

Knowledge Structures and Ways of Their Description in Cognitive Terminology Research

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ABSTRACT

Cognitive Terminology appeared as a continuation of previous stages of terminological studies and is based on the anthropocentric principle, attention to cognition and communication. This interdisciplinary and comprehensive approach brings forth new objectives, foundations, methodology and procedures. They present a terminological meaning in relation to personal thoughts reflecting social, pragmatic and other extra-linguistic factors in knowledge structures according to cognitive mechanisms and categorization in the on-going interaction in specialized discourse.

In discourse of modern technology, telecommunication, legal court communication and discourse of clinical psychiatry nominative terminological units dominate. They are shown in the paper on the basis of various cognitive models – propositions as part of cognitive-onomasiological modelling, image schemas, conceptual metonymy and metaphor, frames representing terminological systems as dynamic models of human cognition. The variability of concepts and the specificity of common and special knowledge conceptualization in terminological units functioning in professional discourse is biased with the answer to intricate questions of the perceptual and conceptual sources of term formation in interaction and terminological systems.

KEYWORDS: terminological studies, a term, Cognitive Terminology study, special discourse, categorization, conceptualization, knowledge structures.

ANOTACIJA

Kognityvinė terminologija, atsiradusi kaip ankstesnių terminologijos tyrimų tęsa, grindžiama antropocentrinio principu ir yra sutelkta į pažinimą bei komunikaciją. Toks daugiapusis tarpdalykinis požiūris iškelia naujus tikslus, teikia naujus pagrindus, metodologiją ir procedūras. Terminologinė reikšmė siejama su mąstymu, atspindinčiu socialinius, pragmatinius ir kitus ekstralingvistinius žinių struktūrų veiksmus, kaip tai numato kognityviniai mechanizmai ir specializuoto diskurso sąveikos kategorizavimas.

Šiuolaikinių technologijų diskurse vyrauja telekomunikacijų, teisinės teismams būdingos komunikacijos ir klinikinės psichiatrijos diskurso nominatyviniai terminologiniai vienetai. Straipsnyje jie atskleidžiami remiantis skirtingais kognityviniais modeliais – teiginiais kaip kognityvinio-onomasiologinio modeliavimo dalimi, vaizdinių schemomis, konceptualiosiomis metaforomis ir metonimijomis, terminų sistemas kaip dinامينius žmogiško pažinimo modelius perteikiančiais freimais. Su sąvokų įvairove, bendrųjų ir specialiųjų žinių konceptualizavimo teikiant terminologinius profesinio diskurso vienetus ypatumais susijęs atsakymas į keblius klausimus dėl suvokimo ir konceptualizacijos kuriant terminus ir terminų sistemas šaltinių.

ESMINIAI ŽODŽIAI: terminologijos tyrimai, terminas, kognityvinės terminologijos tyrimai, specialusis diskursas, kategorizavimas, konceptualizavimas, žinių struktūros.

INTRODUCTION

Terminology shaped its object of study in various ways, being the focal point of a considerable number of contributions that have departed from a variety of disciplines, including philosophy, logics, theoretical and applied linguistics, information science, computational linguistics, sociology and pragmatics. Each of these disciplines widened and deepened the scope of terminology studies reflecting the prevalent ideas on term and its semantics. They contributed the theoretical foundations, research purpose, a set of exploited notions and methods. Each new stage contributing to Terminology development still allowed to retain much of the previous stages. Modern Terminology as a more complex domain of investigation is based on the results of previous approaches and new perspectives in understanding of cognition and communication. Nowadays, it is a mega interdisciplinary approach incompatible to previous goals, which tries to represent term semantics and terminological systems more precisely in the cognitive and functional perspective. It fundamentally takes into account different spheres of human knowledge in dynamic mental processes accompanying special communication.

Here we provide an overview on different spheres of terminology studies and particularly those brought by the shift to cognitive and functional perspective of linguistic and nonlinguistic knowledge shaping terminology work. This perspective has changed the terminology research, because it reveals human knowledge through cognitive processes in interlocutors' mind in understanding the reality and functional mechanisms in language use. It is aimed at revealing socio-cultural conditioning of special discourse and human thinking in communication.

The paper does not intend to give an exhaustive overview of terminology development with regard to all works published; the major focus is to review how the novel developments in linguistics influenced terminology studies in Russia and vice versa – how some advances in terminology influenced the linguistic enterprise in general. At the beginning of this article I outline the major stages of its evolution and postulate the objective of terminology research following research principles and methodology of Cognitive Terminology.

1. THE DEVELOPMENT OF TERMINOLOGICAL STUDIES

The following paragraph proposes in synopsis the terminology development in the most general scope starting with the traditional approaches and proceeding with the recent advances in linguistics.

In the early days of terminology studies a term was described as a unit characterized by a strict definition, one-to-one correspondence between the term and its reference, avoiding polysemy and ambiguity of a term, imitating the pertinent tendencies in formal sciences – *logics*, *mathematics*, and relatively “true knowledge” in *philosophy*. Moreover, the language of science with the terms embedded was aptly defined as “a formalized and codified variety of language” (Picht, Draskau 1985: 9). Within this context terminology science was reflecting certain principles and methods, which were connected with “standardizing and optimizing specialized communication” (Schubert 2011: 27) codified in principles and methods of TC 37, which claimed justification for terminology standardisation. This research strategy stressed the concept in the traditional sense as a key element of thought and a starting point of terminological analysis.

The *logico-philosophical approach* in terminology came to the foreground a bit later through information studies of text analysis and computer engineering approach, where various models linked with social knowledge became relevant for many applications in special vocabulary, particularly in “qualitative reasoning” and “knowledge-level” or AI interpretations as a “sequence of behaviors” of experts in socio-technical systems (See Clancey 1993: 39).

The next is the *structural* or *systematic* stage of terminology development. It brought new theoretical principles as well as novel methods of research. These studies were aimed to explain the relationships between the form and meaning, equalizing a terminological unit to word characteristics. The

understanding of a term as “a word in its specific function” (Vinokur 1939) *deepened the understanding of a term*. Besides that it was interpreted as a sign realised in language. The characteristics of terminological vocabulary were analysed on the basis of a comparative, typological, semasiological and onomasiological methods. Each of them seemed to be useful for term and its concept understanding, but these methods advocated the simplification of the data analysis, because they were performed as formal procedures representing terminology in statics (Manerko 2016).

Identifying terminological concepts and relations between them became the object of terminological work in the middle of the 20th century, which had “to address communication hinders among the domain experts and to meet their terminology needs” (Nuopponen 2018: 10). Another large terminology user group are translators, whose claim is the “‘non-literary’ translation on the basis of terminology” (Rogers 2015: 4).

The 70s of the 20th century enriched terminology studies with the new attitudes towards vocabulary of special communication, where the inventory of certain notions was applied to the fundamental basis employed in linguistic research. These changes are not numerous, but they are gaining relative strength in connection to terms and their context in special communication.

