certain knowledge.

To distinguish between entities of human knowledge, their division and commonalities and to perceive the hidden paths that bind them together, Diderot in his "Encyclopédie" offered a model resembling the world map, which indicates countries, their location and alliances. His idea can be applied to a terminological dictionary. If so, it may be concluded that the author has succeeded in capturing the essence of a fundamental challenge, i.e. the representation of knowledge. In this view, a terminographer fulfils a dual task, both of an observer and of a creator; the dictionary becomes a model of knowledge, while the dictionary construction process becomes modelling. Thus, a model functions in two planes: as a model of a dictionary, i.e. a certain entity on the basis of which the dictionary is based, and a dictionary as a model, i.e. a certain representation of an entity [25; 6].

Models serve as a means of reasoning about entities. To simplify, knowledge is considered as a structure that forms a complex system of its elements. The dictionary can help to represent complex relationships in which different fragments of knowledge interact with each other. It can become a map, the path choice, which implies an acceptance of multidimensionality of interpretation.

One aspect of interpretation multidimensionality involves the description of connections between fragments of represented knowledge. For description purposes, dividing and distinguishing some simple or complex dictionary structures are required. This division can result in the loss of connections between various bits of the knowledge. Following Firth's idea that "you shall know a word by the company it keeps" [15, p. 11] it can be concluded that the meaning of a word is largely determined by its collocational context, that interpretation can generate potentially endless chain of meanings and that a dictionary cannot fully represent knowledge in its entirety.

Now, the question arises: can a perfect dictionary ever be created? Given the enormity of the task, the elusive nature of material, and financial demands of the project, a feasible

ISSN 0320–2372. ІНОЗЕМНА ФІЛОЛОГІЯ. 2024. Випуск 137

answer will be "no". The map metaphor, where concepts are landmarks and semantic relations are motorways, can lend a helping hand. The usefulness of a map is in its representativeness of certain facts about the territory; a domain dictionary's strength comes from its inclusion of specific meanings and their interpretations to fit with the formulation, target audience and purpose.

A domain dictionary is marked by a pronounced degree of selectivity. This is reflected in additional decisions that a terminographer has to make compared to a lexicographer [1]. In particular, the former has to choose which conceptual attributes a term should have to be recorded in the dictionary. The process of deciding implies determining boundaries between the thesaurus of a particular domain, that of other domains, and the common word stock.

It is possible to determine a portion of the domain-specific terminology that is covered by the general lexicon, and a portion that intersects with another domain-specific terminology or terminologies. Depending on the specific terminology, the subject of description may be the domain thesaurus or the domain thesaurus plus the overlapping part(s) of (an)other domain related thesaurus(i) including or excluding the empirical scientific nomenclature.

In light of the mutual influences between different sets of thesauri and the fluidity of their interaction, the question of criteria for placing each linguistic unit in the above sets emerges. It is a question that needs to be answered when working at a field-specific dictionary. To some extent, the personal knowledge of a linguist or that of a field expert can help make such judgements, which, inevitably, involves subjectivity. From a linguistic point of view, the division into domains is not a problem that linguistics can solve, since it is beyond of a linguist to classify terms into specific fields. A linguist can, however, determine whether, how and how often a given unit occurs in general or domain-specific texts. Text corpora processed with appropriate software are the tools that make justified assessment credible and advance natural language processing, machine learning and AI application in general and for translation tasks in particular. Ideally, the corpus make-up should correspond to texts or text types that a target user is likely to interact with. In recent years, increased efforts have been observed regarding projects for various language corpora, e.g. those listed in Sketch Engine or GRAK, but the potential inherent in field-specific, especially geo-ward (EarthArXiv – a volunteer-driven project existing so far), and more precisely English-Ukrainian ones (to be developed), still awaits the heyday.

Activities aimed at deciding on listing a term in the dictionary are subjected to the consideration of knowledge and cognitive realms since they determine the allocation of terminology stratum elements into domain-proper terms and common scientific terms [8], on the one hand, and theoretical terms and empirical terms [5; 19], on the other. The interplay of knowledge and cognitive hierarchy levels is reflected in the concept-navigated framed macrostructures populated with terms mined from target-audience mono- or multilingual corpora, for example from academic papers, student textbooks or popular science materials. Such an approach allows integrating or breaking down, if necessary, multiple semantic attributes indicative of geology specific knowledge system and its linguistic embodiment. In practice, concept like GEOLOGIC FEATURE may be defined using such terms as *cirque, dyke* or *scabland*, which are of domain-proper and empirical nature. When used in an academic context, they do not require extended explanation and do not cause problems for a target

user. However, if a target group is first-year students, for whom the field-specific language is a "foreign" one, then a dictionary presenting theoretical and empirical terms using common scientific terms as well as general vocabulary is a valuable aid able to configure a knowledge database.

