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**MAIN TENDENCIES IN THE TERMINOLOGICAL SYSTEMS
OF DENTAL MEDICINE AND CRANIO-MAXILLOFACIAL
SURGERY (ON ENGLISH AND RUSSIAN MATERIALS)**

Summary of dissertation for obtaining educational and scientific degree
"Doctor"

2.1. Philology

General and comparative linguistics

(Comparative analysis of English and Russian medical terminology)

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The dissertation is presented on 316 pages, consists of 3 chapters, introductory and conclusive parts, 4 appendices, bibliography (237 literary sources in English, Russian and Bulgarian, including specialized literature and dictionaries) and selected publications of the PhD student on the topic.

The public defense of the dissertation will be held on.....at.....
Everyone concerned is invited.

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I. General characteristics of the dissertation

The dissertation is dedicated to the complex study of the terminological systems of the fields of knowledge Dental Medicine (DM) and Cranio-Maxillofacial Surgery (CMS) in view of **tendencies of metaphorization in the term formation, structural-syntactic and etymological modelling and synonymy of the terms available.**

The object of study is English terminology of DM and CMS. Terms from Russian terminology of the same scientific field are used as a metalanguage framework and comparative material (when necessary or to emphasize significant differences).

The subject of study is the role of metaphorization, etymology, structure and synonymy for representing specialized knowledge in DM and CMS.

The aim of study is to describe the specifics and ways of expressing and systematizing specialized knowledge in English terminological systems of DM and CMS, focusing on the research of metaphorical, structural-syntactic, etymological and synonymous modelling of the respective terminological systems.

The following specific **tasks** have been set:

1. Forming an English corpus of metaphorical terms in the scientific field of DM and CMS and extracting their nominative characteristics.

2. Determining the characteristic features of the metaphorical nomination in formation of the studied terminological systems.

3. Formation and classification of metaphorical models in the studied English corpus basing on the main source-input spaces of metaphorical terms.

4. Considering the ways for verbal presentation of metaphorization and presentation of models for metaphor expression:

- structural-syntactic models with typical for English language system characteristics;

- etymological models;

- synonymous rows.

5. Implementation of a field study related to the establishment of presence or absence of conceptual blending based on 30 metaphorical terms, excerpted from the terminological systems of DM and CMS, within the scope of specialized and non-specialized knowledge of 52 respondents.

The hypothesis of study: metaphorization in English terminology of DM and CMS is a verbal presentation of pragmatically processed specialized scientific

knowledge, reflecting the worldview system, basics of mental activity, professional experience and linguistic and cultural competence of the specialist.

1012* one-word and complex English metaphorical terms, collected at random mainly from terminological dictionaries, as well as from specialized literature (monographs, textbooks, articles, reference books, etc.) served as **material** for the study.

For the objectives of the current study, **the analysis of metaphorical projection** in English terminological systems of DM and CMS is placed in **a nominative-cognitive direction**, which starts from language knowledge passing through cognitive processes (based on experience), interaction and integration of conceptual structures so as to arrive at the consequent nomination. **The systematic approach** served as a methodological basis of the current study for considering structural-semantic, linguo-cognitive and formal aspects of English corpus of DM and CMS terminological systems. It allows for **a complementary consideration of metaphor aspects** and in particular the use of the results of one metaphor aspect obtained in the study for a more in-depth study of the others. The systematic approach involves a set of methods (complex methodology): method of conceptual integration, method of cognitive analysis in a broader aspect, method of definition analysis, method of component analysis, etymological method, survey method and statistical method.

Dissertation structure

The dissertation consists of 3 chapters, introductory and conclusive parts, 4 appendices with the working corpus of metaphorical terminological units, bibliography and a list of selected publications of the PhD student on the dissertation topic. It is illustrated in 33 figures, 11 tables and 5 diagrams.

II. Summarized presentation of the dissertation

1. Introduction

The choice of topic, its relevance and scientific value are motivated in introduction; theoretical basis on which the study is based on is indicated; hypothesis, objectives and tasks of the study are formulated; a brief description of material and methods of analysis is made; significance and contribution of the study in practical-applied direction are indicated; a brief description of the dissertation is provided in structural terms.

* Pure metaphorical, directly analyzed terms in view of metaphorical conceptualization of terms are 618. However, in the study of structure, etymology and synonymy, terms are added that have not been directly studied in terms of metaphorization processes. Including the added ones, English metaphorical corpus expands to 1012 units.

The relevance of research is determined by progressive dynamics with which the conceptual terminological apparatus of such areas of knowledge as DM and CMS is developing nowadays and growing need for in-depth complex study of term-forming tendencies in the respective English terminological systems (metaphorization, structural-syntactic characteristics, etymological diversity, synonymy) with formation of models and mechanisms of term modelling by the specialists using them and others.

It is specified that in the analysis of English metaphorical corpus references are made to languages from other language group (Slavonic) of Indo-European language family - Russian and Bulgarian - the first one as a foreign language and the second one as an official language for the country. References are mainly in the capacity of a translated equivalent referred to the analyzed English metaphorical unit. In some cases certain differences in the metaphorical imagery of the three languages are illustrated, with English and Russian metaphorical units most frequently falling into such a comparison. Our grounds for this are indicated as well:

A. Metaphorization as a cognitive mechanism for generating new concepts in all spheres of life (including scientific); as a way of understanding the extralinguistic reality by individual; as a set of tendencies, on the basis of which its procedural nature is realized, is such a universal principle of designation and originally metaphorical human thought that it would be applicable in any linguistic environment, regardless of the language in which the specific knowledge is verbalized.

B. Viewing metaphorization in such a light does not mean absolutizing the aforementioned statement. Certainly, metaphorization in different languages has its own specifics in terms of language resources and a number of national characteristics related to ethnicity, society, culture, history, politics, etc., which identify nation as such. These are differences that inevitably affect the final product of metaphorization - conceptual lexical apparatus. However, these differences are not so numerous in the context of scientific terminology due to the fact that scientific term is a special linguistic unit related to the scientific concept and characterized by clearly defined parameters: unambiguity, accuracy, brevity, systematics, stylistic neutrality.

2. Chapter I - Literature review

The first chapter presents theoretical prerequisites for the forthcoming research. The following is considered: nominative theory as part of cognitology; nature and mechanisms of language nomination; specifics of the terminological nomination process and tendencies in term formation; multifaceted nature of the concept "term" and modern approaches to its interpretation and solving the issues of interaction between thinking, language and specialized knowledge in the process of linguistic and terminological nomination; cognitive paradigm in linguistics and cognitive foundations for the

formation of terminological systems; cognitive map of science; concept within cognitive approach and theory of conceptual integration.

The role of human factor is in itself a natural continuation of the topic of language nomination and analysis of its results. The latter reflect individual experience gained in interaction with the surrounding world and knowledge about it, structures of consciousness created in the course of these processes in the form of linguistic pictures of the surrounding world – namely, entities whose essence is cognitive. This necessitates turning the nominative theory to the consideration of triad: objective world, reality - consciousness - language, its going beyond linguistics and its transformation into part of cognitology (Kubryakova 2003). An even greater scientific paradigm is emerging, the aim of which is the knowledge of human nature, nature of thinking and language role.

This new direction determines the subject of nominative theory: 1. discovery of regularities of the conceptualization and categorization of human experience; 2. establishment of basic and private categorical features, receiving a name in the language systems; 3. determination of the principles for organization and structuring of verbalized concepts, depth and types of taxonomies in hierarchically organized structures, correlation of knowledge and meanings of lexical units, general and particular in lexicalization models of human experience in different languages (Haritonchik 1996: 24 - 25)

The main principle of nomination is the transition from particular, subjective to general, objectified, i.e. to express generalized image of named object by means of its specific feature. The nomination itself is a process of designation, communication and knowledge. The adequacy of transmitting the information, expressed in linguistic form, depends on the name structure as well, which ultimately determines the adequate reflection of the material world in individual's consciousness (Kolshansky 1975: 78 - 79).

The main features of language nomination are related to the selection of leading (motivating) sign. It underlies the name and is directly related to the characteristic of objects or phenomena in terms of their intrinsic features, which is created basing on comparison with other objects and phenomena. The selection of leading sign determines name motivation and is frequently associated with the so-called "semantic background", determined by the specific historical development of society, where the particular name has been formed.

P. Kancheva defines "shape" (e.g. *a sty* - *ячмень* - *ечемик* - inflammation of the sebaceous glands at eyelid edges, resembling the shape of a barley grain) , "function", "belonging of the anatomical object to other larger object", "sign of the anatomical

object structure", "colour", "position and direction", "dimensions" as most essential in her analysis of nominative signs motivating the emergence of a terminological concept in Bulgarian anatomical language (Kancheva 2009 : 79 - 81).

Terminological nomination specificity lies in the specifics of the special knowledge structure that stands behind the term. Being a result of specialist's cognitive activity, this knowledge structure is an integration of several types of knowledge:

- knowledge of a certain fragment of the world (encyclopedic, general scientific and individual specialized);
- knowledge of the mental forms of fragment reflection in consciousness;
- knowledge of the linguistic forms of fragment representation;
- knowledge of operating with language units for the purpose of processing, storing and transmitting fragment information.

The main tendency in term formation is specialization of linguistic means used to express scientific concepts, as well as systematicity and classification regularity of term-forming models, relevant to such systematicity and regularity of the concepts they reflect. Typical features of term formation are as follows: 1. linguistic means (units of the generally accepted language, borrowings from other languages and conscious, purposeful formations); 2. ways of term formation (semantic, morphological, syntactic); 3. features of the term form and semantics.

In Bulgarian linguistics M. Popova considers terminological nomination as a two-stage process of reduction: 1. term content is reduced to its meaning (definition); 2. linguistic form of the term is built by selection of nominative characteristics (Popova 1990). In Russian linguistics V. F. Novodranova reveals characteristic features of medical terminological nomination: 1. bilingualism resulting in hybridity and synonymy; 2. distinct morphology due to unification of the term-forming model structure; 3. multicomponent nature of the terminological structure; 4. compression (morphological, syntactic and as a consequence semantic), caused by the tendencies for conciseness in expressing information (Novodranova 1996; 2002; 2007a).

The origin and development throughout history of the term "language for special purposes" and its modern understanding are briefly presented. The controversy over the absence of a generally accepted definition of the concept "term" in science is considered as well. The understanding about term function and place in individual linguistic and mental activity are expanded. Based on cognitive-discursive paradigm methodology, the multifaceted nature of the term is treated, associating with its status as a unit in the field of knowledge, which arose as a result of the interaction between cognition and communication in professional activity.

The knowledge structure at a higher level of abstraction, such as that of professional-scientific knowledge, is based on key concepts forming its core and can be described as a special conceptual structure. The definitions given by the authors regarding the conceptual structure are different, but in general it is defined as generalized cognitive experience of the person, preserved in the form of special mental formations of various character.

The information-conceptual status of the term is also commented and the term itself is presented as "carrier and custodian of the information, valuable due to its special conceptual system" and being "special cognitive-information structure", accumulated in itself "professional and scientific knowledge, expressed in a specific linguistic form and gained during the entire period of human existence" (Volodina 2000: 30). The term information volume is considered to be dependent not only on scientific and technical knowledge, but on any significant change in society as well - political, economic, social.

The contribution of Bulgarian terminological school for clarifying the concept "term" is noted. M. Popova, setting the onset of a complex approach in terminology, identifies three main structures in term formation - conceptual, semantic and formal; draws a conclusion about the term dual nature being on the border of semiotics and linguistics (Popova 1985). P. Kancheva emphasizes the main parameters of scientific term - unambiguity, accuracy, brevity, systematics, grammatical correctness, stylistic neutrality, word formation (Kancheva 2009: 17 - 18). Considering the anatomical scientific concept, I. Stankova defines three main aspects of the term - semantic, formal and pragmatic (Stankova 2009: 53).