1) One of these essential changes dates back to 1972, when the discipline started to be called *Terminology science* (“terminovedeniye”) (Leitchik 1983) in Russian terminological school. It was shaped by a more careful observation of theoretical foundations of the discipline, methodological apparatus, and research procedures in particular spheres of human activity called *terminologies*. In European terminology this distinction is reflected in different spelling between *Terminology* (“the upper case”) indicating the discipline and *terminology* (“the lower case”) resulting from the vocabulary of special language (see Temmermann 2000: xiii). Besides this distinction “alternative designations” concerning the theoretical basis of the terminological field are added, including terminology work, terminology management and terminology engineering (Nuopponen 2018).

2) The second achievement of Terminology science was the widening of the research object, which was associated with languages for special purposes defined as “the linguistic means in communicative settings within a speciality” (Hoffmann 1976: 170; cited from Schubert 2011: 28). The development of LSP as “a unit of a metalanguage” of Terminology strengthened the attention not only to the world of technical and scientific concepts,

to which specialised terms refer, but also to ways terminological systems are expressed in written texts. Special terms comprising lexical and morphological means are the “key to successful LSP communication” (Rogers 2015: 3). They are used in oral and written interaction. E.g., LSP texts of natural disciplines present “the independence from the context, neutral use of language means, less degree of item motivation” (Gvishiani 1986 (2008): 22), while in texts on history, philosophy and linguistics term semantics is influenced by the “sign or semiotic situation” or pragmatic factors. Special concepts are in constant evolution, in texts they “can’t be torn out of the context” and should be explained on the basis of “the semiotics of interlinguistically based texts” (Nazarova 1994: 160–161). The *functional perspective* describes “permanently dynamic” special concepts referring to terms (Cabr   1995: 3), performing the communicative and semiological functions according to the purport of the text writer.

3) The third important step further in terminology science is that a term is defined as “a language unit fulfilling the nominative function and possessing the general notion in the system of corresponding notions” (Leitchik 1987: 141). Geeraerts considers the process of naming to be very important in understanding dynamic processes of human thinking, while the onomasiological analysis is useful in representing the way “the item in question entertains with other items in the same lexical field” (2006: 413). Crucial for the understanding of this analysis is how the phenomena in reality are acquired by human mind and the motivation of the created unit is associated with *persons’ ability to produce new items* according to the needs of communicative settings in the utterance. Nominative units expressed by different forms of derivative words can be investigated on the basis of a “word-formation meaning”, which corresponds to “the linking pattern between two categorical meanings, it is a kind of relations between things, processes and features in reality and the notions corresponding to them” (Koubriakova 1978: 57). This kind of analysis may be also applied to substantive constructions. The importance of the onomasiological approach is undeniable, because it revealed “the gnoseological basis of the nominative activity, its link with the cognitive processes, characterizing semiotic aspects of nomination and etc.” (Koubriakova 2004: 323). As we can see onomasiological studies both in linguistic and particularly terminological sphere of human activity became the early and extremely fruitful experience of human cognition understanding, anticipating ideas of the future cognitive science.

4) The last outcome of linguistic and terminological research is “the defining of the way a human being influences language” (The role of human factor in language 1988: 9). It appeared not as a declarative statement as it was in previous periods, when scholars spoke about the concept even not reaching it by the formal kinds of analysis, though they tried to do it in a proper way according to the existing research principles and methods. But it is becoming one of the most fundamental principles of cognitive exploration of language coming to the foreground at the end of the 20th century. This principle is called *an anthropocentric principle*. The encouraging thing is that this principle is the basis of understanding human thinking and discursive activity, associated with the influence of cognitive research that “holds that language is a part of a cognitive system” of an individual, whose mental abilities “interact with language and are influenced by language” (Dirven, Vespoor 1998: xi). Cognitive linguistics takes into account agents’ mental and communicative activities incorporating social, psychological, pragmatic and other sides of human interaction (Manerko 2016: 129). This perspective shows a turn from structurally oriented research in language as an autonomous system to the paradigmatic shift mirrored in cognitive and functional perspective of linguistic knowledge description and a new shape of the Terminology science also concerned with cognition, cognitive processing and communication processes.

Cognitive (Cognitive-communicative) Terminology has become one of the main branches of cognitive linguistic study. It represents the research, which is cognitively grounded, speaker oriented, interwoven with interlocutors’ understanding of the world and functionally fulfilling conceptual and discursive mechanisms in language use. Terminological studies are becoming closer to human realization of cognition and goals of communication.

The objective of research in Cognitive Terminology studies is to reveal the semantic peculiarities of terminological units on the basis of familiar, new and transferred conceptual elements representing the general (usual) and special character of human experience in knowledge structures shown through a spectrum of various simple and complex mental constructs depending on sense polyfunctionality transferred in specialised communication. In this paper I follow this objective in revealing the results of terminological research.

In the next part of the paper Cognitive Terminology is discussed altogether with the methodologically important terms for the discipline analysis.

2. THE ATTENTION TO COGNITION AND COMMUNICATION IN COGNITIVE TERMINOLOGY STUDIES

Cognitive or Cognitive-communicative Terminology is a new stage in Terminology development, which started to develop at the end of the 90s of the 20th century. It departed from the previous stages of the development of terminological discipline, though is characterized by new objectives, foundations, methodology, and research procedures. It is mirrored in presenting the cognitive and communicative functions. The central concern of terminological investigations is to describe the cognitive function of language ultimately leading to the term formation. The level and depth of its description is different from those ideas, which cover only “reasoning abilities” of a human being and conceptions of “specificity domains” as “distributed devices” (Hirschfeld, Gelman 1994: 4, 22). The thing is that the cognitive function is understood as a wider phenomenon than it was considered before the cognitive linguistic theory. The investigation doesn’t regard the linguistic system and its structures as an autonomous whole, but rather takes into account the language means explored on the basis of sensory, physical, social, historical, cultural peculiarities revealed on the basis of linguistic features. It seeks to understand how knowledge is constructed by a human being with the help of language means used for purposes of communication. As Temmermann points out, the concept observation is fundamentally supported by experiential epistemology “...embedded in rich cognitive models” (2000: 29).

The cognitive function is linked with human perception of objects in the outer world and a real situation in some sphere of human activity. The terms expressed by single words are rather rare in professional communication. Even in a dictionary article, we can find lexemes linked with the other ones in representing different, but interrelated phenomena, e.g.: *an airplane* – a powered heavier-than-air *aircraft* with fixed wings from which it derives most of its lift (<https://www.merriam-webster.com/dictionary/airplane>); *a detector* is *a device* used for finding *particular substances or things*, or measuring their level: *a lie detector*, *a smoke detector*, *a metal detector*” (Cambridge 1995: 375). Thus, the first level that should be taken into account is the hierarchical structure of conceptual domains within the body of knowledge.