It can be observed that systems are different in dictionaries with macrostructures organized by the alphabet and those systemically organized by concepts. In alphabetical dictionaries, data collected at the microstructure level, particularly definitions, play a prominent role. Dictionaries organized by concepts impart a fundamentally different character to the dictionary's organization based on semantic criteria. In this case, the central role is played by a hierarchical system resembling the macro- and microstructure of a common edition but powered by semantic meaning and sets of semantic relations. The position of a particular term in the thematic hierarchy enables inferring its attributes and precise definition.

A systemic concept-based dictionary is viewed as a specific terminographic output characterized by prioritizing the representation of relationships between terms, thereby highlighting the complexity of dependencies within the concept system. The key feature of a systemic field-specific dictionary is the unveiling of conceptual derivability.

The idea of conceptual derivability rests on the assumption that terms in a terminological system are not homogeneous in their complexity of understanding. Perceptions of what is simple and what is complex may differ between two people. Moving from the individual language user level to a higher level, where generalisation is possible, can be a practical solution to the problem. This paper argues for the relevance of such a perspective on terminology and its representation in a field-specific dictionary, especially since it is expected to store linguistic and extralinguistic knowledge in a collective mode.

The initial set of concepts and terms to be included in the dictionary is based on earlier work [29]. The conceptual categorisation of English terms, carried out for the said study, identified five concepts, namely GEOLOGIC EVENT, GEOLOGIC PROCESS, GEOLOGIC FEATURE, GEOLOGIC MATERAIL and GEOLOGIC TIME. Their relevance to geological terminology stems from the fact that a whole range of other geological terms stratified according to academic and educational corpora can be derived from them via semantic relations.

The table below shows a fragment of proposed entry organisation.

Table 1

Entry organisation in a geological concept-based dictionary

Corpus	Concept	Semantic attribute	Terms
Academic	G E O L O G I C PROCESS	change, continuity, surface	displacement, creep, denudation, exhumation, nivation
Educational	G E O L O G I C EVENT	deformation, result	buckling, calving, delamination, doming, seismic sea wave, uplift

For space saving reasons, definitions are not provided here but are planned to be taken from representative corpora and allocated respectively.

Conceptual derivation serves as a criterion for ordering terms within series and for determining sequences of concept frame levels within a dictionary. Levels are typical structural

elements in semantic-driven dictionaries which establish links between individual headword articles through hypernym-hyponym and holonym-meronym relations. The introduction of levels supported by respective attributes seems beneficial as it allows cognitive grouping of terms that are closely related to each other as well as listing collocations and synonyms. Moreover, mapped and level-wise structure of terminological meaning helps to partly reduce and clarify semasiological and onomasiological aspects of geological knowledge.

Conclusions. The increasing specialization in human activities promotes terminological studies essential for precise communication and effective knowledge sharing, especially in the fields like geology, where diverse approaches and methodologies lead to terminology disagreements. Thematic structuring of dictionaries around domain concepts can accurately represent knowledge. Cognitive linguistics, ontological studies, and terminological research offer insights into the mental frameworks underlying geological terminology. The use of corpus approaches and linguistic software enables terminographers to capture complex knowledge relationships. Domain-specific dictionaries, organized hierarchically by concepts, highlight dependencies and conceptual derivability. Developing concept-based dictionaries for geological terminology grounded in cognitive and ontological principles addresses expanding terminology challenges, enhancing communication precision and supporting knowledge integration.

A project to develop a concept-based dictionary for English geological terminology, grounded in cognitive and ontological principles, offers a practical solution to the challenges of expanding terminology. Such dictionaries enhance communication precision, support knowledge integration and effective knowledge transmission.

Future research should expand the corpus of geological texts to include more diverse sources, improving terminology comprehensiveness. Integrating advanced natural language processing and machine learning techniques can further refine concept-based dictionaries.