Cognitive approach to the description of a particular terminological system, reflecting a system of science, imposes the requirement that terminological units (mainly the key terms making up the system core) should be described conceptually, as certain cognitive structures, i.e. specific structures of specialized knowledge. The conceptual system of each science forms categories and categorical features, between which various connections and relations are established. According to cognitive approach, the systematization of constituent sections of science presupposes falling of this or that section into a certain category. Categorization underlies the organization of any science as a system of knowledge.

"Cognitive map" is a term introduced by the psychologist E. Tolman in 1948. It gives a complete idea of system organization, general perspective of science and hierarchy in its sections. It covers all key disciplines in science. From a cognitive point of view this map can be presented as a set of frameworks built on different principles. They reflect certain scenarios: who is the doctor (doctor, nurses), where the treatment is carried out (hospital, medical institution), who participates in medical activity (scientists, medical staff), what methods of treatment are applied (instrumental and non-

instrumental), etc. The ways of representing such frames depend on the different knowledge format and study objectives.

Cognitive linguistics is based on the following features: 1. language is considered as an integral part of knowledge and as access to consciousness; 2. language reflects the interaction between psychological, communicative, functional and cultural facts.

Concept is a fundamental idea in cognitive linguistics, a unit of mental information. The interpretation of the concept adopted by us is extended and includes designation of different substrate units of the operative consciousness, such as ideas, images, notions. A typical point of view of cognitivists is that one does not think about activating one or another concept (Lakoff 1993; Boldyrev 2001; Kubryakova 2004). According to N. Chomsky, language ability is embedded in "architecture of the brain" (Chomsky 2006). United in a single system, concepts form a "conceptual system" or "conceptual model of the world" (Serebrennikov, Kubryakova, Postalova, Telia, Ufimtseva 1988: 143). The conceptual picture of the world, being partially reflected in language, forms the linguistic picture of the world. The linguistic picture of the world, resembling a kind of "network thrown on our perception and evaluation, influencing the separation of experience from seen situations and events [...] through the prism of language and experience", participates in knowledge of the world and sets patterns of interpretation of everything perceived and projects on the conceptual system of individual (Kubryakova, 1997: 47).

The last part of Chapter I discusses the theory of conceptual integration of Gilles Fauconnier and Mark Turner, which is based on the theory of mental spaces (Fauconnier 1994; Turner, Fauconnier 1998) - essence, functional mechanisms and significance. This is necessary due to the consideration of metaphor in linguistic-cognitive aspect in English terminological corpus of DM and CMS applying the method of conceptual integration. The theory itself is also a theoretical framework for the field study of 30 conceptual metaphors excerpted from Bulgarian specialized language of the respective terminological systems.

According to G. Fauconnier, language could not conceptualize rich and complex human thought accurately and in detail. It rather sets simple instructions for expressing complex ideas. Hence, mental spaces as a structural framework of conceptualization are areas of the conceptual space (conceptual packet), created in order to comprehend a given context (local understanding) and perform the relevant actions. Possessing cognitive status, they are carriers of a specific type of information about the specific discourse, contextually and culturally connected, reflecting the encyclopedic knowledge of the world, dynamic, constantly modifying and temporary.

G. Fauconnier and M. Turner have built a framework model with at least four elements, where each frame is a mental space. The two input spaces (source-input space 1, target-input space 2) are connected by means of "mapping" process. A generic space is created - a common cognitive space that contains common information about the two inputs. The fourth element of the categorical apparatus of the theory of conceptual integration is integrated space or conceptual blending. There the new resultant structure is formed as an expression of both input and generic spaces, with a new meaning of the considered concept, different from the meanings of its structuring elements. "Mapping" stages from the input mental spaces in conceptual blending are as follows: composition, completion and elaboration of the integrated space. In blending a number of processes of logical operations with input spaces occur; input spaces are enriched with additional meaning and emotional content, rhetorical presence effect is created, conceptual and cultural changes take place, extra weight to one of the input spaces is given, etc.

The study material involves a large number of examples-metaphors, formed on the principle of conceptual integration, some of which are presented in Appendix 1. Chapter I discusses the stages of formation of three conceptual metaphors: *guillotine/гильотина/гилотина*; *mammelon/мамmelon/мамелон*; *matrix, patrix/матрица, патрица/матрица, патрица*.

The metaphorical terms *matrix and patrix (a female element and a male element)* have passed from the source-input space (technique) to the target-input space (dental implantology), gaining a new specialized meaning (matrix and patrix are two fastening elements of a prosthesis of one pair that are locked; patrix is a protruding element located on the implant; matrix is a corresponding and receiving the patrix element, located in removable prosthesis; both elements form the implant). Such concepts reflect deep structures in specialist's consciousness, related to feminine and masculine onset in childbirth: "implant" as a "process" is the germ of a new construction, in the formation of which both matrix and patrix take part. Conceptual enrichment of the resultant structure is observed (Fig. 1).

matrix and patrix (a female element and a male element)
матрица и патрица (женский элемент и мужской элемент)
матрица и патрица (женски елемент и мъжки елемент)

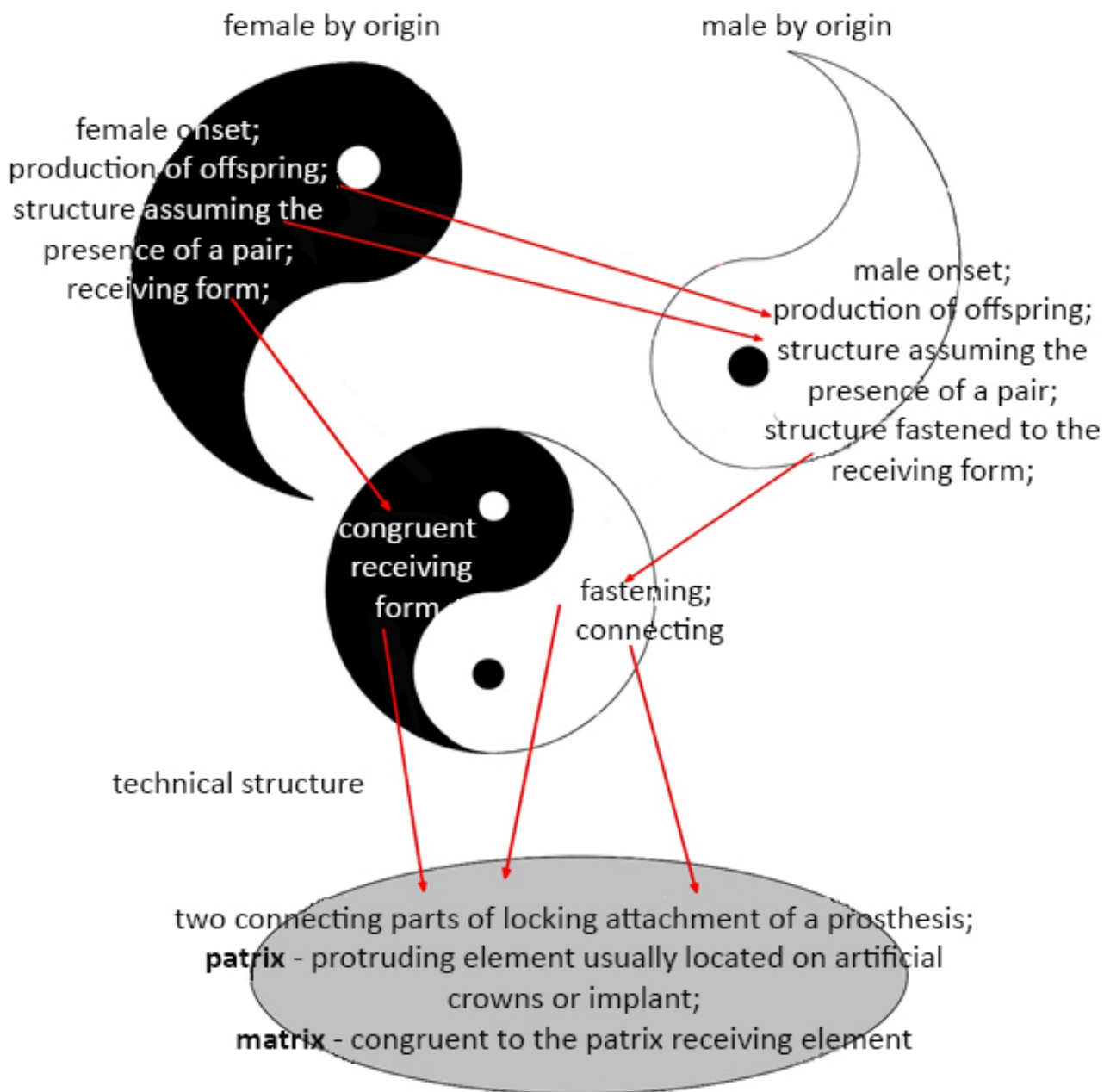


Fig.1. Formation of a single mental space based on two conceptual structures

3. Chapter II - Metaphor as a means of terminological nomination

The second chapter focuses on the problems of metaphorical nomination as a result of the emergence of a new interdisciplinary science - metaphorology and increased attention to metaphor by representatives of various branches of science, including cognitivists.

Different interpretations of metaphor nature and mechanism lead to arising different concepts, which have become a theoretical basis for the emergence of the basic ideas of scientific metaphor. This chapter outlines the semantic aspect of studying metaphor in science by conditional distinguishing four types of concepts about metaphor: 1. concepts in which metaphorization is considered as a semantic displacement of the direct meaning by figurative one (comparative theory - Aristotle); 2. concepts aimed at establishing common between direct and figurative meaning (interactive theories - Black, Telia, Jose Ortega y Gasset, McCormac); 3. concepts that affirm studying direct meaning as a basis for creating figurative meaning - imagery is embedded in literal meaning of words - going beyond semantics, entering pragmatics (Davidson, Searl, Morgan, Nikitin); 4. concepts with pronounced cognitive character, striving to create a model of metaphorization process and interpretation of metaphorization on the basis of reference relations (cognitive theories - Boyd, Kuhn, Ricoeur, Arutyunova).

The cognitive theory of metaphor, formulated in a concentrated form in the book "Metaphors We Live By" (1980) written by G. Lakoff and M. Johnson is analyzed. The main thesis of the theory comes down to the following: processes of metaphorization are based on procedures for processing knowledge - the categories of frameworks and scenarios. The knowledge realized in these frameworks and scenarios is a generalized experience of human interaction with the surrounding world - both with the world of objects and with society. A special role is played by the experience of direct interaction with material world, which is reflected on the linguistic level in the form of ontological metaphors. Metaphorization is based on the interaction between two knowledge structures - the cognitive structure of the "source" (source domain) and the cognitive structure of the "target" (target domain). The "source" structure is designed in the "target" structure, where this process is partial (Invariance Hypothesis).

Source and target-input spaces are not equivalent. The knowledge typical of source-input space is more specific and more structured ("knowledge through acquaintance", acquired by means of experience). It is organized in the form of "image schemas", to which categories such as "container", "way", "balance", "part-whole", "top-down", "front-back" can be referred. These categories are discussed in the present study as well. The knowledge typical of target-input space is abstract and unstructured

("knowledge by definition"). Metaphor allows us to comprehend the abstract, unstructured essence through the concrete, structured one.

Cognitive metaphor is one of the forms of conceptualization, without which it is impossible to express and form new concepts and acquire new knowledge. Conceptualization itself, in turn, is a key concept in cognitive science. The most studied metaphors in connection with the significant role they play in terminology formation turn out to be conceptual.

The second part of the chapter provides an overview of the main types of conceptual metaphor according to G. Lakoff and M. Johnson's system (Lakoff, Johnson 1980; Lakoff 1993) based on analogies and associations between different concepts - 1. ontological metaphors with three subtypes (container metaphor, entity metaphor with its own subtype metaphor personification, substance metaphor); 2. orientational metaphors; 3. structural metaphors. Conduit metaphor is defined and described (Reddy 1979; Lakoff, Johnson 1980). Image metaphor and new metaphor, which became the subject of G. Lakoff and M. Johnson's linguistic analysis, are commented on as well. The classification of medical metaphorical terms by L.A. Lipilina on the basis of motivating signs is also considered (Lipilina 1998).

