The article deals with the problem of obtaining, processing, storing and transferring professional information with the help of language means and the formation of a system of professional knowledge. The paper substantiates the term ‘cognitive terminological structure’ proposed by the authors to denote a unit of professional consciousness, in which a fragment of the professional worldview is concentrated and which is verbalized through terms. The formation of such a cognitive unit is the speaker’s reaction and reflection to the phenomena of the scientific world. Understanding of these phenomena is formed in the mind with the acquisition of knowledge about them, and ideas about them are continuously transformed by added professional and relevant information, are stored in professional memory and verbalized in the form of a term. Terminological units are associated with the cognitive terminological structures they verbalize. Such cognitive
terminological structures are clumps of information stored in the memory of a professional metalanguage user. From the linguo-cognitive point of view the authors offer to understand the term as a word or phrase, representing a fragment of the professional worldview through the verbalization of the cognitive terminological structure within a certain scientific / professional discourse.

**Keywords:** term, structure, cognitive unit, concept, knowledge, verbalization.

### 1. Introduction.

Language is the main way for obtaining, processing, recording, storing, and transmitting human knowledge. For a long time, researchers in various fields of the human study have been trying to combine mental representations with language forms, to find ways and means of studying thinking and consciousness of a person generating single language units and the whole texts. Considering cognitive processes in close connection with the language, with the help and means of which the knowledge is objectified, scientists highlight cognitive approach to the study of human consciousness and knowledge organization forms, which requires joint efforts of researchers in many sciences and leads to creation of new scientific paradigms.

The development of cognitive linguistics has posed many new questions to researchers. Thus, studying the relationship between the processes of language / speech and mental activities set the scientists thinking about how cognitive operations and language structures relate and how intangible conceptual content is realized by means of language; whether it is possible to trace and structure the procedure of interpreting conceptual content, formed and existing in language consciousness, through language units. That is, linguistics has approached to go beyond the linguistic unit in order to realize the mentality, the processes of which generate these linguistic units. For the first time, the scientific community pondered not only the issues of finding grounds (rather subjective and largely hypothetical factors), but also the possibility of formulating causal explanations through reflection and justification.

### 2. Literature Review.

Today cognitive linguistics tends “to view linguistic signs as being formed as a result of cogitative and speech operations, peculiar conceptual reflections of objects, phenomena, and characteristics of the objective world” (Kostusiak, 2020, p. 2). The study of language units from a cognitive point of view requires manipulations with over-language structures, which are the result of systematic linguistic and mental activity. At the same time, the combination of units of study of cognitive and linguistic spheres turned out to be a difficult task: linguistic facts are units of natural science type, i.e. with the proper evidence base the study of such units are objective. But the units of mental activity – cognitive structures – do not have natural scientific interpretation through empirical experience, which is the reason for rather subjective conclusions from the study of these units, the evidence base of which is not causal explanations, but rather giving grounds.

Modern terminology science is characterized by its cognitive orientation towards the study of terminological units as a result of development of scientific knowledge (Ye. Holovanova, S. Hrynov, V. Iveshchenko, V. Leichik, N. Mishankina, Ye. Skorohodko, and others) through understanding the processes of their secondary nomination (V. Kalko, Ye. Karpilovskaya, T. Prystaiko, O. Selivanova, R. Temmerman, and others). At present, there is every reason to talk about the cognitive essence of terms as structures of scientific consciousness, such as conceptual construct (T. Drozdova, A. Ilenkov, L. Kucheruk, V. Novodranova, and others), or terminological concepts (T. Stasiuk, O. Yuzhakova, and others), or frame models (P. Faber, H. Sadovnikova, Yu. Vit, and others), through which fragments of various professional worldviews are objectified (M. Alefiirenko, Yu. Apresian,
3. Aim and Objectives.
This paper aims at analyzing the problem of obtaining, processing, storing and transferring professional information with the help of language means and the formation of a professional knowledge system. The need to study this aspect is caused by the awareness of the urgent need to find ways to interpret the processes and results of professional consciousness through the only objective tool today – the language itself. Central to the study is the theory of cognitive terminological structure meaning a unit of professional consciousness, which concentrates a fragment of the professional worldview and has a verbal realization in the form of terms.