References

1. Alberts M. Lexicography versus terminography. *Lexikos*. 2001. P. 71–84.
2. Augusto L. M. Toward a general theory of knowledge. *Journal of Knowledge Structure and Systems*. Vol. 1. Iss. 1. P. 63–97.
3. Buttigieg P. L., Morrison N., Smith B., Mungall Ch. I., Lewis S. F.. The environment ontology: contextualising biological and biomedical entities. *Journal of Biomedical Semantics*. 2013. No. 4. Art. 43. URL: https://doi.org/10.1186/2041-1480-4-43
4. Caracciolo C., Stellato A., Morshed A., Johannsen G., Rajbahndari S., Jaques Y., Keizer J. The AGROVOC linked dataset. *Semantic Web*. 2013. Vol. 4. Iss. 3. P. 341–348.
5. Chartrand L. Similarity in conceptual analysis and concept as proper function. (Unpublished). 2019. URI: http://d-scholarship.pitt.edu/id/eprint/36442
6. Cimino J. J. Knowledge-based terminology management in medicine. *Recent Advances in Computational Terminology*. 2001. P. 111–126.
7. Davis M. A., Thompson K. Eight ways to be a colonizer; two ways to be an invader: a proposed nomenclature scheme for invasion ecology. *Bulletin of the Ecological Society of America*. 2000. No 81. P. 226–230.
8. De Bessé B., Nkwenti-Azeh B., Sager J. C. Glossary of terms used in terminology. *Terminology*. 1997. Vol. 4(1). P. 117–156.

9. Drucker P. F. The rise of the knowledge society. *Wilson Quarterly*. 1993. Vol. 17. No. 2. P. 52–71.
10. Emmorey K. D., Fromkin V. A. The mental lexicon. *Linguistics: The Cambridge Survey*. 1988. P. 124–149.
11. Faber P., León–Araúz P. Frame–based terminology applied to military science: transforming a glossary into a knowledge resource. *Lexicography*. 2019. Vol. 6 (1). P. 105–131.
12. Fauconnier G., Turner M. The way we think: Conceptual blending and the mind's hidden complexities. 2002. 464 p.
13. Feigenbaum E. Knowledge engineering: the applied side of artificial intelligence. *Annals of the New York Academy of Sciences*. 1984. Vol. 426. P. 91–107.
14. Fillmore C. J. Frame semantics. *Linguistics in the Morning Calm: Selected Papers from SICOL-1981*. Seoul: Hanshin Pub. Co., 1982. P. 111–137.
15. Firth J. R. A synopsis of linguistic theory. *Studies in Linguistic Analysis*. 1957. P. 1–31.
16. Hanushek E. A., Woessmann L. The knowledge capital of nations: Education and the economics of growth. MIT Press Books, 2015. 280 p.
17. International Virtual Observatory Alliance. (2011). IVOA Thesaurus. URL: http://www.ivoa.net/documents/latest
18. Kageura K. The dynamics of terminology: a descriptive theory of term formation and terminological growth. Benjamins, 2002. 322 p.
19. Krüger R. A cognitive linguistic perspective on explicitation and implicitation in scientific and technical translation. *Journal of Translation and Technical Communication Research*. 2013. Vol. 6(2). P. 285–314.
20. Langacker R. Foundations of Cognitive Grammar. Volume 1: Theoretical Prerequisites. 1987. 540 p.
21. Minsky M. A framework for representing knowledge. *The Psychology of Computer Vision*. 1975. P. 211–277.
22. Raskin R., Pan M. Knowledge representation in the semantic web for earth and environmental terminology. *Computers & Geosciences*. 2005. No 31(9). P. 1119–1125.
23. Richard S. M. Geoscience concept models. *Geological Society of America Special Paper*. No. 397. P. 81–107.
24. Richard S. M., Boisvert E., Brodaric B., Duffy T. GeoSciML: Enabling the exchange of geological map data. *Geoinformatica*. 2012. No. 16(2). P. 373–392.
25. Roche C., Costa R., Carvalho S., Almeida B. Knowledge-based terminological e-dictionaries: The EndoTerm and al-Andalus Pottery projects. *Terminology*. 2019. Vol. 25 (2). P. 259–290.
26. Sager J. C. A practical course in terminology processing. John Benjamins, 1990. 258 p.
27. Smith B., Ashburner M., Rosse C. *et al*. The OBO Foundry: coordinated evolution of ontologies to support biomedical data integration. *Nature Biotechnology*. 2007. No. 25. P. 1251–1255.
28. Temmerman R., Kerremans K. (2003). Termontography: Ontology building and the sociocognitive approach to terminology description. *Proceedings of CIL 17*. Matfyzpress, 2003. Vol. 7. P. 1–10.
29. Брона О. А. Структура і семантика терміноконцептів англомовного геологічного дискурсу: дис. докт. філос.: 035. Львів, 2023. 274 с.
30. Зубков М., Микульчик Р., Мисак Р. Розробляння нової редакції ДСТУ ISO 860 "Термінологічна робота. Гармонізування понять і термінів". *Вісник Національного університету "Львівська політехніка". Серія "Проблеми української термінології"*. 2017. № 869. С. 50–53.