The term-creation always depends on the stage of discipline development at some certain period. Starting the analysis with the term definition and

in some cases its etymology is a common thing, but even this information tells us about the LSP as “a system of linguistic means of the national language” and an important metalanguage unit of modern terminological studies (Zyablova 2005: 17). Let us look at one of the examples belonging to the sphere of clinical psychiatry on the basis of the term *schizophrenia*. The dictionary provides the information about the word *schizophrenia* and its origin. It appeared from two Greek roots *skhizein* “to split” and *phrēn* (genitive *phrenos*) “mind, heart” (<https://www.etymonline.com/word/schizophrenia>). This terminological unit was coined in 1910 by Swiss psychiatrist Eugen Bleuler (1857–1939), who wanted to explicate *the state of people’s mind* characterized by the dysfunction of associations, childish silliness, hysterics and hallucinations as the non-adequate affect to reality, and other symptoms of this disease. This was the period of the development in the medical domain specialization with the careful observation of diagnosis, prevention and treatment of mental disorders. The nominative unit of *schizophrenia* is defined as “a mental disorder characterised by abnormal behavior and misinterpretation of reality” (<https://www.etymonline.com/word/schizophrenia>), where the hyperonym “a mental disorder” corresponds to a certain class of diseases in the medical sphere. But previously, at the early stage of this scientific field in the 80s of the 19th century, there existed the other term – *dementia praecox* “premature dementia”. Expressed in Latin it pointed at the age discrepancy of the person with this syndrome, besides that the Latin expression was rather vague in its denotation still pointing at one of the most typical features of the disease. So the term and its immediate context point at many other layers of human experience, including the perceptual, physical, social and other spheres.

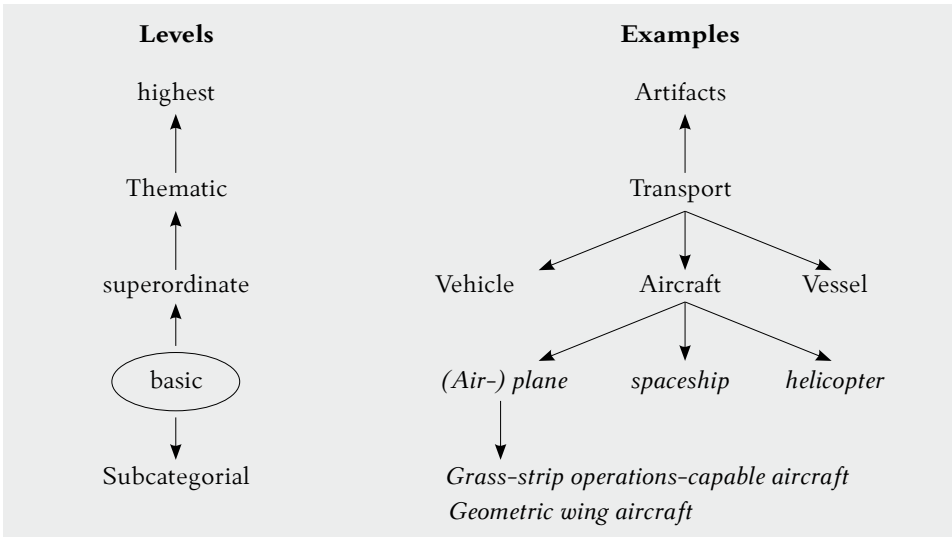
Some scholars think that cognitive processes may be revealed by ontological knowledge based on entities, activities, characteristics, and relations (Sager 1990: 27) resembling the part of speech meaning. Other scholars widen this list to “conceptual entities” including Thing, Event, State, Place, Path, Action, Property, and Amount, though quite obviously they are “all quite different in the kind of reference” (Jackendoff 1996: 9, 34). These entities are thought to represent mental operations of categorization and conceptualization, representing the world understanding in a concept as “an operative unit of consciousness” corresponding to a particular sign in the on-going process of interaction in human activity.

Langacker describes the meaning as “conceptualization”, which “resides in cognitive processing” and is able to “characterize the types of cognitive

events whose occurrence constitutes a given mental experience” (Langacker 1991: 2). Showing how the cognitive processing works, the author discusses the notion of *hypotenuse*, which posits a hierarchy referring to “the prior conception of a right triangle” and this triangle “functions as the cognitive domain for *hypotenuse*” (Langacker 1991: 3). He also mentions a kind of implication appearing in human consciousness, when a person compares these two notions – a hypotenuse and a right triangle. In real meaningful descriptions, including usual and of course special notions, these implications may be of various kinds corresponding to sensory, kinesthetic, spatial, emotional, and rational. Langacker states that people usually remember “basic domains”, which are “irreducible representational spaces or fields of conceptual potential” (Langacker 1991: 4). The definition helps to find out the higher level identifier or a word of the same level in conceptual organization of certain classes of words in the explanatory dictionary, e.g. in the example with *an airplane* our mind switches to the cognitive domain of a powered heavier-than-air *aircraft* (<https://www.merriam-webster.com/dictionary/airplane>) and in *a detector* the prominent characteristic is *a device*. The term becomes an integral part of certain domains of human knowledge, as in our examples corresponding to means of transport or devices.

Linguistic units included into the transport domain are quite different in their morphological structure, but they are organized into one subject area according to a result of human cognition and categorisation. As any other conceptual category it is characterized by the hierarchical structure of its members revealing the relationship between the language items. The thematic concept of TRANSPORT organises human knowledge about the entire category of objects integrating a number of different means of transportation. It is included into the wider concept ARTIFACT represented by the highest level of categorization, which is the most abstract phenomenon in this taxonomic system. At the same time it's easy to trace the hierarchical path through this sphere of knowledge, because TRANSPORT bears a relationship of schematicity to such notions as AIRCRAFT, VESSEL and VEHICLE representing their use according to various ways of movement in the air, in water and on the land surface. Simple, derivative, compound words and nominative phrases belong to the superordinate, basic and subcategorical levels (Manerko 2000). All these units describe different kinds of transportation (see Figure 1).

Figure 1. Hierarchical levels in the conceptual domain of transportation means



There is much evidence that basic level terms are more salient than the representatives of other levels (Dirven, Vespoor 1998: 38), but it is essential that on the basic level we usually find a language unit, which among several other possibilities is used most readily to refer to a certain phenomenon. These language items represent the most prototypical physical objects for artifacts and means of transport. These are the most prominent members of the category usually immediately coming to the mind when we think of this conceptual category.

In discourse, which is understood as a language activity performed by a human being, categorization is functional and dynamic depending on human thought and personal experience, circumstances of communication, it is data-driven and may reveal the viewpoint the speaker or writer wishes to express in written or oral interaction (Manerko 2014). As it was highlighted by Koubriakova, discourse is “primarily a cognitive event, dealing with the transfer of knowledge” and with the request on knowledge from the listener or reader, new processing of it or relying on knowledge observations following definite goals (2004: 516).