This aim can be achieved through solving the following tasks: to analyse the phenomenon of cognitive structure in the humanities, to substantiate the term ‘cognitive terminological structure’ introduced into scientific discourse.

4. Methodology.
The research methods used in the study include general scientific methods (induction and deduction, analysis and synthesis). Among linguistic methods there are a descriptive method, linguistic observation, and a definition analysis. The theoretical character of the work does not require any empirical methods to be employed.

5. Results.
Understanding the essence of any complex phenomenon begins with understanding the essence of the concept nominating it.

The Oxford Dictionary of Difficult Words gives the information that the adjective cognitive is a derivate of the noun cognition meaning “the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses; a result of this; a perception, sensation, notion, or intuition” (Hobson, 2004, p. 78). Modern Philosophy considers cognitive to be “those mental processes involved in understanding, believing as distinct from volitional processes such as wanting or intending” (Proudfoot et al., 2010, p. 68).

The very phenomenon structure is complex and multifaceted. Philosophy by structure means “a whole set of parts” (Жюлиа, 2000, p. 431), “a set of stable links of the object, ensuring its integrity and identity to itself, the preservation of basic properties in various external and internal changes, the invariant aspect of the system. The category structure is the development of the concept form (form is the structure of content). The structure expresses what continues to be stable, relatively unchanged in various transformations of the system. At the same time, the structure is inconceivable outside the system, and the system always has a structure” (Некрасова et al., 2008, p. 82). An important property of the structure is that it is “formed not by any, but, above all, by natural, essential links and relationships” (Алексеев, 2004, p. 374). Structure as a category is considered from the point of view of the conceptual system. According to G. Ruzavin, “in the conceptual system, for example, in theory, the notions and judgments that form it are connected by logical relations of definition and conclusion (deduction)” (Фролова, 2001, p. 543).

Explanatory dictionaries of common vocabulary contain many definitions of a given lexical unit, which reveal the most diverse aspects of the very phenomenon of structure and...
testify to its complex and ramified essence: “1) the structure of something is the way in which it is made, built, or organized, with all its different parts or aspects forming a particular shape, pattern, or system; 2.1) something that has been formed or arranged in a particular way; used especially in discussing chemistry, physics, geometry, etc.; 2.2) something that has been built or constructed, especially a large building; 3) the structure of a group of people such as a family, an organization, or a society is the pattern of their relationships with each other and the way their various roles, powers, laws, etc. are arranged; 4) a structure of thinking, working, or behaving is a method of thinking, working, or behaving that will help you to plan or organize activities, relationships, information, etc. in an orderly and useful way; 5) a system, activity, etc. that has structure has things well arranged and neatly organized and is therefore efficient; 6) if you structure something, you arrange it in a careful, organized pattern or system” (Sinclair, 1992, p. 1451).

The Visual Thesaurus presents the word map for this lexical unit, which demonstrates multidimensional and interdisciplinary nature of this notion:

![Figure 1. Word maps for structure (Visual Thesaurus)](image)

The data obtained demonstrate a complex internal structure of the analyzed terms, which often results in contradictory meanings of those terminological complexes in which these units can be used. This problem is especially acute when it comes to ambiguous and controversial phenomena, for which ambiguous units are used.

5.2. Cognitive structure as an over-language unit.

The issue of the phenomenon of cognitive structure and its essence fell into the focus of research attention of many scientists and received different – sometimes opposite – interpretations from the standpoint of various sciences and branches of knowledge. Thus, from a general cognitive point of view, the cognitive structure of the field of knowledge is understood as “a component of a coherent semantic representation of a formalized model that reflects the content of this field” (Костенко et al., 2016, p. 50). The cognitive structure of cognition is interpreted by scientists as a structure that “determines the possibility of decoding, interpretation and transmission of cultural, linguistic, historical information through language” (Авдеева, 2013, p. 214). Psychology under cognitive structures means “hypothetical elements of the cognitive apparatus of a person, the peculiarities of the
structure of which the style and effectiveness of cognitive activity depends on” (Нарциссова, 2010, p. 385). Other scholars see the cognitive structure as a “generalized abstract representation of the objective world” (Гилев, 2007, p. 33), “internal relatively stable psychological system of knowledge representation, which is also a system of extraction and analysis of current information. It also contains a base of empirical knowledge about the surrounding material world” (Алефиренко, 2007, p. 394).