The mechanisms underlying metaphorization in terminology are subjected to in-depth analysis. M. Popova pays special attention to metaphorization as one of the lexical-semantic term-forming ways. She considers three main characteristics of metaphorization in terminology in view of: 1. the logical basis of nominative mechanism of metaphorization; 2. the semantic value of motivating signs taking part in metaphorical process; 3. the formal structure of metaphorical term (Popova 2012). B. Alexiev also interprets the mechanism of metaphorization, combining the conceptual theory of terminology and the conceptual theory of experientialism. He formulates the following principle - terminological metaphor is constructed by "mapping a concept with general reference on a concept with special reference". The result is a metaphorical feature of type A interaction as B - "predication by analogy". This feature is integrated into the resulting metaphorical concept with special reference, which completes the process of metaphorization. Using the following formula, Alexiev expresses the process of creating terminological metaphor:

Concept with general reference → *Concept with special reference* >
Terminological metaphor where sign (→) means "mapping" and sign (>) - "result"
(Alexiev 2005: 16).

Chapter II deals with the specifics of metaphorical term formation in English and the role of Greek-Latin influence in this process as well. The formation of European languages terminological systems and the ratio of Greek-Latin and national layers (ratio

from center to periphery) are shown basing on medical terminological materials. In the center there is a core of original Latin terms, which are not subject to any phonetic and morphological changes (*Lat. extrasystole - Eng. and Ger. extrasystole*). The next layer presents borrowed terms of Greek-Latin origin, followed by terms artificially created for new concepts based on Greek-Latin term elements according to the rules of ancient terminology modelling. Mixed international-national units form the penultimate layer, and national ones occupy the periphery. When analyzing the ways of filling in each of the layers, the researcher inevitably returns to the center of terminological system. The reasons for this are rooted in polysemy restriction with the entry of Greek-Latin terms and word-forming elements into the national terminological systems; derivational advantage of Greek-Latin term elements; ability of the classical terminological system to adapt phonetically and morphologically in the host language, preserving the community of root word and the unity of semantic idea (*prosthetics/протетика, протезирование/протетика, протезиране*).

The last part of chapter II discusses synonymy in metaphorical term formation. Different views are presented. Synonymy is described by the concept variant: formal-structural variants (phonetic, accent, morphological, graphic); onomasiological variants (affixal variation - *chalazion, chalazia*; composite variation - *anchor implant, implant-anchor*; syntactic variation - *fossa tonsillaris, tonsillar fossa*); synonyms - varying linguistic means, indicating different properties of the denotation (Tatarinov 2006). From a semantic point of view, depending on the identity or differences of the motivating signs, the synonymous terms are divided into two types: equivalent and interpretive. Most terminological synonyms of the equivalent type turn out to be interlingual doublet terms (words or phrases of different linguistic origin whose root or word-forming elements possess the same meaning). In interpretive synonyms in medical terminology there is a possibility to separate different distinctive features of the same object; use of both obsolete and modern scientific designations to name the same disease (*palatum fissum/насть волчья – obs. Russ./вълча насть – obs. Bulg.*); naming the same object differently by different specialists (*Filatov flap, Filatov-Gillies flap, tubed flap/стебель Филатова/стъбло на Филатов* (method in reconstructive surgery); enrichment of the concept of medical object in the process of its study. The reasons for constantly growing number of synonyms in medical terminology and the need to regulate terminological synonymy by standardizing one of the variants are pointed out.

For the objectives of the current study of the data from DM and CMS fields the following understanding regarding metaphor and metaphorization as a process of term formation and the following model of analysis of the considered tendencies of development in English metaphorical corpus of DM and CMS - metaphorization, structural-syntactic characteristics, etymological diversity, synonymy - have been accepted:

➤ **Metaphor** is not simply a pure linguistic structure. We understand it rather as a conceptual phenomenon, where the concept is a principle organizing perception, knowledge, thinking, behaviour, practical activity of the individual and categorizing human experience. In this respect, we accept metaphor as a cognitive mechanism with complex cognitive structures, the understanding of which requires knowledge of extralinguistic and professional nature.

➤ What has been stated so far determines our interpretation of the terminological metaphor and the process of its emergence - metaphorical terminology. In this context, we tend to understand **terminological metaphor** as establishing analogies with our routine experience conceptual mechanism for verbalizing the new scientific concept in view of the specialized and non-specialized experience of the specialist. We accept terminological metaphor as a means facilitating the transfer of knowledge and realizing the dialogicity in scientific communication as well.

➤ We define **metaphorical terminology** as a process of verbalized cognitive-image synthesis of integrated conceptual structures of pragmatically processed specialized scientific knowledge. The process course is as follows: the two input mental spaces - source-input space 1 and target-input space 2 interact through "mapping", a generic space is created - a common cognitive space that contains general information about both inputs. The ensuing integrated space or conceptual blending is the place where the new resultant structure is formed. It, in turn, is an expression of the two input and generic spaces, with a new meaning of the considered concept, different from the meanings of its structuring elements. In this respect we consider metaphorical terminology as a process ensuring the nomination of objects, phenomena and processes that arise in new areas of scientific knowledge.

➤ **Methodology for conceptual analysis** has been accepted in order to be applied in the process of studying and modelling English terminological metaphors. It consists of the following operations: 1) activation of general knowledge (animate and inanimate nature, culture, religion, science, life), determination of conceptual distinctive features of the object within the first input mental space (source-input space), which create an initial idea of the object; 2) activation of intermediate (professional) knowledge related to the target-input space (second input mental space) and subsequent stage of the research object conceptualization, going into the depth of its conceptual content and re-identifying its characteristic conceptual features; 3) finding points of contact between the compared concepts and their projection in the integrated space, synthesis of two or more mental spaces and placing the selected nominative unit in a certain category.

4. Chapter III - Characteristic features and modelling of English metaphorical units in DM and CMS terminological systems

Chapter III highlights the prerequisites for the language choice and contribution of English (as leading language in the study) and Russian (as translated equivalent of

the studied metaphorical units and reference in some places) for enriching international medical terminology fund and facilitating worldwide mediation on a professional level (Fig. 2).

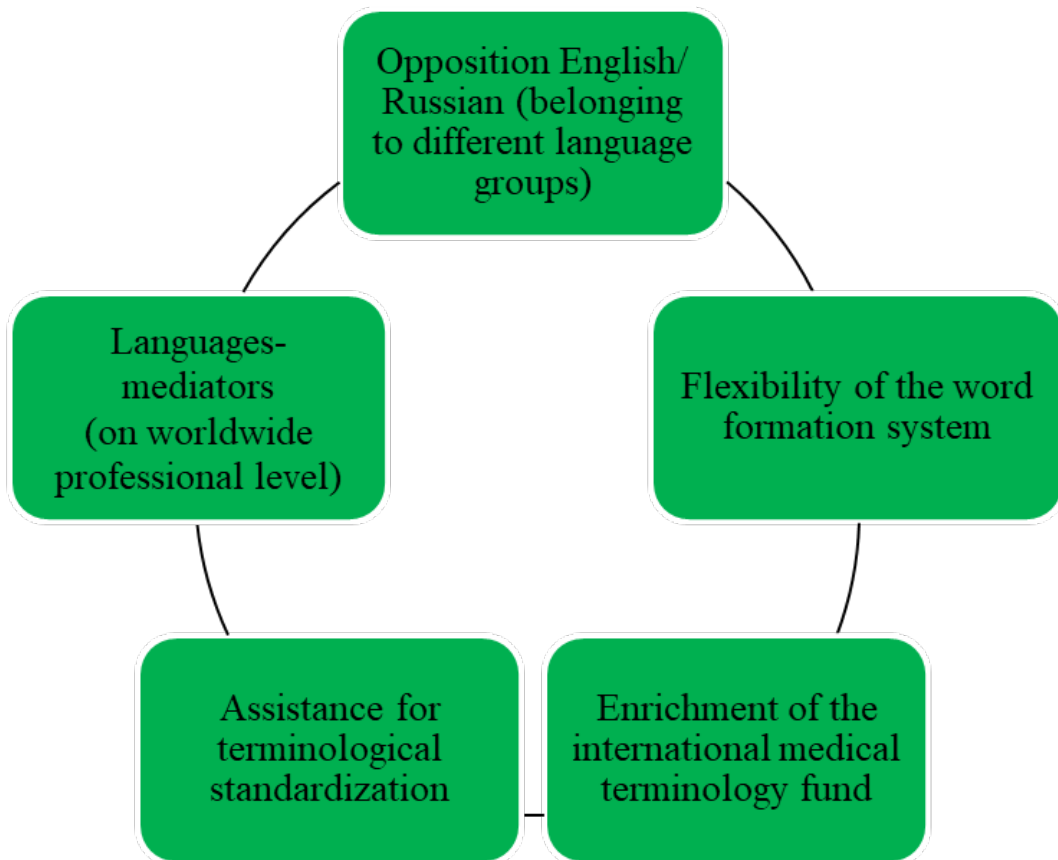


Fig.2. Motivation for language choice (English and Russian) in the study

The specifics of terminology of the studied terminological systems (DM and CMS) are defined. The considerations for the name of Cranio-Maxillofacial Surgery speciality accepted by us and reasons for inclusion of diseases with non-dental genesis but with manifestations of symptoms typical of Fundamental and Special DM and CMS morphology and surgical treatment performed by cranio-maxillofacial surgeons are set out.

The formation of some debatable metaphorical terms for a given historical period is commented on. Such is the case with metaphors *hare lip/заячья губа/заешика устна* and *cleft of the hard palate/волчья пасть/вълча уста, пасть*, common at the beginning on the level of communication between specialists, subsequently subjected to discussion in the direction of most accurate reflection of the conceptual nature of congenital facial defects (*non-fusion of the lip and non-fusion of the palate*), but having regained their metaphorical imagery presently. Another striking example of controversial nature is the metaphorical term *implant/имплантат/имплант*. Starting from the word etymology

we come to a metaphorical transfer of meaning, pass through alternative interpretations of the term in order to witness the moment of formation of metaphorical units from modern dental implantology (*anchor implant/якорный имплантат/имплант котва; blade implant - имплантат лезвиевидный, имплантат лопастный/имплант острие*). Discrepancies of the means of expression in the languages based on imagery - neutrality are established as well: *air dressing (wound)/открытая, без повязки (рана)/открыта, без превръзка (рана); ключ-трещотка/трещотка/ratchet, syn. torque wrench*. The reasons (extralinguistic and linguistic processes) for the metaphorical nature of the dental instrumentarium names and elements of the dental surgery are indicated.

4.1. Formation of metaphorical models based on the source-input space in DM and CMS corpus

The thematic lexical diversity of analyzed terminological metaphors (618 representative units), the introduced specific imagery of the source-input space allowed the differentiation of two main categories of metaphorical models: **Anthropogenic and Non-anthropogenic metaphorical models**. The first model includes terms directly associated with human activity and nature while the second one indicates the relationship of man with surrounding reality. This proves that English metaphorical terminology of DM and CMS shares **anthropocentrism** typical of the development of modern linguistics.

Anthropogenic metaphorical models include 13 metaphorical models with the respective basic components. Non-anthropogenic metaphorical models involve terminological units of 7 metaphorical models and the basic components referred to them. Tables 1 and 2 give compressed information about all separate metaphorical models with their basic components, representative English metaphorical units with translation equivalents in Russian and Bulgarian, ratio in percentages of each model to the total number of units in the corpus and the specific number of studied terms within the particular model.