Nominative units take up a privileged position in special discourse. They dominate there, because the number of these language means differs from 70 to 95 per cent of the text space depending on the field specialization. The relationships between these units presuppose not only the relationship

of inclusion into the certain class of notions, but also some other relations, e.g.: The *coincident arrival* of the *new technology* in *computers* and *composite materials* influenced *commercial air transportation*, where *aircraft* larger than the *Boeing 747* and faster than the *Concorde* are not only possible but inevitable (<https://www.britannica.com/technology/airplane/Materials-and-construction>). Certain implications help revealing the cognitive domain entity in human memory an expression refers to. In this sentence from the Encyclopedia Britannica several implications arise in our minds pertaining to the domains of human knowledge and experience. Phrases from the sentence direct our attention not only to new technologies in computer engineering and aviation, but also to other kinds of social, spatial, cultural knowledge and evaluative attitude.

Knowledge structures, to which terminological units refer to in communication, can't be stable and static, especially when they denote different things in reality. Meanwhile, as it is stated by Novodranova, the formation of scientific knowledge is "a cognitive process linked with the data processing, its organization inside the mental lexicon, keeping it in memory, extracting the necessary data, etc. On the other hand, it is regarded to be a process of producing scientific texts, when the shift of communicative acts is observed in the context of scientific activity" (2000: 8). The cognitive and communicative functions are fulfilled in special discourse, where a term, as we can observe, becomes "a verbalized result of professional cognition" (Manerko 2014: 481) represented by various kinds of knowledge structures characterizing the state of development in a scientific sphere and the level of the society at some particular moment. It is "a relevant linguo-cognitive means of orientation in the specialised activity domain and professional sphere of communication" (Manerko 2014: 481) underlined by the relationship with other signs according to human intentions, contextual grounding and type of special communication. Special mediation and the constructed LSP of some certain domains of knowledge are characterized by the open character of semantic boundaries of terminological units, sometimes influenced by cognitive processing based on emotional and valuable constituents of knowledge structures in representing the general (usual) and special kind of human experience. They depend on the sense transferred in specialized communication at some particular moment. In this respect it is necessary to mention a very important observation of Engberg, who noticed: "knowledge is an *evolving, unstable entity* as a basic

concept... in studies of domain specific discourse...” If this *knowledge* is studied in “cognitive systems of human beings, an important consequence is that it must be seen as being *inherently dynamic*” (2007: 35).

This understanding of a term semantics embracing knowledge structures and their construal has become the core achievement in Cognitive Terminology. It also has lead to new methodological decisions and changes in the objectives of special communication study. The result of cognition in some special activity is realized in a term on the basis of special and sometimes common (every day) knowledge structures, the cognitive nature of which is defined thanks to relations between terminological units and cognitive operations revealed in some particular terminological system construed by discourse of language personality.

Further on I would like to address the descriptions of several particular languages for special purposes and demonstrate how the specific domains of human knowledge could be considered in cognitive terminology studies. They are a language of modern technology, computer engineering and telecommunication usually regarded as strict spheres of knowledge, where terminological units carry the main semantic load.

3. TECHNICAL SPHERES OF HUMAN KNOWLEDGE: PECULIARITIES OF COGNITIVE TERMINOLOGY RESEARCH

As discussed earlier, nominative units of different kinds play an essential role in special discourse. They are peculiar cognitive-discursive formations, the cognitive nature of which is extremely valuable for the purpose of communication. They represent various kinds of information about the world interwoven through spatial, social and emotional experience of an individual, language knowledge and ways of its organisation.

Names of artifacts take the privileged position in special discourse of modern technology. They denote different objects created by a human being according to their instrumental function. This function qualifies *an airplane* as an aircraft and organizes the relation of inclusion of this concept to a specially organized system of naming transport means. Besides the names of aircrafts other domains of technical artifacts include kinds of weapon, mechanisms, machines, instruments, devices, tools, etc. (Manerko 2000). All of them are characterized by hierarchical relations with respect to the level of a wider or a narrower specification inside conceptual categories as it was presented in Figure 1 (see Figure 1).

Alongside to categorization inside conceptual domains we also employ cognitive methods that give the evidence of internal (mental) processes, contextualization of the cognitive function and meaning of nominal constructions as part and parcel of the empirical observation in LSP organization. Nominal phrases from special discourse mostly belong to the subcategorial level of special domain of knowledge, consisting of several components. They may be analysed on the basis of their cognitive-onomasiological modelling. This modelling starts with the description of main components in word-groups and its subdivision – an onomasiological basis in the nominal phrase *bacteriological bomb vehicle* is a *vehicle*, while its attributive part of the complex belongs to an onomasiological sign (*bacteriological bomb*, where the second element is the head-member component of this word-group).

In our analysis we specify three types of the onomasiological basis in nominal word-combinations in the sphere of modern technology, structurally represented by a simple, compound and complex bases (see the table). This step of the analysis leads us to phrase-forming models, to which various formats of knowledge domains refer. The analysis makes it possible to reveal the way the mental lexicon is grouped into certain conceptual categories in accordance with the current picture of the world in human mind.

Table 1. Three types of nominal phrases in LSP of modern technology

TYPE OF THE ONOMASIOLOGICAL BASIS IN SUBSTANTIVE WORD-COMBINATIONS	ONOMASIOLOGICAL (ATTRIBUTE) SIGN OF THE CONSTRUCTION	ONOMASIOLOGICAL BASIS OF THE CONSTRUCTION
Simple onomasiological basis	[(bacteriological bomb) [(geometric wing)	(vehicle)] (aircraft)]
Compound onomasiological basis	[(self-escorting)	(fighter bomber)]
Complex onomasiological basis	[((time of arrival) (measurement equipment))	(guided bomb)]

Both onomasiological parts of the nominal construction like in [(*bacteriological bomb*) (*vehicle*)] or [(*geometric wing*) (*aircraft*)] belong to the conceptual entity of a THING. We get to know that besides these two

parts of the nominal phrase there is a predicate relation uniting them. It is not expressed linguistically, but it is implied, for example in *geometric wing aircraft* this relationship between parts of the nominal word-group may be described as [THING₁ (whole) **is composed of** THING₂ (part)]. THING₁ (whole) corresponds to the category of the onomasiological basis of the nominal phrase – an *aircraft* as one of the “cognitive or knowledge domains”. THING₂ (part) designates *the wing* – an essential part of an aircraft. The proposition specifies the predicate relation between the parts of the syntactic construction. The predicate relation uniting both parts reflects the cognitive processing in human mind, when the speaker pronounces or writes this phrase as a part of special discourse. Investigating the corpus of nominative phrases denoting artifacts in discourse of modern technology 45 cognitive-onomasiological models are found. Some of them are used more often than the others.