Список використаної літератури

1. Alberts M. Lexicography versus terminography. *Lexikos*. 2001. P. 71–84. 2. Augusto L. M. Toward a general theory of knowledge. *Journal of Knowledge Structure and Systems*. Vol. 1. Iss. 1. P. 63–97.
3. Buttigieg P. L., Morrison N., Smith B., Mungall Ch. I., Lewis S. F.. The environment ontology: contextualising biological and biomedical entities. *Journal of Biomedical Semantics*. 2013. No. 4. Art. 43. URL: https://doi.org/10.1186/2041-1480-4-43
4. Caracciolo C., Stellato A., Morshed A., Johannsen G., Rajbahndari S., Jaques Y., Keizer J. The AGROVOC linked dataset. *Semantic Web*. 2013. Vol. 4. Iss. 3. P. 341–348.
5. Chartrand L. Similarity in conceptual analysis and concept as proper function. (Unpublished). 2019. URI: http://d-scholarship.pitt.edu/id/eprint/36442
6. Cimino J. J. Knowledge-based terminology management in medicine. *Recent Advances in Computational Terminology*. 2001. P. 111–126.
7. Davis M. A., Thompson K. Eight ways to be a colonizer; two ways to be an invader: a proposed nomenclature scheme for invasion ecology. *Bulletin of the Ecological Society of America*. 2000. No 81. P. 226–230.
8. De Bessé B., Nkwenti-Azeh B., Sager J. C. Glossary of terms used in terminology. *Terminology*. 1997. Vol. 4(1). P. 117–156.
9. Drucker P. F. The rise of the knowledge society. *Wilson Quarterly*. 1993. Vol. 17. No 2. P. 52–71.
10. Emmorey K. D., Fromkin V. A. The mental lexicon. *Linguistics: The Cambridge Survey*. 1988. P. 124–149.
11. Faber P., León-Araúz P. Frame–based terminology applied to military science: transforming a glossary into a knowledge resource. *Lexicography*. 2019. Vol. 6 (1). P. 105–131.
12. Fauconnier G., Turner M. The way we think: Conceptual blending and the mind's hidden complexities. 2002. 464 p.
13. Feigenbaum E. Knowledge engineering: the applied side of artificial intelligence. *Annals of the New York Academy of Sciences*. 1984. Vol. 426. P. 91–107.
14. Fillmore C. J. Frame semantics. *Linguistics in the Morning Calm: Selected Papers from SICOL-1981*. Seoul: Hanshin Pub. Co., 1982. P. 111–137.
15. Firth J. R. A synopsis of linguistic theory. *Studies in Linguistic Analysis*. 1957. P. 1–31.
16. Hanushek E. A., Woessmann L.. The knowledge capital of nations: Education and the economics of growth. MIT Press Books, 2015. 280 p.
17. International Virtual Observatory Alliance. (2011). IVOA Thesaurus. URL: http://www.ivoa.net/documents/latest
18. Kageura K. The dynamics of terminology: a descriptive theory of term formation and terminological growth. Benjamins, 2002. 322 p.
19. Krüger R. A cognitive linguistic perspective on explicitation and implicitation in scientific and technical translation. *Journal of Translation and Technical Communication Research*. 2013. Vol. 6(2). P. 285–314.
20. Langacker R. Foundations of Cognitive Grammar. Volume 1: Theoretical Prerequisites. 1987. 540 p.
21. Minsky M. A framework for representing knowledge. *The Psychology of Computer Vision*. 1975. P. 211–277.
22. Raskin R., Pan M. Knowledge representation in the semantic web for earth and environmental terminology. *Computers & Geosciences*. 2005. No 31(9). P. 1119–1125.
23. Richard S. M. Geoscience concept models. *Geological Society of America Special Paper*. No. 397. P. 81–107.