I. Anthropogenic metaphorical models

Table 1

Anthropogenic metaphorical model	Basic component	Examples of metaphorical terms (Eng. – Russ. – Bulg.)	Ratio %	Number of metaphorical terms
"MAN"	"CONDITIONS", "BODY PARTS",	<i>dead pulp/мёртвая пульпа/мъртва пулпа; neck of a</i>	13,9%	86

	"PHYSICAL ABILITIES", "SOCIETY", "QUALITIES"	<i>tooth</i> /шейка зуба/зъбна шийка; <i>jump flap</i> / мигрирующий лоскут/мигриращо ламбо; <i>granny knot</i> /бабий узел/бабин възел; <i>wisdom tooth</i> /зуб мудрости/мъдрец		
"CONSTRUCTION AND ARCHITECTURE"	"CONSTRUCTIONS AND THEIR PARTS"	<i>bridgework</i> /протез мостовидный/ мостовидна (зъбна) протеза; <i>ethmoidal labyrinth</i> /лабиринт решетчатой кости/лабиринт на решетъчната (етмоидална) кост; <i>mouth floor</i> /дно полости рта/ „под“(основа) на устната кухина; <i>vestibule of the nose</i> /преддверие носа/преддверие на носа; <i>Black's sidewalks</i> /тротуары Блэка/тротуарите на Блек	10,8%	67
"LIFESTYLE"	"HOUSEHOLD ITEMS", "GAME ITEMS"	<i>bed</i> /ложе/легло, ложе (алвеола); <i>lacrima sac</i> /слезный мешок/слъзна торбичка; <i>cell pellets</i> /клеточные пеллеты/клетъчни пелети; <i>doll's eye symptom</i> /симптом кукольных глаз/ рефлекс на куклениите очи	7,4%	46
"PROFESSIONAL EQUIPMENT"	"PROFESSIONAL INSTRUMENTS"	<i>chisel</i> /долото/длето; <i>frenulum linguae</i> / уздечка языка/ юздичка на езика,	5,5%	34

		френулум; <i>malleus</i> /молоточек/ „чукче” (кост в средното ухо); <i>sickle flap</i> /серповидный лоскут/сърповидно ламбо		
"MUSICAL INSTRUMENTS"	"PROFESSIONAL INSTRUMENTS"	<i>accordion</i> <i>graft</i> /аккордеонный трансплантат/ „акордеонна” присадка (трансплантат); <i>drum membrane</i> / барабанная перепонка/ тъпанчева мембрана; <i>lyra</i> /лира/лира	1,5%	9
"ACTIVITY"	"PROFESSION" "HABITS"	<i>cobbler's suture</i> / сапожный шов/ обущарски шев; <i>pilot drill</i> /бор-пилот, сверло- пилот/пилотен борер; <i>smoker's tongue</i> /язык курильщика/ синдром на „черен космат език“	1,5%	9
"FOOD PRODUCTS"		<i>cheesy necrosis</i> ,/ творожистый некроз/казеозна, сиренеста некроза; <i>cafe au lait spots</i> /пятна цвета кофе с молоком, кофейные пятна/родилни петна тип „кафе с мляко“ ; <i>egg bur</i> /яйцевидный бор/яйцевиден борер	2,6%	16
"CLOTHING AND TEXTILE"		<i>cap</i> <i>crown</i> /наперстковая коронка зуба/зъбна коронка; <i>capeline</i>	3,2%	20

		<i>bandage</i> /шапка Гиппократ/шапка на Хипократ; <i>mantle</i> /кора головного мозга/мантия, кора (на главния мозък)		
"MILITARY AFFAIRS"	"WAR", "WEAPONS", "AGGRESSION"	<i>guillotine</i> /гильотина, применяемая при оперативном удалении миндалин/гилотина (хирургичен инструмент); <i>killing the nerve</i> / девитализация пульпы зуба/ умъртвяване на нерв; <i>lanceolate incisor</i> /копьевидный резец/копиевиден резец ; <i>sagittate suture of skull</i> / стреловидный шов черепа/стреловиден, сагитален шев на черепа	2,8%	17
"SPATIAL ORIENTATIONS AND TIME"		<i>anterior occlusion</i> / передний прикус/ предна захапка; <i>closed bite</i> /закрытый прикус/дълбока захапка; <i>golden hour</i> /золотой час/златен час, критичен час; <i>height of disease</i> /разгар, пик болести/разгар, пик на болестта	1,5%	9
"MYTHOLOGY AND FOLKLORE"		<i>atlas</i> /атлант/атлас (първи шиен прешлен); <i>chimeric tooth</i> /зуб-химера/ зъб-химера; <i>ugly duckling stage</i> /стадия „гадкогo утенка“/	2,3%	14

		стадий „грозного пате”		
"LETTER"		<i>O-ring attachment</i> /кольцевидный аттачмен/ пръстеновиден атачмънт; <i>sigmoid sinus</i> /сигмовидный синус/сигмоиден синус; „ <i>T-shaped flap</i> /Т-образный стебель/Т-образно ламбо	2,4%	15
"NATIONALITY AND GEOGRAPHY"		<i>Turkish saddle</i> / турецкое седло/ турско седло; <i>geographical tongue, lingua geographica</i> /географический язык/набразден, географски език; <i>German measles</i> / краснуха коревая, германская корь/рубеола, немска дребна шарка	1,0%	6
TOTAL			56%	348

II. Non-anthropogenic metaphorical models

Table 2

Non-anthropogenic metaphorical model	Basic component	Examples of metaphorical terms (Eng. – Russ. – Bulg.)	Ratio %	Number of metaphorical terms
"NATURAL COMPONENTS"	"RELIEF", "SOIL AND COMPOSITION"	<i>cavernous sinus</i> / пещеристый синус/пещерист синус; <i>floor</i> /пол в значении „дно“/ дъно; <i>fossa</i> / ямка/ямка;	8,6%	53

		<p><i>petrotympanic fissure</i>/щель каменисто-барабанная/ петрозно-тъпанчева фисура; <i>acervulus</i>/ „мозговой песок“/ „мозъчен пясък“</p>		
"AQUA"	"WATER"	<p><i>lacrimal lake</i>/слезное озеро/„сльзно езеро“; <i>submandibular duct</i>/подчелюстной проток/канал на долната челюст; <i>water cancer</i>/водяной рак/ воден рак (нома, влажна гангрена); <i>primary erythroblastic anemia</i>/средиземноморская анемия/ средиземноморска анемия</p>	7,1%	44
"ANIMAL WORLD"	"BODY PARTS", "BEHAVIOUR", "APPEARANCE", "APPEARANCE AND BEHAVIOUR"	<p><i>monkey face</i>, <i>monkeurox</i>/лицо обезьяны, оспа обезьян/маймунско лице, маймунска вариола; <i>cat cry syndrome</i>, <i>cri-du-chat syndrome</i>/синдром кошачьего крика, синдром „кошачьего мяуканья“/синдром на котешкото мяукане; <i>butterfly rash</i>/„кожная“ бабочка/пеперудо-подобен обрив по лицето; „<i>rat tail</i>“ <i>rasp</i>/рашпиль „крысиный хвост“/пила тип „миша опашка“</p>	12,8%	79

"PLANT WORLD"	"GROUND SURFACE PLANTS", "FRUIT", "SEEDS", "VEGETABLES"	<i>brain stem</i> /ствол мозга/мозъчен ствол; <i>root of tongue</i> /корень языка/корен на езика; <i>taste bud</i> /вкусовая почка/вкусова луковица; <i>strawberry tongue</i> /„клубничний“ язык/„ягодов“ език; <i>oat cell carcinoma</i> /карцинома с овсяновидными клетками/карцином с овесовидни клетки; <i>hair bulb</i> /волосяная луковица/космена луковица	11,5%	71
"ASTRONOMY AND NATURAL PHENOMENA"		<i>flame bur</i> /пламевидный бор/пламъковиден борер; <i>semilunar hiatus</i> /полулунная расщелина/полулунна цепка; <i>stellate fracture</i> /звездчатый перелом/звездовидна фрактура	1,5%	9
"COLOUR AND TINT"		<i>purpura</i> /пурпура/пурпура (тъмночервен или виолетов обрив); <i>raspberry tongue</i> /малиновый язык/малинов език; <i>port-wine mark</i> /невус (родимое пятно) цвета портвейна/винени, родилни петна; <i>black hairy tongue</i> /черный „волосатый“ язык/черен космат език	1,3%	8

"ACOUSTICS"	"SOUND"	<i>cracked-pot sound syndrome/симптом „шума треснувшего горшка”/симптом „звук на пукнато гърне“; nun's murmur/шум волчка/венозен шум, венозно бучене - бръмчене, жужене</i>	1,0%	6
TOTAL			44%	270

In quantitative terms, the predominance of Anthropogenic metaphorical models in the studied corpus compared to Non-anthropogenic metaphorical models is obvious (56% - 44%). Human sphere in its numerous manifestations (physical, moral, intellectual, social) as one of "eternal themes" in the context of language historical development, explains the dominance of anthropogenic metaphorical model "MAN" in the general classification. The metaphorical terms of this model are formed on the basis of analogies related to the human biological characteristics, names of body parts and living organism properties.

The model "CONSTRUCTION AND ARCHITECTURE" takes second place in the anthropogenic part of the analysed English metaphorical corpus. It is formed on the basis of analogy with construction and architecture terminology. Transfer by shape and function is mainly observed and presence in the terminology of modern biotechnologies has been reported in this model (*scaffold-based bio-tooth design/био зубная платформа, подмости/био зъб на платформа, скеле*). The presence of terms related to modern biotechnology has been reported as well in the models "LIFESTYLE" (*cell pellets/клеточные пеллеты/клетъчни пелети* - tooth regeneration method) and "MYTHOLOGY AND FOLKLORE" (*chimeric tooth/зуб-химера/зъб-химера*).

"ANIMAL WORLD" model is the leading model in the non-anthropogenic metaphor. Its percentage puts it in second place immediately after the model "MAN" in the general classification of the corpus. The connection between both models is obvious and is realized in a certain direction - metaphorical transfer from the space of "ANIMALS" to that of "MAN". The sources for forming this model – animal body parts, behaviour and appearance - are transferred to the same of man. The zoomorphic metaphor marks a high frequency of usage in DM and CMS due to the high degree of metaphorical reasoning and wide range of topics that affect pathological, disease-causing conditions, surgical manipulations and dental instrumentarium.

The non-anthropogenic metaphorical model "PLANT WORLD" has a strong presence - second in number of non-anthropogenic metaphorical units and third in the general classification of the studied English corpus. The phytomorphic metaphor reflects both the concept of "anatomical object and its signs within the norm" and the concept of "deviation from the norm, disease". The polyfunctionality of this metaphor determines a tendency for expansion of the metaphorical terminology in the field of DM and CMS and is its distinguishing feature. It takes part in the formation of other models as well: "FOOD PRODUCTS", "COLOUR AND TINT", "NATURAL COMPONENTS" (*maple syrup urine disease/болезнь „кленового сиропа”/болест на кленовия сироп* - with manifestations in oral cavity).

The international character of metaphorical terminology of the studied English corpus is manifested in the presence of international metaphorical terms in two of the models - "MYTHOLOGY AND FOLKLORE" and "LETTER" (*gargoylism/гарголизм/гарголизъм* - macroglossia with a grotesque face, abnormal enlargement of tongue, jaw, teeth and thick turned lips).

Ethnolinguistic differences have been observed and indicated in the formation of mental grounds for forming a particular metaphor (*nun's murmur/шум волчка/венозно бучене, жужене*).

The motivating nominative sign for most metaphorical units is the similarity in shape or function but there are other analogies - in consistency, sound, colour, time period, etc.

The selective activity of metaphorical models proves the existence of **systematicity** in term formation. The terminological units of DM and CMS sublanguage are a system in which through metaphorical transfer key concepts from this field of knowledge are verbalized - concepts related to anatomical nominations, pathological processes, symptoms, syndromes, diseases, various pain sensations, surgical manipulations, medical instrumentarium.

Appendix 2 presents the list of all studied English metaphorical terms with their translated equivalents in Russian (618) in DM and CMS terminological systems by models: Anthropogenic and Non-anthropogenic.