A certain part of human experience corresponds to “a single, clearly determined prototype” (Langacker 1991: 2), which is used more often for the description of artifacts in nominal word-combinations. It tells us about the occurrence constituting human mental experience about THINGS created by a human and named by complex syntactic units. Such a *prototype* helps to identify certain classes of objects in reality. In our material the most prototypical propositional models are represented by three relations: [THING₁ (whole) – **composed of** – THING₂ (part)], [THING – **have** – QUALITY], [THING – **is used for** (performing) – FUNCTION (activity)]. Their frequency of occurrence is definitely higher in comparison with other propositional relations in terminological constructions.

All the found cognitive-onomasiological models correspond to a definite situation, in which the understanding of an object and its features depends on absolute characteristics of a particular object (*geometric wing aircraft*) or relative features of an object perceived by a human being in space (*land-based launcher*). Both absolute and relative features are revealed by a speaker/writer in accordance with extra-linguistic properties of artifact classes observed in the communicative event (Manerko 2000; 2016).

In the English terminological system of telecommunications (Orel 2005) representing the synthesis of common and computer engineering knowledge 11 nominal conceptual categories are revealed. The most complicated is the further subdivision of the large artifact category corresponding to the class THING. Other conceptual categories refer to SPACE,

PROCESS, FEATURE, STATE, PROBLEM in telecommunication system, PARAMETER, MEASURING UNIT, etc. The boundaries between the categories are fuzzy and dynamic, because some names may refer to two or even more classes, denoting an artifact and a process, or a measuring unit and an artifact. Cases of metonymy and metaphor in discourse of telecommunication system are analysed taking into account image schemas (Manerko 2016: 22–24). Image schemas are dynamic perception patterns explicating the evolution of human experience in term semantics. The terminological meaning evolves on the basis of familiar conceptual features in a common language unit and includes new transferred senses in telecommunication system. The most important image schema is SOURCE – PATH – GOAL (Orel 2007: 142), which presents the narrowing of the word meaning *address* from the number of the building and the name of the street and town, etc. where someone lives or works, especially when written on a letter or package to the terminological meaning of *address* as a part of a signal that defines the destination of a call (Figure 2).

Figure 2. The image schema of the term *address* in the telecommunication system

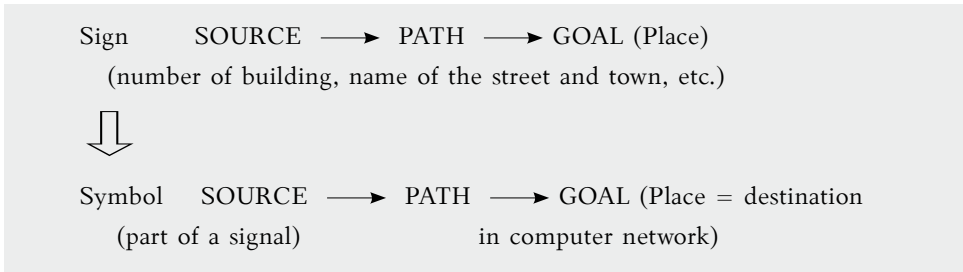


Image schemas and propositions are simple mental constructs objectivised with the help of language means. They serve as the basis for the more complex mental constructs in the conceptual framework of the telecommunication system. This complicated knowledge structure in the English terminological system of telecommunication reflects the way information is received and transmitted including a physical, channel, set, transport and other levels. The frame structure includes all the 11 conceptual classes of names (Orel 2005: 213–219) and may be presented in two frame varieties depending on the knowledge structures in the creator’s mind of telecommunication technologies or its customer.

The analysis in the language of modern terminology and telecommunication sphere confirmed that the main aim of terminological research in Cognitive-communicative Terminology is to focus on the variability of term conceptual structures in discourse specified further in LSP and terminological systems' construal. This analysis is based on the anthropocentric coordinate in understanding professional discourse and the corresponding terminological system. Besides the linguistic analysis it includes the description of knowledge structures. It starts with the representation of the categorizing potential of all the terminological units belonging to certain levels in knowledge domains, proposition as a part of the cognitive-onomasiological modeling, which is the sufficient reference to conceptual entities in nominal complexes, sometimes where it is necessary image schemas, the analysis on the basis of conceptual metaphor and metonymy is used. The construction of the relationship between certain domains in the investigated subject fields ends with the creation of the framework, which elaborates the schematic substructures of LSP organization of human professional activity.

The methodological principles and procedures became the object of cognitive and communicative research in other papers in terminological spheres of English.

4. COGNITIVE RESEARCH IN LEGAL DISCOURSE AND PSYCHIATRY

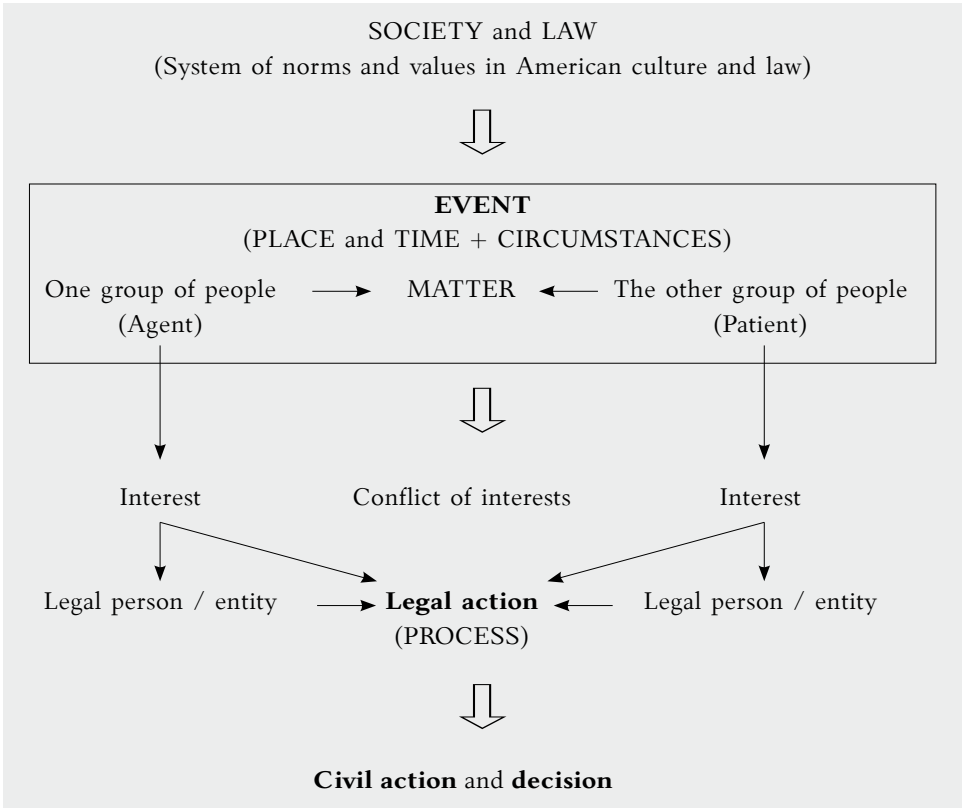
One of the most interesting kinds of special discourse is legal discourse. Here we address some peculiarities of term formation in legal discourse based on special courtroom communication in the Supreme Court of the USA (2011–2018) (Manerko 2018; 2019; Vorobjova 2018). Our understanding of legal courtroom discourse is also associated with the prominence of special and common knowledge occurring in mediation between the interlocutors, whose professional and linguistic activity is influenced by personal, socio-cultural, and pragmatic factors as well as conflict interests and court roles in communication. Legal discourse includes language structures of special law and everyday types of knowledge in professionally oriented picture of the world. The professional speech represents the already existing strict terms and their semantics in terminological system of law.