В. К. Garner explains the phenomenon of cognitive structures as “the basic mental processes people use to make sense of information” (Garner, 2007, p. 2). She suggests using terms mental structures, mental tools and patterns of thought to refer to such processes as well. The researcher developed the classification of cognitive structures, according to which all cognitive structures are divided into three interdependent categories:

1. “Comparative thinking structures process information by identifying how bits of data are alike and different” (ibid.). Such structures include recognition, memorization, conservation of constancies, classification, spatial and temporal orientation, metaphorical thinking.

2. “Symbolic representation structures transform information into culturally acceptable coding system” (ibid.). This type of structures includes verbal and nonverbal language; mathematics; music and rhythms; movements, dance, and gestures; interpersonal interactions; graphics; sculpture and constructions; simulation, drama and multimedia.

3. “Logical reasoning structures use abstract thinking strategies to systematically process and generate information” (ibid.). They include deductive and inductive reasoning, analogical and hypothetical thinking, cause-effect relationships, analysis, synthesis, evaluation, problem framing and solving.

To study and understand the process of formation and functioning of cognitive structures, the researcher introduces the term metability = meta (meaning ‘change’) + ability (“to describe the ongoing, dynamic, interactive cycle of learning, creating, and changing”) (ibid., pp. XIV–XV).

The cyclic nature of the dynamic process of metability is schematically represented by the scientist as follows:

![Figure 2. Metability as a Dynamic Cycle (Garner, 2007, p. XV)](image)

Exploring the process and prerequisites for development of students’ cognitive structures in the learning process, В. К. Garner proposes a model of formation of these...
structures through reflexive awareness and visualization, which directly affects the quality and metability:

![Diagram](image)

**Figure 3. Reflective awareness and visualization develop cognitive structures and foster metability (Garner, 2007, p. 13)**

Explaining the use of cognitive structures by students and building the path from information processing to the creation of new meaning, B. K. Garner identifies the following stages:

1. Making connections. “Cognitive structures help students make connections with prior knowledge and experience by bridging from the known to the unknown” (Garner, 2007, p. 5).
2. Finding patterns and relationships. “Cognitive structures help students compare, analyze, and organize information into patterns and relationships” (ibid.).
3. Formulating rules. “Cognitive structures help students formulate rules that make processing information automatic, fast, and predictable” (ibid., p. 7).
4. Abstracting generalizable principles. “Cognitive structures help students abstract generalizable principles that apply or transfer to situations other than the original learning context” (ibid., p. 9).

This approach can be applied to the process of formation of cognitive structures not only in the process of academic training, but also to the development of cognitive structures in the process of professional activity and awareness of professional world.

R. J. Shavelson considers the cognitive structure as “a hypothetical construct referring to the organization (relationships) of concepts in memory” (Shavelson, 1972, pp. 226–227). D. Ifenthaler, I. Masduki and N. M. Seel state that often cognitive structures, which also known as knowledge structures or structural knowledge, are seen as “the manner in which an individual arranges facts, concepts, propositions, theories, and raw data at any point in time” (Ifenthaler et al., 2011, p. 42).

So, according to the existing theories of cognitive structures, it can be argued that, in general, cognitive structures are understood as generalized typed structures of knowledge organization to represent a particular situation in the human mind; mechanisms for receiving, processing, storing, retrieving and further using information necessary for cognitive reproduction and cognitive reflection of what is happening.
In modern cognitive linguistics, according to the observations of Ye. Ivanova, the concept of cognitive structure “is used quite often and widely both when analyzing large information blocks and when considering information contained in one sentence. Cognitive structure is defined as a scheme for representing knowledge” (Иванова, 2003, p. 9).

From the point of view of cognitive linguistics, Ye. Lukashevich, under the cognitive structure, mediating the objective world in the human psyche, understands “the method / result of compiling and processing certain information in the consciousness of an individual” (Лукашевич, 2003, p. 293). According to the scientist, the conceptual structures are formed on the basis of cognitive structures, that is “the result of appropriating information, embedding it in the conceptual system of the individual” (ibid.). The author also notes that the formed conceptual structures provide the formation of new cognitive structures and the restructurings of existing ones, thereby cognitive structures are dynamic formations.