4.2. Field study: "Conceptual blending through the cognitive prism of DM students"

A field study was conducted on 30 one-word and complex Bulgarian metaphorical terms excerpted from the terminological systems of DM and CMS in a language group of 52 respondents (students being taught in DM) with a pre-defined theoretical framework, hypothesis, research question, aim and tasks.

Hypothesis: Conceptual blending as a type of metaphORIZATION is present in individual's consciousness, where the word functions as a key to the processes of blending, in which the resulting metaphorical term is understood by the individual through mental perceptions (images) associated with specialized and non-specialized personal knowledge.

Research question: Do the processes of interaction and integration of mental spaces in a common conceptual blending, based on common vocabulary, realize in the analyzed 30 metaphorical terms of DM and CMS terminological systems on the basis of data obtained from 52 respondents? The expectation is that if blending really functions as a mechanism for term metaphorical interpretation, respondents will associate the term with some input mental space and will be able to determine the associative connection (i.e. the motivation for knowledge transfer from one space to another and structuring of the latter in a metaphorical term in each case).

Aim: To establish or reject the existence of conceptual blending in understanding or functioning of 30 metaphorical terms from DM and CMS scientific field basing on the obtained associative information from 52 respondents surveyed.

The selection of terms is in compliance with the following criteria: 1. representativeness (covering all specialties of Fundamental DM, Special DM, CMS and Dental Instrumentarium); 2. association with different levels of knowledge and expertise; 3. frequency of use in specialized literature and professional everyday life; 4. significance for the future specialist's training, practice and professional expertise; 5. metaphoricity.

Methods: survey method; method of component analysis; statistical method.

The proposed questionnaire contains 183 questions, grouped in 30 sections with 6 questions identical for each metaphorical term. Section 31 consists of 3 questions, the first of which is common to all units studied and the other two provide information about the respondents (1st year, aged between 19 - 24).

Results. Analysis and discussion.

The summarized data on issues for the entire representative material of the study is presented and discussed in the dissertation. It is illustrated with figures as well. The descriptive analysis and figures for each separate terminological unit can be seen in Appendix 3.

1. **Are you familiar with the expression/word...?** Regarding the first question predominance of participants familiar with metaphors (78.5%) has been reported and most of the knowledge about the term comes from everyday life (38.1%), followed by a minimal difference - from the scientific literature and training process. The terms

related to dental diseases and conditions with manifestations in cranio-maxillofacial field, which are the subject of studies at a later stage of training, quite logically turn out to be unknown to 21.5% of the respondents (e.g. „черен космат език“; „готическо небце“). The level of professional and linguistic-cultural competence of the respondents, their skills for associative thinking and conceptualization, the background knowledge available to each respondent are highly significant.

2. What do you associate the expression/word... with? The second question of the survey is open. Here the respondents create a wide range of linguistic means with which they associate each of the conceptual metaphors. Participating directly in the conceptual process, they create both input spaces (source-input space and target-input space) and generic space. This is a prerequisite for the emergence of the merged space (blending) and formation of the terminological unit. All this is realized depending on the individual, his thoughts, behaviour, understanding of the world, embodied experience gained in non-specialized and specialized environment. The dominance of words and expressions related to common language has been reported (74%). The largest number of such units are associated with the term „гилотина“ - 96% (beheading, head, execution, punishment, middle ages, strong fear, horror, end, amputation, murder, death, conviction, verdict, torture), followed by „мотичка“ - 94% (agronomy, work, digging, blade, a piece of land, field, shoulder, remove). Metaphorical terms whose connections respondents find more in specialized language than in common language are - „турско седло“ - 58%; „атлас“ - 54%.

The following ways of perceiving the metaphor stand out: 1. By means of specific objects and activities from everyday life (sewing, thread); 2. By means of emotions, feelings, moods, more often extreme and negative (disgust); 3. By means of giving an assessment - neutral or negative (high, ugliness); 4. By means of specialized scientific concepts (bone structure, osteology). More conventional and frequent lexical units turn out to be most often relevant for understanding the metaphorical terms but all four groups of linguistic means participate in blending and term formation. In addition, most of the words and expressions associated with the metaphors by the respondents coincide with those indicated by us in the next question (3) as a generic space.

3. Is the expression/word... related to the words:...? Concepts from input spaces are in a constant process of interaction and selection of their associations. The generic space contains "unfixed" referents responsible for the terminological metaphorical conceptualization (Alexiev, 2005). Within the 3rd question of the research, the participants are suggested common for the respective inputs of each metaphor referents. Their task is to establish the presence or absence of a connection between the considered expression/word and proposed general features. The predominance in favour of the presence of conceptual blending in understanding (i.e. functioning) of metaphorical terms is obvious: 97% of the subjects claim that the required connection

exists and only 3% do not find it. 100% coherence between the term and proposed lexemes is found in „*мостова протеза*“, „*умъртвяване на нерв*“, „*кавернозен/пещерист синус*“, „*шийка на зъб*“, „*мъртва пулпа*“, etc.

4. What do you think these words... are in general? The fourth question determines the nature of the linguistic means indicated by us for each individual expression/word in the previous question of the survey. The majority of respondents tend to define the indicated linguistic means from generic (hybrid) space as commonly used (77% - „*винен нос*“, „*мъдрец*“, „*бабин възел*“, „*стадий грозно пате*“, etc.), which gives us a good reason for identifying the analyzed material as a result of a conceptual fusion based on routine lexis. Concerning other two categories of definiteness - "words/expressions from the specialized language of DM and CMS" and "words/expressions from some specialized language" - low percentage result has been reported.

5. Which other sphere of life is the expression/word... related to apart from DM/CMS? The fifth question of the survey is aimed at forming a unified set of metaphorical models that bear the name of source-input space and are, therefore, related to a specific sphere of life. By the metaphorical projections of the source-input space into the target-input space (DM and CMF) images of construction and architectural facilities, household items, mythological and folklore creatures, natural objects and phenomena, animals, plants, habits, colours, conditions, nationalities, etc. emerge and enter the study ("Construction and Architecture", "Lifestyle", "Military Affairs", "Profession and Habits", "Mythology and Folklore", "Nationality and Geography", "Space", "Aqua", "Animal World" and "Natural Components"). The open option "Others" has also been added.

The generalized result of the research indicates the connection of linguistic expressions with some "sphere of life" quite categorically - 92% of the respondents associate each of the metaphors with a certain sphere indicated by us. 5% of them interpret the sphere in their own way again making an analogy of the expression/word with "sphere of life"- „*камшичен удар*“ (mechanics, agriculture); „*бабин възел*“ (man, sewing); „*длето*“ (art); „*мотичка*“ (agronomy), etc.

A high level of variability in the choice of leading source-input space has been reported due to the range of respondents' knowledge about the world, required for the specific analogy. A certain frequency of some "spheres of life" has been marked as well. First place is occupied by the sphere "Animal World", represented by 9 terms (30%), followed by "Lifestyle" (7 units, 23%) and "Construction and Architecture" (6 units, 20%). The expressions „*мостова протеза*“ (88%) and „*заешка уста*“ (82%) most unambiguously state that they belong to the respective source-input space – "Construction and Architecture" and "Animal World".

6. Point out the similarity in which the origin of the expression/word...is based on (personal opinion is required)? The last question (6th) of the 30 sections of the survey concerns the motivation of analyzed conceptual metaphors for terminological nomination. Selecting from the suggested options (shape, function, result, colour, sound, I cannot determine, others), respondents indicate the sign they believe motivated the emergence of the expression/word.

Similarity in shape is the most significant nominative sign (12 terms - 40% of the total share of units; e.g. „кулообразен череп“, „турско седло“, „птиче лице“, „заешка уста“, „шаранова уста“). Function is the second most important sign motivating the emergence of the studied metaphors (10 terms - 33%; e.g. „черепен покрив“, „мостова протеза“, „атлас“, „корен на езика“), followed by similarity in result (4 terms - 13%; e.g. „умъртвяване на нерв“, „мъртва пулпа“). 12.6% of the respondents find it difficult to specify the similarity and 1.8% make their own analogies (location - „преддверие на носа“; vision - „черен космат език“; time, period - „стадий грозно пате“, etc.). Two other metaphorical units turned out to be interesting findings as they apparently hindered respondents the most - „воден рак“ and „херувизъм“ (40%; 38% of respondents do not make analogies for their forming).

7. Would you use all expressions and words when talking to a patient? Question 1 of 31st section is common to all 30 metaphors in the study. 69% of respondents express their opinion that the analyzed terms can be used not only in specialized discourse, but in a less formal environment as well - in a conversation between a dental specialist and a patient.

The above-described analogies of expressions/words with concepts from surrounding material and abstract world; defining them as conceptually motivated names; their ability for adequate applicability in dialogue between professional and patient to clarify the diagnosis and treatment, as well as the entire empirical database led to the following **specific conclusions** and a **generalized conclusion** proving the study hypothesis:

A. The considered expressions/words (30) are result of metaphorical conceptual blending. They are understood as such by the individual on a mental level through perceptions and images;

B. The metaphorical conceptual blending of the analyzed units is largely based on expressions and words from common language;

C. The space of metaphorical conceptual blending of the considered expressions/words (30) contains the generalized information extracted on the basis of the established correspondences between source-input space (sphere of life) and target-input space (DM and CMS conceptual field);

D. The metaphorical conceptual blending of all analyzed units is a fusion of concepts, considerations, analogies, imagination; includes respondents' knowledge of the world, namely:

- basic knowledge of everything surrounding individual;
- cultural knowledge;
- professional knowledge;
- socio-political, mental, emotional, ethical and aesthetic knowledge;
- basic perceptual knowledge;

E. Within the studied representative material (30 expressions/words) non-anthropogenic sphere of life "Animal world" is dominant;

F. The similarity in form is prevailing motivating nominative sign regarding the analyzed 30 expressions/words.

Conclusion: The conducted field study on 30 Bulgarian metaphorical terms, excerpted from DM and CMS terminological systems, in a language group of 52 respondents (students studying DM) and the empirical data derived from it highlighted terminological metaphorization specifics in the direction of complex cognitive processes, in the course of which the specialist (in this case still studying but having certain knowledge base in specialty) creates conceptual images of the scientific object, comprehends the connections between them, merges some of them into conceptual blending, actually "processes" his knowledge of the object through the prism of his associative skills and personal knowledge of the world.

It has been proven that conceptual blending as a kind of metaphorization is present in individual's consciousness, reflecting his pictures of the world. It is a universal cognitive mechanism by nature, fully functioning in any linguistic community, regardless of the language expression of metaphorical thought. Being a common cognitive and synergistic phenomenon in specialized language, conceptual blending leads to terminological fund enrichment of one or another scientific field.

4.3. Formation of structural-syntactic models in English metaphorical corpus of DM and CMS

In this part of Chapter III of the dissertation we show that the analyzed metaphorical terminology (excerpted segment of 182 English metaphorical terms) is not formed chaotically but within **regular structural-syntactic models typical of English**. This regularity in the linguistic layout of metaphorical terms testifies again to the systematic nature of their term formation.

The direction in which the structural-syntactic modelling is performed is **substantive**. Taking into account the criterion - nature of the components making up the models - we can talk about a tendency to form **Substantive model**, represented by **two component-different structural-syntactic submodels**: 1. Substantive model **with substantive component** and 2. Substantive model **with adjectival and substantive components**. According to the number of components in metaphorical term composition, the first type of model is represented by one-word, two-word and multi-word metaphorical terms, on the basis of which 7 structural models are distinguished. (N, N+N, N's+N, N+of+N, N+N+N, N+of+N+N, N+of+N's+N). The second type of structural model is represented by two-word and multi-word terminological units. They are part of 11 structural models (Adj.+N, N+Adj., Part.I+N, Part.II+N, Adj.+N+N, Adj.+N+N+N, Adj.+Adj.+N, N+of+Adj.+N, N+Part.II+N, N+Part.II+N+N, Part.II+N+N). The terms, formed on a pure model from classical languages - Latin and Greek, are not included in the analysis. Figures 3 and 4 present the linguistic means for explicating both types of structural-syntactic models, examples, number and percentage ratio of the units.