Our analysis started with the language information represented in oral and rebuttal arguments of court proceedings of the Supreme Court of

the USA. We get the data about the conflict between two groups of people (*wrongdoers*, on the one hand, and *victims*, on the other) and the reason of the conflict situation. Analysing the existing conflict in real EVENT we paid attention to the interests of these people and the matter specified by the extra-linguistic situation and the circumstances of the EVENT (see Figure 3).

Then, from the texts of the oral arguments we get to know about the legal conflict, explain participants' social roles and values sometimes unintentionally causing harm to other subjects of law. It is conceptually revealed as a PROCESS. In the court the enhanced salience is given to the law breakers and victims, who become legal persons or entities – either *petitioners* or *respondents*, while *defendants*, *solicitors*, *witnesses*, *experts* and different ranks of *judges* contribute the civil action steadily leading to the RESULT reflected in the court decision on each case.

Figure 3. Conflict EVENT in real life and in Legal action as a PROCESS



Names of the participants are organized into conceptual categories expressed by derivative units of native or borrowed (French) origin. They become the conceptual scaffold of knowledge structures included in more complicated cognitive mechanisms in legal discourse. The conceptual model of the conflict event is determined by the relations between the EVENT and PROCESS participants, their functions revealed in communicative blocks of the conflict study. The function description corresponding to the participants in court discourse is based on the links with conceptual categories of SPACE, TIME, MATTER referring to the common worldview, and those specified by LAW, kinds of CRIME, HARM and EVIDENCE. The knowledge construal of terms and relations between them becomes obvious in conceptual modelling of the scientific area based on human experience and dynamic framework of each oral argument in the Supreme Court of the USA.

In the special discourse of medicine, particularly in clinical psychiatry (Voron-Kovalskaya 2016) language units represent the category of “a human brain”, which also refers to the subordinate level of categorisation. The greater part of these units are expressed by word-combinations (*brain circuit, cortical gray matter, Broca's area*), others are words of Latin origin (*amyglada, thalamus*, etc.). In addition to this category other spheres of knowledge also acquire the relative prominence including domains of human experience starting from neurophysiology and genetics, profiling functions of the neural system and its structural units – neurons, and of course concepts of the social sphere. In the dissertation it is shown (Voron-Kovalskaya 2016) that every discipline develops with the evolution of human knowledge. The most important constituents of the conceptual modelling represent stages of the disease development, diagnostics, variability of symptoms, peculiar features of a remission and relapse, and of course the treatment of patients. Terms representing new domains of knowledge become more complicated and detailed. Clinical psychiatry discourse is a very anthropocentric kind of communication represented by terms characterised by imagery semantics, construed on the basis of conceptual metaphor and metonymy.

In legal discourse and discourse of clinical psychiatry as kinds of special communication performed by language personalities certain terminological units are organized into central conceptual categories focusing immediate attention to them. Represented by certain knowledge structures

they influence other categories in texts. In legal discourse, which reveals the relations between the people in society, the system is construed on the basis of names of participants and the state of affairs at a concrete moment, closely related to matters, interests and social roles of individuals in the community, designating sets of interconnected special entities corresponding to law and rules of behaviour. In discourse of clinical psychiatry the dominating conceptual category points at a human brain, the conceptual understanding of which is construed according to its characteristics and functions specified by terminological units. In general, the dominating category provides the structuring between the categories, brings forth the symbolization of conceptual content expressed by nominative units inside certain terminological systems.

CONCLUSION

Cognitive-communicative Terminology science as it has been demonstrated in this article follows the development of previous stages of terminological studies. But this stage constitutes not a departure from formal types of analysis, but a new viewpoint on the objectives, foundations, methodology, and research procedures influenced by the interdisciplinary approach. This approach is drawn from human knowledge dynamics in its representation of the cognitive context of terminological meaning creation, in which mental processes of communicators are part and parcel of specialized discourse.

The investigation of special discourse, LSP and terminological systems from this new perspective is based on cognitive and communicative functions reflected in the anthropocentric principle of language use description. This perspective takes into account human knowledge construction on the basis of language and cognitive processes in interlocutors' understanding of the reality and functional mechanisms in language use conditioned by socio-cultural and other factors in special mediation.

Special discourses of modern technology and telecommunication reveal the dominant role of artifact categories corresponding to the conceptual entity of THING and providing certain links to SPACE, PROCESS, FEATURE, STATE and others categories. In legal court argumentation and clinical psychiatry the terminology depends on social and pragmatic factors influencing communication of a particular language personality in written or oral interaction. In legal discourse names of participants involved

in concrete episodes of events dominate, while in psychiatry academic texts the main conceptual sphere corresponds to human brain characteristics, stages of the disease, diagnostics and treatment. So, knowledge structures in concrete special discourse are able to illuminate the peculiarities of human attention to in some particular domains of knowledge.

The construal of knowledge structures is organised around the central conceptual categories usually expressed by nominative units. Linguistically they belong to simple, derived, complex units and nominal combinations, which point at the deepening of human experience in cognizing the outer world. Nominative units associated with common, special and professional activity mostly belong to the subcategorical level of the analysed categories.

The constructive potential of various types of special discourse and terminological systems is realised by the diversity of cognitive methods. Various formats of knowledge fruitfully employed in Cognitive Terminology research reveal the concept organisation based on categorization and conceptualization in the human mind involved in professionally oriented mediation. These formats include cognitive-onomasiological modelling based on propositions, image schemas, conceptual metonymy and metaphor. They illuminate the on-going character of human thinking, mental experience and ways of term creation. Besides that, these kinds of analysis help to describe dynamic processes in terminological naming through their semantics and relations with other items in professional discourse inhibiting the intricate questions of the perceptual and conceptual sources of term formation and their organization in terminological systems.

Simple mental constructs are included into cognitive frameworks of terminological system domains in special discourse, which represent the link between common and special kinds of knowledge structures influenced by linguistic and mental processing.