So, given the fact that cognitive structures are open, as a result of the interchange of information units and energy with the external environment, cognitive structures undergo changes and reorganization; “in this way, there is a transition from the old structure and system to the new, and under the influence of a number of random factors at the bifurcation point, fundamentally new properties, qualities and patterns [of new cognitive structures] appear” (Фролова, 2001, p. 543).

According to N. Golubeva, “the cognitive structure as a result of cognitive representation is a form of encoding and storing information” (Голубева, 2007, p. 84). The researcher agrees with the theory of V. Krasnykh, who characterizes the cognitive structure as “an indivisible cognitive unit that preserves the “folded” knowledge and / or representations” (Красных, 2003, p. 64). The scientist notes that cognitive structures are “the areas of the cognitive space organized and structured in a certain way. These are a kind of “elementary” units, that is, basic, essential, on the one hand, and further indivisible – on the other” (ibid.). The author adds that such structures are a meaningful form of encoding and storing information.

The study of specific types of discourses and varieties of linguistic personalities generate an understanding of the phenomenon of cognitive structure in relation to the situation being analyzed. Thus, N. Belous proposes an analysis of conflict discourse, within which she defines the cognitive structures of a conflicting linguistic personality as “data structures for representing a certain collision situation in the consciousness of an individual, that is, those responsible for receiving, collecting and transforming information in accordance with the requirement of reproduction stable, normal, usual characteristics of the conflict” (Белоус, 2008, 64). The scholar also notes the presence of several types of such structures, each of which underlies a specific level of cognitive reflection.

According to Encyclopedia of the Sciences of Learning cognitive structure is understood as “a psychological construct that accounts for a form of human knowledge. Schema and mental models are examples of cognitive structures. Cognitive structure provides meaning and organization to experiences and guides both the processing of new information and the retrieval of stored information” (Seel, 2012, p. 32). This approach and understanding of the essence of cognitive structure is the theoretical basis for distinguishing a special type of cognitive structures – cognitive terminological structure.

6. Discussion.

Traditionally, ‘a term’ was understood as a linguistic unit that “expresses a specific concept, has a precise definition, and performs the functions of sign systematization, scientific communication, gnoseological and heuristic functions, and is characterized by accuracy, brevity and ease of derivative term creation” (Bogachyk, 2020, p. 5). Later, the
cognitive paradigm shifted the attention of researchers to the internal content of the term and made it possible to speak of the term as a linguistic basis of any metalanguage, a unit of the cognitive-communicative space. Moreover, “the cognitive approach to the description of the terminological system requires that terminological units be described conceptually as certain cognitive structures, that is, as specific structures of special knowledge” (Новодранова, 2013, p. 13).

Taking into account the linguo-cognitive approach to the analysis of linguistic units, we propose to understand the term as a word or phrase, representing a fragment of the professional worldview through the verbalization of the cognitive terminological structure within a certain scientific/professional discourse.

Observations of linguistic terminological material, as well as the findings of cognitivists within various scientific fields allow us to identify a new unit of measurement of human cognitive space – a cognitive terminological structure, which we define as “a unit of professional consciousness, in which a fragment of the professional worldview is concentrated and which is verbalised through the terms” (Матвєєва, 2020, p. 8).

The formation of such a cognitive unit is the speaker’s reaction and reflection to the phenomena of the professional world, which are introduced into consciousness with the acquisition of knowledge about them, continuously transformed with the receipt of additional professional and related everyday information, stored in professional memory and have verbal realization in the form of terms.

According to the statement of D. Glynn, “language is the vehicle for expressing meaning and so we can assume that speakers will constantly search for formal ways of encoding what they wish to express” (Glynn, 2010, p. 241). At the same time, one of the important characteristics of the process of verbalization of the cognitive terminological structure is its reliance on conceptual units already existing in human consciousness, formed in the process of primary, non-professional world cognition, the mechanisms of correlating these units with new knowledge and filling them with additional semantics, which results in terminological conceptualization and formation (in most cases) of a secondary linguistic unit – a term.

Professional knowledge is objectified in the professional worldview through linguistic units that ensure the functioning of a specific discourse, as a result of which the explanation of the nature of linguistic phenomena should be sought, among other things, in the cognitive mechanisms of knowledge processing. The network of cognitive terminological structures of the professional information holder provides intrasystem connections and links for each branch of professional knowledge.