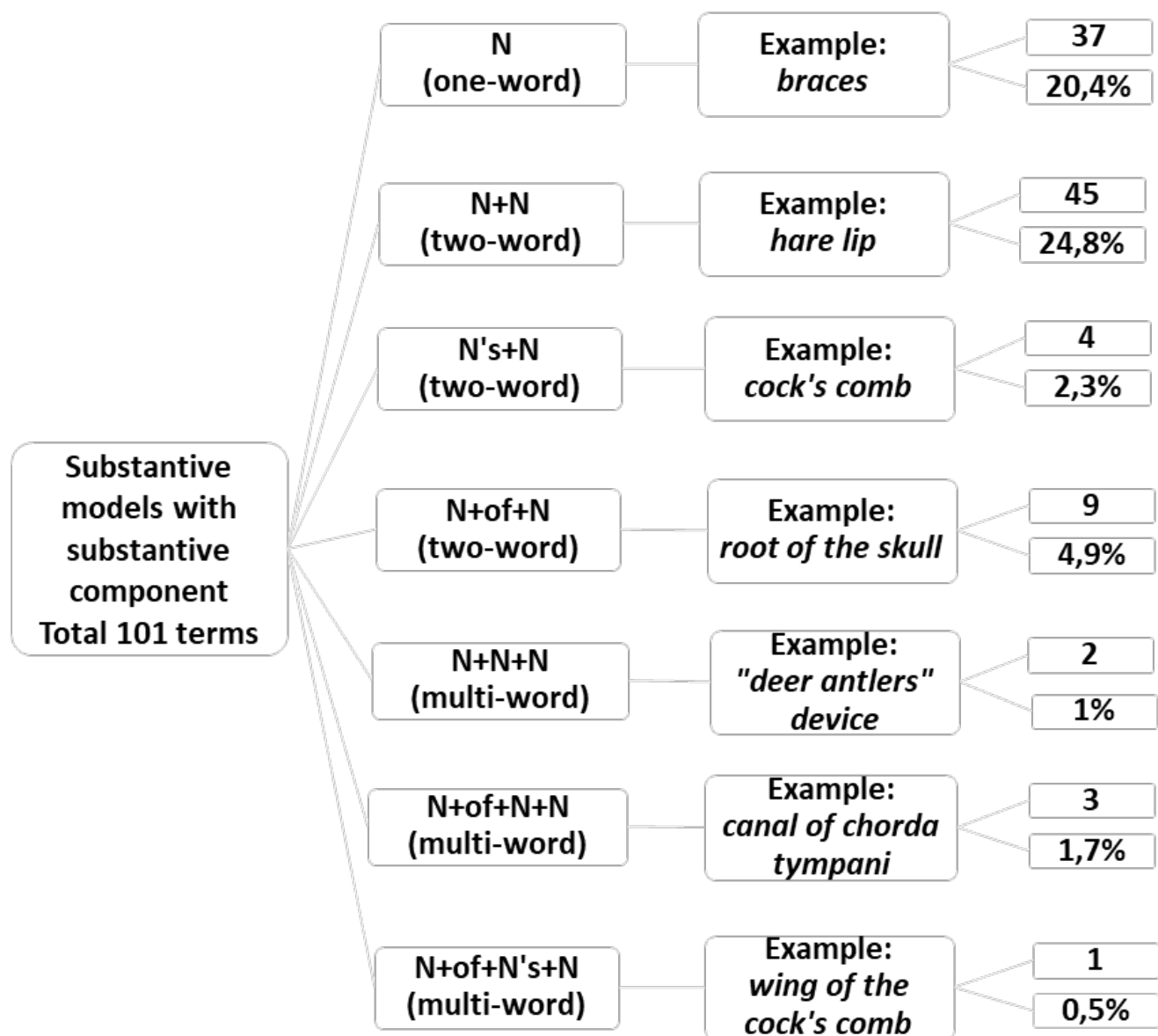


Fig. 3. Linguistic means for explication of metaphorical terms – Substantive models **with substantive component**

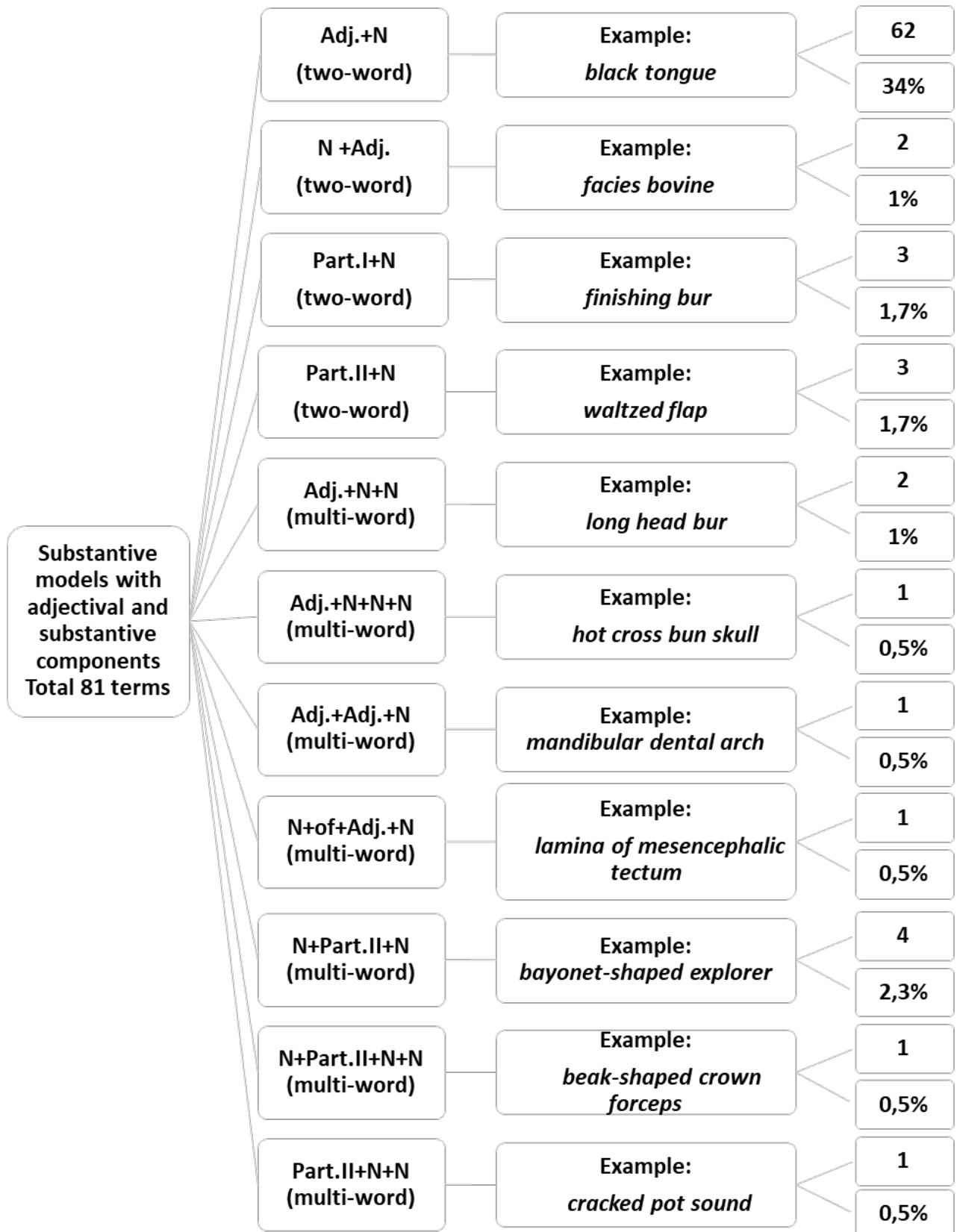


Fig. 1. Linguistic means for explication of metaphorical terms – Substantive models with adjectival and substantive components

The substantive structural model **with substantive component** marks a higher productivity (55.5%) compared to the substantive model with adjectival and substantive components. Within this model the most frequently used structure is the two-component language realization N+N (24.8%) followed by the one-component language realization N (20.4%). N+N model has typical for English attributive function and in terms of productivity it occupies second position in the general corpus classification. Basically, it is composed of original English metaphorical terms (*buffalo neck* / „бизонья“ шея/бизонска гърбица).

The substantive model **with adjectival and substantive components** presents a variety in the combinations of term elements. Predominance of the two-component language realizations has been reported in this model. **Adj.+N** model (62 terms - 34%) has a dominant position in general structural-syntactic classification, represented mainly by assimilated borrowings metaphorical terms of Greek-Latin origin (*caudate nucleus*/хвостатое ядро/опашато ядро). Within the substantive model with adjectival and substantive components, there is a tendency for strong variability in the combinations of the two components making up the models.

Relatively numerous in the studied segment is the substantive model N, which involves one-word metaphorical terms - English by origin (*canine*/клык/кучешки зъб, канин) and borrowings from other languages (*bur*/бор/борер).

The two-component terminological combinations turn out to be dominant structure in the studied English metaphorical terminology of DM and CMS. In the studied segment their number amounts to 128 metaphorical units (70.4%).

The multicomponent structural-syntactic models indicate much lower productivity in the considered corpus with representatives from 1 to 4 metaphorical units.

The structural-syntactic models include a large number of assimilated borrowings from classical and other languages with a predominance of ancient Greek and Latin but there is a tendency to use original English metaphorical terms as well.

All examples of verbalization of the substantive structural models **with substantive component** in English corpus of DM and CMS are presented in the dissertation with registered term elements' etymology. All metaphorical terms that make up the substantive structural models **with adjectival and substantive components** are shown in Appendix 4 considering their etymology.

4.4. Formation of etymological models in English metaphorical corpus of DM and CMS

In this part of Chapter III the focus is on the tendency of etymological diversity in the studied English metaphorical corpus and the formation of etymological models. A segment of 400 metaphorical terms from „Толковый англо-русский и русско-английский словарь метафорических терминов черепно-челюстно-лицевой хирургии и стоматологии“ was subjected to etymological analysis (Novodranova, 2007b). As a final result, the following models of terminological units were distinguished: **original** (pure) etymological models, **hybrids**, **assimilated borrowings (from classical languages)** and **assimilated borrowings (from other languages)**. The etymological models with their submodels, examples and number of terms in the excerpted segment are presented in Figure 5 and the full list of the studied units by models and in tables is placed within the etymological part of the dissertation.