The cognitive-communicative Terminology tries not only to describe terminological means and their peculiarities in special discourse, but it also focuses on extra-linguistic contexts that achieve substantial cognitive salience in interlocutors' mutual "dialogue of consciousnesses" (Bakhtin 1996: 159) in the conceived situation. The investigation of the nominative sphere in special communication greatly depends on the construal of terminological semantics inside terminological systems that brings forth mental mechanisms revealed through knowledge structures based on cat-

egorization and conceptualization. The analysis of the material demonstrates some degree of predictability in understanding of cognitive processes in the global context of specialised discourse and terminological systems in a certain domain of knowledge.

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СТРУКТУРЫ ЗНАНИЯ И СПОСОБЫ ИХ ОПИСАНИЯ

В ИССЛЕДОВАНИЯХ ПО КОГНИТИВНОМУ ТЕРМИНОВЕДЕНИЮ

Резюме

Когнитивное или когнитивно-коммуникативное терминоведение появилось как продолжение предыдущих этапов развития терминоведческой науки, вобрав много ценного из прошлого опыта из смежных дисциплин, таких как философия, логика, теоретическая и прикладная лингвистика, информатика и т.д. На основе логико-философского и структурного подходов стали использоваться различные виды анализа в терминологических исследованиях. В 70-ые годы XX века изучение терминологических единиц начинает связываться с изучением

свойств знака в рамках специальных текстов. Антропоцентрический принцип и внимание к ономасиологическому анализу привели к формированию новых тенденций в исследовании термина, позволившему обратить внимание на когницию и коммуникацию.

Когнитивное терминоведение ввело новые цели, основания, методологию и процедуры анализа. Становится очевидным, что термин является важной составляющей когнитивной и функциональной перспективы профессионального дискурса и представления языков для специальных целей и терминологических систем как динамических моделей человеческого сознания. Для цели этого междисциплинарного комплексного подхода внимание отдается терминологическому значению и экстралингвистической информации, оказывающей влияние на процесс коммуникации. Формирование значения в терминологических единицах описывается на основе наиболее важных концептов и когнитивных механизмов, категоризации и концептуализации в протекающем взаимодействии, выражая личностные смыслы в специальном дискурсе.

Автор представляет своеобразный отчет об изучении разнообразных видов специального дискурса, в рамках которых изучены терминологические единицы и терминологические системы. В дискурсах современной техники и телекоммуникации, представляющих точные сферы человеческого знания, основную семантическую нагрузку несут номинативные и синтаксические единицы. В дискурсе современной техники мы наблюдаем превалирование терминологических единиц, обозначающих артефакты. Из этих единиц строятся категории: наименования транспортных средств, видов оружия, машин, инструментам, устройствам, и т.д. Каждый класс единиц организован иерархически в соответствии с пятью уровнями категоризации. В статье представлена категория наименований транспортных средств, в которой большинство номинативных единиц имеют отношение к субкатегориальному уровню. В дискурсе современной техники от 70 до 95 процентов текстового пространства выражено номинативными фразами.

Считается, что концепты представляют ментальные операции категоризации и концептуализации, представляя действительность. Концепт ВЕЩЬ, доминирующий в технической сфере, способен описать наименования артефактов. Эта концептуальная сущность характеризуется связями с другими, такими как ПРОСТРАНСТВО, ПРОЦЕСС, СВОЙСТВО, СОСТОЯНИЕ и т.д. Эти сущности используются в пропозициях – основного этапа в когнитивно-ономасиологическом моделировании номинативных словосочетаний. Модель состоит из ономасиологического признака и ономасиологического базиса, последний представлен простым, сложным и составным видами. Ономасиологический базис и ономасиологический признак связаны друг с другом предикативными отношениями. Наиболее частотными и прототипическими в терминологических конструкциях, обозначающих артефакты, являются [THING₁ (whole) – **composed of** – THING₂ (part)], [THING – **have** – QUALITY], [THING – **is used for** (performing) – FUNCTION (activity)]. Описание концептуальной категории ВЕЩЬ указывает на восприятие объекта человеком на основе абсолютных и относительных свойств, отраженных в словосочетаниях.

В дискурсе телекоммуникации представлены категории ВЕЩЬ, ПРОСТРАНСТВО, ПРОЦЕСС, СВОЙСТВО, СОСТОЯНИЕ, ПРОБЛЕМА в телекоммуникационных системах, ПАРАМЕТР, ИЗМЕРИТЕЛЬНАЯ ЕДИНИЦА и т.д. Пропозиции и образные схемы как простые когнитивные конструкторы используются для объяснения особенностей семантики терминологических единиц. В сфере телекоммуникации концептуальные категории, отношения между ними и образные схемы далее организуются в разновидности фреймов, представляющих систему телекоммуникации в сознании создателя компьютерных технологий или ВЕЩЬ ее потребителя.

В судебных прениях и дискурсе клинической психиатрии терминология зависит от социальных и прагматических факторов, влияющих на коммуникацию отдельной языковой личности. Данные виды языка для специальных целей становятся более сложным с развитием научного знания и человеческого опыта. В юридической коммуникации в Верховном суде США доминируют наименования участников, которые вовлечены в различные эпизоды событий. В устных прениях в суде конфликт между людьми в реальной жизни описан посредством языковых единиц, указывающих на специальные юридические и каждодневные виды знания при отражении обстоятельств СОБЫТИЯ, индивидуальных интересов и причин конфликтной ситуации. Профессионально-ориентированная картина мира представляет юридический конфликт, социальные роли участников, иногда наносящих непредумышленно вред другим субъектам права, в конфликта как СОБЫТИИ. Структуры знания раскрывают то, как рассмотрение дела приводит к РЕЗУЛЬТАТУ, что находит отражение в решении суда по каждому делу.

В научных текстах в области психиатрии основной концептуальной сущностью является человеческий мозг и его свойства, стадии болезни, диагностика и лечение. Анализ семантики термина включает обыденные слова с переосмысленным значением в специальном дискурсе.

В статье была сделана попытка представить различные типы терминов, функционирующих в дискурсе и соотносимых с разновидностями концептов. Свидетельство о концептуальной сфере человеческого опыта получено на основе различных форматов знания: пропозиций как части когнитивно-ономасиологического моделирования, образных схем, концептуальной метафоры и метонимии, фреймов, представляющих структуру терминологических систем. Они помогают описать концептуализацию терминологических единиц в профессиональном дискурсе и ответить на запутанные вопросы по поводу истоков восприятия и концептуализации при формировании термина в процессе общения и при построении терминологических систем.