Due to the character of the cognitive terminological structure, the unobservable nature of this mental unit, cognitive terminology must apply the mechanism of linguistic reconstruction of the cognitive terminological structure, the starting point for which (reconstruction) is the verbalizer of such a structure – the term. As I. Shtern notes, “through the linguistic material it is possible to determine the main features inherent in the process of understanding in general, to reconstruct the universally significant cognitive mechanisms of understanding as a universal manifestation of consciousness” (Штерн, 1998, p. 284).

Terminological units are associated with the cognitive terminological structures they verbalize. Such cognitive terminological structures are clumps of information stored in the memory of a professional metalanguage user. Each subsequent structure or complex of structures is created from the components of other terminological structures that are already stored in memory, combined with new background and professional information, and provide adequate cognitive processing of new professional situations. There is also a number of peripheral and intermediate concepts that are located between two conceptual spheres,
overlap one another and combine the features of two or more adjacent conceptospheres. This hierarchical nature of the links between units of language and consciousness ensures the consistency and integrity of the cognitive context.

We suppose that schematically, the path from a linguistic to a mental terminological unit can be laid as follows: each discrete term activates a system of concepts that enrich the explicit meaning of the term with a number of implicit meanings; the ontological ideas about the system of concepts are introduced into the array of empirical data; conceptualization takes place in a specific professional discourse, which ensures the theoretical organization of knowledge around the term and instant multidimensional schematization of intrasystem inter-conceptual connections within the framework of this discourse; this leads to a concentrated fragment of the professional worldview through the formed cognitive terminological structure. Such processes ensure the framework of the mental space of the professional worldview, in which the semantic structures (formed as a result of the cognitive activity of a specialist) coexist, and are similar in all languages due to the universal nature of human cognitive processes (perception of professional information, its coding, storage, processing, decoding, use, transformation, etc., that is, the arrangement of incoming professional information and transformation of this information into professional knowledge), which does not exclude the influence of national, cultural and historical factors on the verbalization of the concepts of the professional worldview.

7. Conclusions.

Cognitive terminological structure is a fluid mental structure. Obviously, it is formed with the active participation of the subject of professional activity in the process of mental creativity and remains in the human mind in the form of a certain professional image. Reflecting the previous professional experience, the cognitive terminological structure determines the vector of movement of the interpretation of the next experience.

In language every cognitive terminological structure is represented by terminological units that reflect the content of this cognitive structure. The study of the cognitive mechanisms of knowledge processing will bring scientists closer to explaining the essence of many language phenomena and understanding the step-by-step paths from a terminological linguistic unit to a mental entity in which a fragment of the professional worldview is concentrated, and vice versa.

The prospect of studying the stated problem is to involve empirical study of the language material of specific terminological systems in order to identify common and different cognitive background of terminological units in different languages and within different professional worldviews.

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Бібліографічний опис:

Анотація
У статті пропонується новий підхід до осмислення процесів отримання, обробки, зберігання та передачі професійної інформації мовними засобами та формування системи професійних знань. У роботі обґрунтовано запропонований авторами термін «когнітивна термінологічна структура» для позначення одиниці професійної свідомості, в якій зосереджений фрагмент професійної картини світу і яка має словесну реалізацію у вигляді термінів. Формування такої когнітивної одиниці є реакцією та рефлексією мовця на явища наукового світу. Розуміння цих явищ формується у свідомості з набуттям знань про них, а уявлення про них безперервно трансформуються у зв'язку з додатковою професійною та актуальною інформацією, зберігаються у професійній пам'яті та вербалізуються у вигляді терміна. Термінологічні одиниці пов'язані з когнітивними термінологічними структрами, які вони вербалізують. Такі когнітивні термінологічні структури є згустками інформації, що зберігаються в пам'яті професійного користувача метамови. Автори пропонують лінгвокогнітивний погляд на термін як слово чи словосполучення, що репрезентує фрагмент професійної картини світу через вербалізацію когнітивної термінологічної структури в межах певного наукового/професійного дискурсу.

Ключові слова: термін, структура, когнітивна одиниця, поняття, знання, вербалізація.