24. Richard S. M., Boisvert E., Brodaric B., Duffy T. GeoSciML: Enabling the exchange of geological map data. *Geoinformatica*. 2012. No. 16(2). P. 373–392.
25. Roche C., Costa R., Carvalho S., Almeida B. Knowledge-based terminological e-dictionaries: The EndoTerm and al-Andalus Pottery projects. *Terminology*. 2019. Vol. 25 (2). P. 259–290.
26. Sager J. C. A practical course in terminology processing. John Benjamins, 1990. 258 p.
27. Smith B., Ashburner M., Rosse C. *et al*. The OBO Foundry: coordinated evolution of ontologies to support biomedical data integration. *Nature Biotechnology*. 2007. No. 25. P. 1251–1255.
28. Temmerman R., Kerremans K. (2003). Termontography: Ontology building and the sociocognitive approach to terminology description. *Proceedings of CIL 17*. Matfyzpress, 2003. Vol. 7. P. 1–10.
29. Brona O. A. Struktura i semantyka terminokontseptiv anhlomovnoho heolohichnoho dyskursu: dys. dokt. filos.: 035 [Structure and semantics of terminological concepts in English geological discourse: PhD thesis: 035]. Lviv, 2023. 274 S.
30. Zubkov M., Mykulchyk R., Mysak R. Rozrobliannia novoi redaktsii DSTU ISO 860 "Terminolohichna robota. Harmonizuvannia poniat i terminiv" [Development of DSTU ISO 860 "Terminology work. Harmonization of concepts and terms" new edition]. *Visnyk Natsionalnoho universytetu "Lvivska Politekhnika". Seriia "Problemy ukrainskoi terminolohii"*. 2017. № 869. S. 50–53.

Article submitted 07.07.2024
Accepted for publication 17.07.2024

ISSN 0320–2372. ІНОЗЕМНА ФІЛОЛОГІЯ. 2024. Випуск 137

СИСТЕМИ ЗНАННЯ В ГАЛУЗЕВОМУ АНГЛІЙСЬКОМОВНОМУ СЛОВНИКУ

Олена Брона

Львівський національний університет імені Івана Франка,
вул. Університетська, 1, м. Львів, Україна, 79000
olena.brona@lnu.edu.ua

У дослідженні запропоновано організацію словника англійськомовних геологічних термінів на основі концептів із метою удосконалення форм представлення знань та комунікації. Організація словника на основі галузевих концептів допомагає відобразити складні семантичні зв'язки геологічних знань. Деталізовано комплексний характер геологічної термінології, зумовлений вузькою спеціалізацією, та наголошено на важливості чіткого представлення інформації шляхом її тематичного структурування. Використання здобутків когнітивної лінгвістики та онтологічних досліджень відкриває можливості для розуміння ментальних структур та організації геологічних сутностей. У роботі застосовано комбіновану методологію, що включає елементи когнітивної лінгвістики, онтологічного підходу, фреймової семантики, концептуального суміщення та фреймів представлення знань. Корпусний аналіз англійськомовних академічних і навчальних текстів забезпечив репрезентативну вибірку геологічної термінології. Проаналізовано взаємозв'язок між загальним вокабуляром і галузевим словником, зокрема розглянуто питання про рішення термінографів щодо включення термінів та їхніх концептуальних ознак до реєстру. Ієрархічна організація термінів у рамках концептів полегшує репрезентацію знань і уточнює багатогранні взаємозв'язки в системі концептів. Вихідний набір концептів і термінів сформовано на базі попереднього дослідження, в якому визначено ключові англійськомовні геологічні терміноконцепти та похідні від них терміни на підставі семантичних взаємозв'язків. Концептуальна структура словника передбачає групування когнітивно пов'язаних термінів і висвітлює семасіологічні та ономасіологічні аспекти їхнього галузевого значення. У дослідженні наголошено на необхідності створення концептуального термінологічного словника, який би враховував пріоритетність зв'язків між термінами та сприяв стандартизації, завдяки чому підвищувалася би ефективність комунікації та інтеграції знань. Майбутні дослідження передбачають розширення корпусу геологічних текстів і застосування сучасних методів опрацювання природної мови та машинного навчання для вдосконалення концептуальних галузевих словників. Співпраця між лінгвістами, геологами та спеціалістами з комп'ютерних наук відіграє важливу роль у забезпеченні потреб геологічної спільноти в нових форматах представлення знань.

Ключові слова: когнітивна лінгвістика, концептуальний словник, галузеві знання, англійськомовна геологічна термінологія, онтологічна структура.