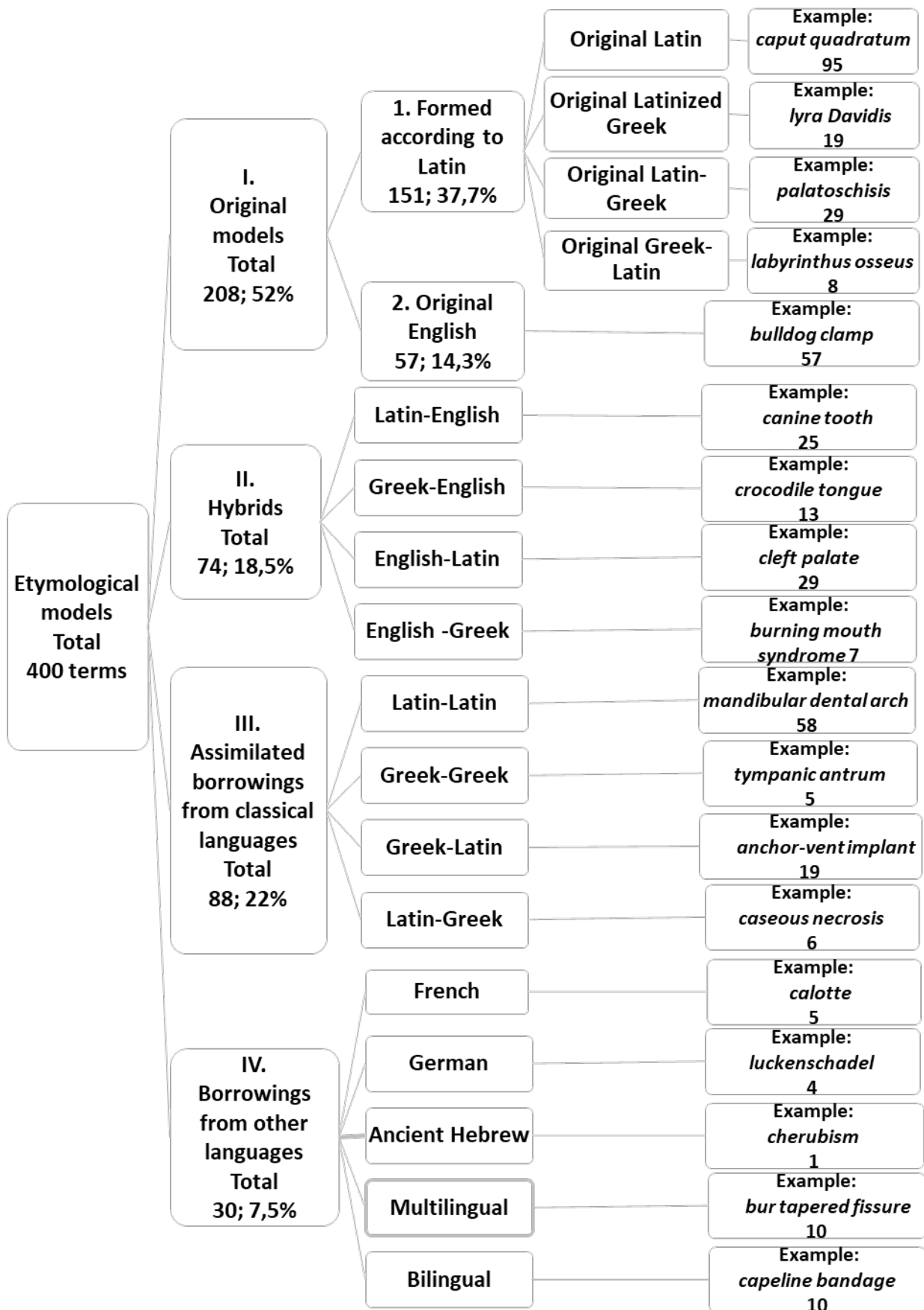


Fig. 2. Etymological models (excerpted material)

Etymological diversity in a terminological system is due to the emergence and intensification of the process of intersection and interaction of national and international means of term formation. Native terminology, being built on the basis of living, natural language, inevitably reflects its inherent national characteristics and in addition, is complicated by the fact that around the original term we have associations, connections, lexical compatibility. On the one hand, the original terms themselves break the strictness of Greek-Latin system and on the other hand - contribute to its opening and adoption of new terms, reflecting modern development of medical science and practice.

The etymological picture of the studied terminological systems of DM and CMS showed the great influence of classical languages on English medical terminology formation. Influence, the degree of which can be reported in the following descending order based on the considered metaphorical terms: 1. Classical languages (ancient Greek and Latin) as terms and term elements have the strongest influence on the formation of English metaphorical terminology of DM and CMS. This is due to derivative advantage of Greek-Latin term elements, expressed in amazing modelling abilities of word-forming means of classical languages, starting with interfixes and ending with radixoids and complex term elements. Most term elements unambiguously express certain meanings, i.e. polysemy is not typical of them. 2. Increasingly strong penetration of English terminological language in the studied scientific field as a term (which is assimilated in pure form or with participation of word-forming elements of another language), as a term element or word-forming means. 3. Weaker influence of the terminological layer - borrowings from other languages (French, German, Spanish, Italian, etc.).

The ratio between the layers of classical languages, original English and other languages explains the heterogeneity of the analyzed metaphorical units. The differentiated original models, hybrids, assimilated borrowings from classical languages and borrowings from other languages with a significant predominance of the borrowed layer of terms (85.7% - 343 units) show the preference of English metaphorical terminology to satisfy its need for terms by borrowing, which is actually specific to each national terminology.

Original classical models: original Latin, original Greek (Latinized Greek), **original hybrids (Latin-Greek and Greek-Latin)** are formed according to the rules of Latin spelling and grammar and are mainly presented in anatomical nomenclature of fundamental DM.

Hybrid group involve models with **Latin-English, Greek-English, English-Latin** and **English-Greek** metaphorical units.

Assimilated borrowings from classical languages are adapted in English and formed according to the rules of English spelling and grammar. They are divided into four groups according to the origin of terminological composition: **Latin-Latin, Greek-Greek, Greek-Latin** and **Latin-Greek**.

Ten language sources were used to differentiate the models of **assimilated borrowings from other languages (French, German, Spanish, Italian, Dutch, etc.)**. Structurally they are represented by word combinations with components from one or more language sources. They have the lowest productivity and different levels of adaptability. They are used in English terminology with their pure form (*en coup de sabre lesion/полоса по типу „удар сабли“/лентоподобна лезия тип „удар на сабя“* – French borrowing); partially retain their graphic form (*cri-du-chat syndrome/синдром кошачьего крика/синдром на котешкото мяукане* – French-Greek borrowing) or adapt in English in view of English grammar - German terms are written with a small letter and definite article (*bur/бор/борер*).

All this, as well as the presence of **original English** metaphorical terms in the studied segment (14.3% - 57 units, *dog teeth/клыки/кучешки зъби*) points out the growing aspiration of English language to participate in and influence the term-forming processes in English terminology, hence the international ones.

Heterogeneity (associated with different types of language sources) and **heterochronology** (associated with different historical periods of development of languages - sources of the analyzed terminology) are specific features of the etymological composition of English metaphorical units in DM and CMS terminology.

4.5. Formation of synonymous rows in English metaphorical corpus of DM and CMS

Traditional use of terms in a certain scientific field; existence of different points of view in science; exchange of information in different languages, often associated with specific national micro-terminological systems; insufficient systematic efforts to limit the growth of synonyms determine debatable nature of terminological synonymy.

This part of Chapter III is devoted to the manifestations of terminological synonymy in English metaphorical corpus of DM and CMS. The understanding of synonyms of Bulgarian and Czech linguistic schools is shared: belonging to the same part of speech; different sound composition; differences in semantic and stylistic aspects, leading to complete and partial synonymy; units operating in a certain time period and in a particular common language system (Pernishka 2013: 556; Filipec, Cermak 1985: 133). The understanding of "terminological synonymy" in medical discourse is specified - the cases in which the concept of the same medical object is nominated in a different way or its different features are named.

The object of the synonymous study is an excerpted segment (400 metaphorical units) from „Толковый англо-русский и русско-английский словарь метафорических терминов черепно-челюстно-лицевой хирургии и стоматологии“ (Novodranova 2007б). Some authors refer to synonyms graphic and structural variants of metaphorical terms - for example, T. Stedman, whose interpretive medical dictionary was used as well (Stedman's concise medical dictionary for the health professions 2001). Distinguishing the terminological variants (absolute identity of the semantic structure of the units in different graphic-structural elements) from the synonyms, we introduced graphic-structural variants of the metaphorical terms according to Stedman in the synonymous classification (e.g. *chalazion*, *chalazia* (*градина на веке, халязион/ечемик, халацион, киста на клепача*)).

Taking into account the variety of approaches for studying the phenomenon of synonymy, we apply the semantic vocabulary approach (study of the lexical language layer).

A strong tendency of the metaphorical terms for entering synonymous relations has been established (87.8% - 351 units). Only in 12.2% or 49 terms such a tendency has not been detected (e.g. *bayonet-shaped dental explorer* (*зубной штыковидный зонд/байонетна зъбна сонда*)). The synonymous row is most frequently represented by two to six terms (e.g. *roof of the skull/skull cap/calvaria* (*свод черепа, крыша черепа/черепен покрив*); *canine tooth/eye-tooth/cuspid* (*клык/кучешки зъб*)).

The semantic essence of synonymy is related to the equivalence of the whole volume of meanings of terminological units, their separate meanings or matching elements of meanings. Based on this two types of synonymy have been identified: **complete (absolute)** and **partial (relative)**. The identifying parameters by which a language unit becomes a scientific term - unambiguity (contextual independence), accuracy and stylistic neutrality - are the basis for **the dominant position of complete synonymy** and formation of such a direction of metaphorical terminology development of the analyzed corpus. Diagram 1 shows the intensity of the manifestations of synonymy in the studied segment and all synonymous rows are presented in three tables (graphic-structural variants according to Stedman, complete synonyms, partial synonyms) within this part of the dissertation.

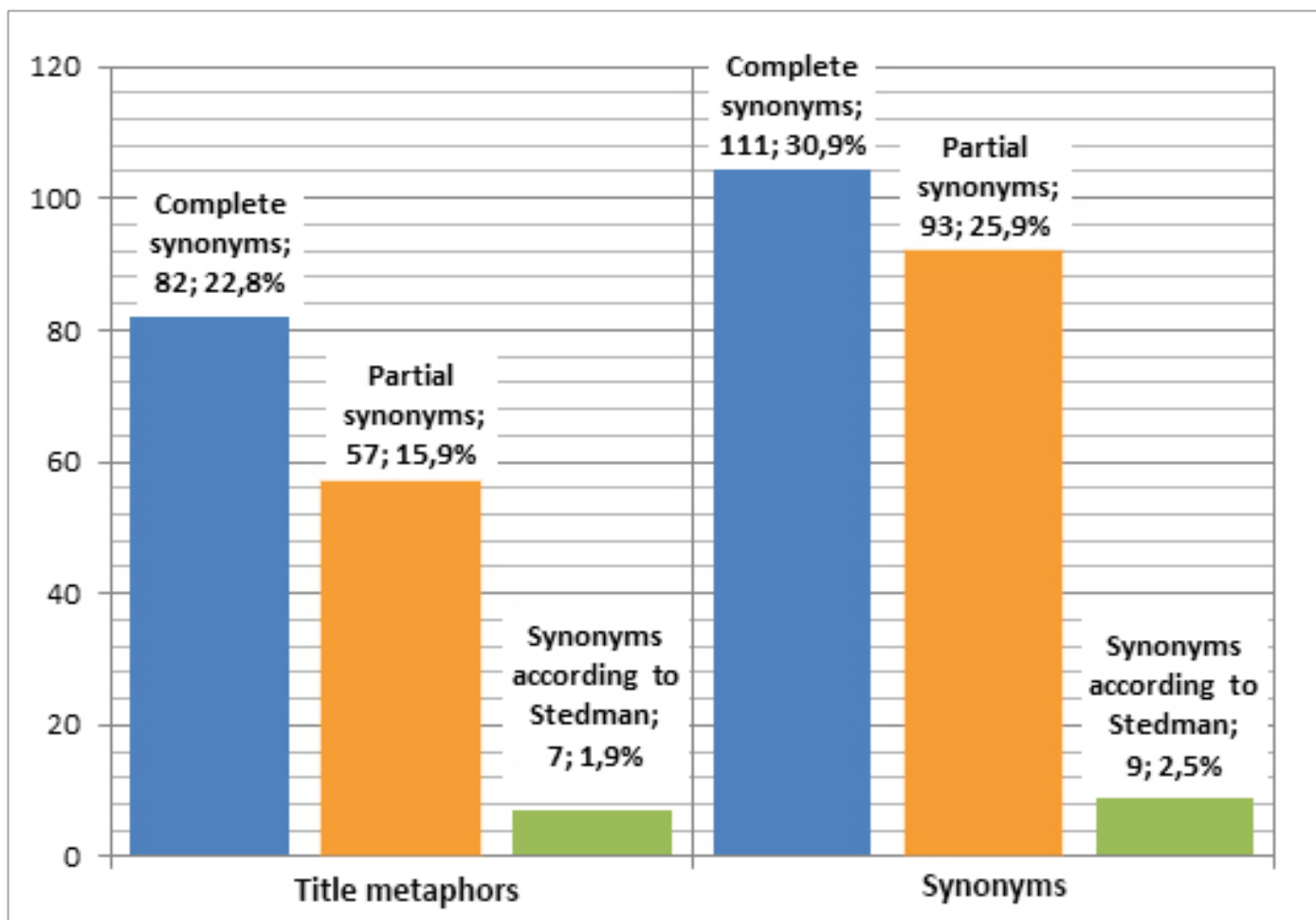


Diagram 1. Classification of the synonyms of metaphorical terms

Complete synonymy is based on the complete identity of the information volume about the analyzed dental object in semantic and functional-stylistic terms. It is represented by synonymous rows consisting of **two to five** metaphorical units with **a title metaphor and its corresponding synonymous unit/units** formed on the basis of interlingual Greek-Latin synonymy (e.g. *dental arch/arcus dentalis* (зубная дуга/зъбна дъга, арка); *neck of a tooth/collum dentis/cervix dentis/dental neck* (шейка зуба/зъбна шийка)).