ŽINIŲ STRUKTŪROS IR JŲ APRAŠYMO BŪDAI KOGNITYVINĖS TERMINOLOGIJOS TYRIMUOSE

Santrauka

Kognityvinė, arba kognityvinė-komunikacinė, terminologija atsirado kaip ankstesnių terminologijos tyrimų tęsia ir perėmė vertingiausių tarpusavyje susijusių sričių – filosofijos, logikos, teorinės ir taikomosios kalbotyros, informatikos ir kt. – patirtį. Remiantis šiais loginiu-filosofiniu ir struktūriniu pagrindais, terminologijos moksle buvo tai-

koma įvairių rūšių analizė. XX a. aštuntajame dešimtmetyje terminologijos vienetų tyrimai imti sieti su ženklo ypatumais specialiuosiuose tekstuose. Antropocentrinis principas ir dėmesys onomasiologiniams tyrimams lėmė naujus terminijos tyrimų pokrypius, taip atkreiptas dėmesys į pažinimą ir komunikaciją.

Kognityvinė terminologija iškėlė naujus tikslus, numatė naujus pagrindus, metodologiją ir procedūras. Tampa akivaizdu, kad terminas yra svarbi profesiniam diskursui būdingo kognityvinio ir funkcinio požiūrio dalis, reikšminga specialios paskirties kalbų ir terminijos sistemų kaip dinaminių žmogiško pažinimo modelių dedamoji. Taikant tokį daugiapusį tarpdalykinį požiūrį, dėmesys sutelkiamas į terminologinę reikšmę ir komunikacijai įtakos turinčią ekstralingvistinę informaciją. Terminologijos vienetų reikšmės aprašomos remiantis svarbiausiais konceptais ir pažinimo mechanizmais, bendraujant taikomu kategorizavimu ir konceptualizavimu, taip perteikiant specialiajame diskurse asmens teikiamą prasmę.

Autorė pateikia tam tikrą specialiųjų diskursų, kurių pagrindu nagrinėti terminologiniai vienetai ir terminologinės sistemos, tyrimų ataskaitą. Šiuolaikinių technologijų ir telekomunikacijų diskursuose, atstovaujančiuose tiksliosioms žmogaus pažinimo sritims, pagrindinis semantinis krūvis tenka nominatyviniams ir sintaksiniam vienetais. Šiuolaikinių technologijų diskurse vyrauja terminologijos vienetai, žymintys artefaktus. Vienetai sudaro kategorijas: transporto priemonės, ginklų rūšys, mechanizmai, mašinos, įrankiai, prietaisai ir t. t. Kiekviena terminų klasė yra hierarchinė, apimanti penkis kategorizavimo lygmenis. Straipsnyje aptariama transporto priemonių pavadinimų kategorija ir atskleidžiama, kad dauguma nominatyvinių vienetų sudaro subkategorijas. Šiuolaikinių technologijų diskurse nominatyviniais žodžių junginiais perteikiama nuo 70 iki 95 procentų teksto.

Manoma, kad konceptai perteikia mentalinius kategorizavimo ir konceptualizavimo veiksmus, taip jie atspindi tikrovę. Technikos srityje vyraujančia DAIKTO sąvoka galima aprašyti artefaktų pavadinimus. Šis konceptas apibūdinamas pagal ryšius su kitais konceptais, tokiais kaip ERDVĖ, PROCESAS, SAVYBĖ, BŪKLĖ ir kt. Tokie vienetai įtraukiami į teiginius, kurie yra kognityvinio-onomasiologinio nominatyvinių žodžių junginių modeliavimo dalis. Modelius sudaro onomasiologinis požymis ir onomasiologinis pagrindas, pastarajam atstovauja paprasti, sudurtiniai ir sudėtiniai tipai. Onomasiologinis pagrindas ir onomasiologinis požymis susiję predikatiniais ryšiais. Artefaktus žyminčiose terminologinėse konstrukcijose dažniausi yra prototipiniai [DAIKTAS₁ (visuma), **sudarytas iš** DAIKTAS₂ (dalis)], [DAIKTAS **turi** SAVYBĖ], [DAIKTAS **nau-dojamas** (atliekant) FUNKCIJĄ (vykdant veiklą)]. Konceptualiosios DAIKTO kategorijos aprašymas rodo objekto suvokimą per absoliučiąsias ar santykinės ypatybes, reiškiamas žodžių junginiais.

Telekomunikacijų diskurse ryškėja DAIKTO, ERDVĖS, PROCESO, SAVYBĖS, VALSTYBĖS, telekomunikacijų sistemos PROBLEMŲ, PARAMETRO, MATAVIMO VIENETO ir kt. kategorijos. Terminologijos vienetų semantikos ypatumams paaiškinti naudojami teiginiai ir vaizdinių schemas – paprasti pažintiniai konstruktai. Telekomunikacijų srityje konceptualiosios kategorijos, jų santykiai ir vaizdinių schemas virsta struktūrų įvairove, kuri perteikia telekomunikacijų sistemą kompiuterinių technologijų kūrėjo arba kliento suvokimu.

Teismo ginčiuose ir klinikinės psichiatrijos diskurse vartojama terminija priklauso nuo socialinių ir pragmatinių veiksnių, darančių poveikį tam tikro kalbėtojo komunikacijai. Plėtojantis mokslo žinioms ir kaupiantis patirčiai, tokios specialiosios paskirties kalbos tampa vis sudėtingesnės. JAV Aukščiausiojo Teismo teisinėje komunikacijoje vyrauja į konkrečius įvykių etapus įtraukiamų dalyvių įvardijimas. Vykstant žodiniams ginčams, tikroviškas žmonių konfliktas aprašomas specialiąsias teises ir įprastas žinias rodančiomis kalbos priemonėmis, taip atspindimos ĮVYKIO aplinkybės, interesai, priežastys. Profesinio pobūdžio pasaulio matymas, perteikiantis teisinį konfliktą, dalyvių, kitąkart netyčia padarančių žalos kitiems teisės subjektams, socialinius vaidmenis, atsiskleidžia kaip PROCESAS. Žinių struktūromis parodoma, kaip nuo civilinio ieškinio einama prie REZULTATO, kuris kiekvienoje byloje reiškiasi kaip teismo sprendimas.

Moksliniuose psichiatrijos tekstuose esminė konceptualioji sritis yra žmogaus smegenys ir jų ypatybės, ligos stadijos, diagnostika ir gydymas. Terminų semantikos analizė apima ir įprastinius žodžius, specialiajame diskurse turinčius kitą reikšmę.

Straipsnyje mėginama pateikti skirtingų diskurse funkcionuojančių terminų, atitinkančių sąvokų įvairovę, tipų. Konceptualiosios žmogiškos patirties sferos duomenys yra gauti taikant skirtingo formato žinias: kognityvinio-onomasiologinio modeliavimo sudėtinę dalį, teiginius, vaizdų schemas, konceptualiąsias metaforas ir metonimiją, terminų sistemų struktūrą perteikiančius freimus. Tai leidžia perteikti profesiniame diskursui būdingą konceptualizavimą terminijos vienetais ir atsakyti į sudėtingus klausimus dėl suvokimo ir konceptualizavimo kuriant terminus bei terminų sistemas šaltinių.

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