Partial synonymy includes terminological units characterized by the identity of their individual meanings. It is represented by synonymous rows consisting of **two to six** metaphorical terms with **a title metaphor and its corresponding synonym/synonyms** (e.g. *cheesy necrosis/caseation/caseification/curdy pus/caseous degeneration/caseation necrosis* (творожистый распад/казеозна, сиренеста некроза); *thimble crown/cap crown/shell crown* (наперстковая коронка зуба/метална зъбна коронка)). Depending on the terms entering synonymous relations, there are two types of partial synonymy: interlingual (borrowed and original

terms) and intralinguistic (associated with the different stages of scientific knowledge development and the different scientific schools in a certain country).

Taking into account the etymology of the considered English synonymous units, the following reasons for the occurrence of the phenomenon terminological synonymy were found: 1. Most frequently based on Greek-Latin synonymy - the same concept is denoted by terms or term elements of Greek or Latin origin - (Lat.) *palatum fissum* - (Gr.) *iranoschisis* (*расщелина твердого неба/вълча уста, паст, небна цепка*); 2. Based on borrowed and original terminology - (Lat.) *lingua plicata* - (Eng.) *furrowed tongue* (*бороздчатый язык/набразден език*); 3. Based on original English terminology - (Eng.) *cheesy necrosis* - (Eng.) *curdy pus* (*некроз творожистый/казеозна, сиренеста некроза*).

The existence of internal terminological synonymy, arising on the basis of various terminology nominations of a given scientific concept in a particular field of medicine and syntheticity of a number of specialities in medicine, including the studied DM and CMS, was confirmed as well (*one part implant = one-stage implant; surgery field = operating field = operative field*).

We concluded that on the one hand, terminological synonymy in medical discourse is a rather contradictory phenomenon, which can aggravate the semantics of the scientific text and hence the dialogicity in scientific communication both between specialists and between trainer and trainee. However, on the other hand, terminological synonymy is a mechanism for fixing the specialist's new view on the object of thought; for his choice of a new nomination of the already known concept, considered by him in a new aspect and reflected in the language of the respective scientific field. The aspiration of terminologist for the presentation of the medical object according to the scientific term parameters and native language resources is obvious. Here we can talk inevitably about **the ratio between terminological synonymy - level of knowledge and development of scientific thought**. A higher level of scientific development is a prerequisite for a more synonymous thinking of the specialist. This process also requires **regulation of synonymy** in the scientific medical literature from a practical-applied point of view by means of **terminological standardization** - standardization of one of the synonymous variants and "archiving" the others, preserving them as a visual language tool for the needs of specialized training, which not only emphasizes the importance of terminological synonymy for science and scientific exchange of information, but also requires the inclusion of a wide range of specialists with a set of acquired knowledge and skills.

5. Conclusion

The final part summarizes the results and conclusions of the study, outlines the observed tendencies in the development of English metaphorical terminology of DM and CMS, highlights the contribution points, indicates prospects for future research.

The hypothesis of the current study, which consists in considering the metaphorization in English terminology of DM and CMS as a verbal presentation of pragmatically processed specialized scientific knowledge, reflecting the worldview system, basics of mental activity, professional experience and linguistic and cultural competence of the specialist is fully confirmed at each stage of studying the tendencies metaphorization, structural-syntactic characteristics, etymological diversity, synonymy with a focus on modelling of the respective terminological systems within the specific English metaphorical corpus.

5.1. Main points of the dissertation

1. Terminological metaphorization is a natural phenomenon and occupies an important place in the conceptual apparatus formation of new terminological systems when there is a need for nomination of a concept in the relevant scientific field.
2. Metaphorization is a cognitive mechanism for term formation in the field of English terminology of DM and CMS, where the conceptual integration of different types of specialized and non-specialized knowledge participates.
3. Conceptual integration in the field of English terminology of DM and CMS is motivated by the structure and content of the source-input space, but in the course of integration knowledge processing occurs in view of the new field's specifics and background knowledge of the specialist. As a result of the conceptual enrichment, a conceptual metaphor is formed, which gathers in itself the features of old and new knowledge.
4. DM and CMS terminology, as a part of the specialized medical domain terminology, is characterized by a wide application of metaphorical terms, which build up a unified system of metaphorical term formation in the relevant fields of scientific knowledge. This system is represented by a metaphorical corpus with its regularities, typology and models.
5. The metaphorical models studied in English corpus of DM and CMS terminological systems are built up on the principles of **systematicity** (unity of components, arranged in a certain way, interconnected and with a particular place in the whole), **selectivity** (categorization of the metaphorical unit based on the source-input space), **anthropocentrism** (linguistic phenomena are considered in relation to man, his activity, behaviour and thought), **regularity** (found expression in English linguistic means for

explication and formation in structural-syntactic terms), **heterogeneity** (diversity of the metaphorical term components regarding etymology), **heterochronology** (determined by the different historical phases of development of the linguistic sources of DM and CMS terminology), **identity of the semantic structure** (presence of complete or partial terminological synonymy in the studied corpus).

6. English metaphorical term formation is strongly influenced by classical languages (ancient Greek and Latin) - a phenomenon that is observed in terminology of other European languages as well. In English terminology of DM and CMS this influence is manifested in all aspects: metaphorical modelling, etymology, structural composition, synonymy.

7. Each metaphorical term is a kind of knowledge microsystem about the world, respectively knowledge about the particular medical object. The higher level of scientific thought development and the more progressive thinking determine more diverse ways of expressing fragments of reality in linguistic forms. Terminological metaphorization is a measure of the level of scientific thought development and the language creative power and variability.

8. Individual competence of a specialist, understood as a set of experience, knowledge, thinking, skills and relations that allow the individual (respectively, the specialist) to cope effectively in a situation largely determines the ways of forming the conceptual apparatus of a particular scientific field, one of which is terminological metaphorization.

9. Conceptual blending as a kind of metaphorization is a universal cognitive mechanism present in individual's consciousness; applicable in any linguistic community, regardless of the language verbalization of metaphorical thought and provoking creating terminology in one or another field of scientific knowledge.

10. An individual, respectively a specialist, with all complexity of his being, consciousness, world perception, professionalism and encyclopaedic competence is projected metaphorically on the nominations for anatomical structure of human body, symptoms, diseases, pathological changes, treatment procedures and instrumentarium.

11. There are several main characteristics outlined that determine and contribute to the formation and development of the metaphorical language of English DM and CMS terminological systems in the corpus analysis: **perception, conceptuality, encyclopaedicity, experience (specialized and non-specialized)**.

5.2. Perspectives

The results obtained from the study of the main tendencies in English terminology systems of DM and CMS could become a starting point for:

- analysis with a wider range of intersections of DM and CMS metaphorical terminology with the terminological language of other medical specialties;
- study of the rapidly growing terminological fund of modern narrow specialized sub-branches of DM and CMS - implantology, reconstructive, plastic-restorative, aesthetic CMS, etc .;
- study of the relations between the terminological apparatus of DM and CMS and that of other non-medical specialized domains.

III. Contribution of the dissertation

1. Systematization and classification of English metaphorical terms in DM and CMS field with differentiation of their linguistic and extralinguistic characteristics from a linguo-cognitive perspective based on the methods of conceptual integration;
2. Studying the main differences and/or similarities with metaphorical Russian terms from the scientific field of DM and CMS as a meta-linguistic framework of the language-object and comparative material;
3. Forming models for explication of metaphorical terms in the studied English corpus according to the considered tendencies: metaphORIZATION, structural-syntactic characteristics, etymological diversity, synonymy;
4. Studying conceptual blending functioning as a mechanism of metaphorical understanding of 30 terminological units in the consciousness of a language group of Bulgarian students in Dental Medicine;
5. Studying the specifics of metaphorical nomination in DM and CMS scientific field contributes to the further development of the theory of metaphor and a deeper understanding of the cognitive processes underlying the nomination of new objects and phenomena;
6. Brief medical description of separate metaphorical units and interpretation and translation of some of them (not fixed in the lexicographical sources or without interpretation) after consultations with specialists from FDM of MU - Sofia;
7. Application of the obtained language database in the process of:
 - teaching in English, Russian and Bulgarian to students and graduates of CMS (Bulgarians and foreigners) in the dental faculties of medical universities;
 - increasing linguistic medical competence of specialists, necessary for the teaching process, participation in international medical forums and conferences and for sharing the accumulated expertise at international level;
 - preparation of textbooks, reference books, monographs, articles, etc.;
 - regulation of medical vocabulary by means of terminological standardization, in particular - inclusion and selection of synonymous variants in the considered professional domain;
 - improvement of terminological practice and specialized medical translation.

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V. List of selected publications of the PhD student on the dissertation topic

1. Taneva S. Y. Specifics of medical eponymous terminology (in view of English, Russian and Bulgarian medical discourse). - V: Zdorov'ye cheloveka, teoriya i metodika fizicheskoy kul'tury i sporta, 2020, t. 20. № 4. s. 42 - 48. [Taneva S. Y. Specifics of medical eponymous terminology (in view of English, Russian and Bulgarian medical discourse). - В: Здоровье человека, теория и методика физической культуры и спорта, 2020, т. 20. № 4. с. 42 - 48.]

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2. Taneva S. Y. Medical discoveries, diseases and syndromes in eponymous terminology (based on English, Russian and Bulgarian medical discourse). - V: Universitetskaya klinika, 2020, № 4(37), s. 97 - 101. ISSN 1819-0464. [Taneva S. Y. Medical discoveries, diseases and syndromes in eponymous terminology (based on English, Russian and Bulgarian medical discourse). - В: Университетская клиника, 2020, № 4(37), с. 97 - 101. ISSN 1819-0464.]

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3. Taneva S. Y. Medical terminology as a part of the matrix of scientific knowledge (in view of English and Bulgarian academic languages). - V: Universitetskaya klinika, 2020, № 3(36), s. 145 - 151. ISSN 1819-0464. [Taneva S. Y. Medical terminology as a part of the matrix of scientific knowledge (in view of English and Bulgarian academic languages). - В: Университетская клиника, 2020, № 3(36), с. 145 - 151. ISSN 1819-0464.]

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4. Taneva S. Y. Basic mechanisms of dental medicine terminology. - V: Zdorov'ye cheloveka, teoriya i metodika fizicheskoy kul'tury i sporta, 2021, t. 21, № 1, s. 38 - 45. [Taneva S. Y. Basic mechanisms of dental medicine terminology. - В: Здоровье человека, теория и методика физической культуры и спорта, 2021, т. 21, № 1, с. 38 - 45.]

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5. Taneva S. Y. Anthropomorphic metaphorical model "Person" and its manifestations in Dental and Cranio – Maxillofacial terminology. - V: Zdorov'ye cheloveka, teoriya i metodika fizicheskoy kul'tury i sporta, 2020, t. 20, № 4, s. 4 - 11. [Taneva S. Y. Anthropomorphic metaphorical model "Person" and its manifestations in Dental and Cranio – Maxillofacial terminology. - В: Здоровье человека, теория и методика физической культуры и спорта, 2020, т. 20, № 4, с. 4 - 11.]

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