Man In India, 96 (10) : 4107-4117

REPRESENTATION OF DEFINING FEATURES IN TECHNICAL TERMS AND DEFINITIONS

Maxim Nikolayevich Latu[*], Aleksey Valeryevich Razduev[**] and Alina Gennadyevna Monogarova[***]

This paper is devoted to the study of the correlation of the defining features represented in the semantics of terminological components of technical terms and in the content of their definitions in terminological dictionaries. The research focuses on how often the semantics conveyed by the chosen terminological components that seemed to be important when a technical term was coined coincides with the content of its definition that reflects the key defining features of the concept and outlines its scope within the field of knowledge it belongs to. The types of defining features are considered. The frequency of correlation of the semantics of different types of terminological components and the content of definition is studied. The examples are drawn from the actively developing terminologies of mediation and nanotechnology.

Keywords: technical term, definition, terminological component, defining feature, semantics, structure, concept

INTRODUCTION

It would not be an exaggeration to state that the language of science plays a key part in the study of different academic and professional disciplines and their practice in the modern fast developing world. Indeed certain "scientific fields have been highly productive in recent years in the addition of new terms and phrases to the lexica of languages all over the world" (Wessels 2010). Scientific texts can have a heavy load of specialized vocabulary. As new concepts are introduced, new technical terms are coined to express them. These are sometimes derived from general vocabulary units, for some words which are usually high frequency words or academic words can function as technical words in certain fields (Flowerdew, 1993). As the terminology corpus of a certain field of knowledge grows, the technical terms should be ordered and precisely defined (Anokhina 2005). This is especially important for the relatively young actively developing terminologies such as the terminology of nanotechnology, information technologies, mediation, etc.

In 2010, the members of the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) claimed that "with the expected increase in

[*] Head of the Research and Educational Center "Applied Linguistics, Terminology Studies and Linguacognitive Technologies", Pyatigorsk State University, Pyatigorsk, Russia, Kalinin Avenue, 9, Pyatigorsk, 357532, Russia

[**] Institute of Translation Studies and Multilingualism, Pyatigorsk State University, Kalinin Avenue, 9, Pyatigorsk, 357532, Russia

[***] Pyatigorsk State University, Kalinin Avenue, 9, Pyatigorsk, 357532, Russia

the applications of nanotechnology, there is an urgent need to identify by clear unequivocal descriptions what can be considered as a nanomaterial and what should not be. This need to identify a nanomaterial comes from the uncertainty regarding the safety evaluation and risk assessment of nanomaterials" (EC 2010). As G. Liden (2011) demonstrates, it is not a simple task because many defining features of this concept should be taken into consideration. Moreover, definitions can take a very large variety of forms (Flowerdew 1992) that differ in structure and content. S. Hayakawa (1990) believes that "the most helpful definitions are those that include examples". The defining features of a concept may also be reflected in the inner (underlying) form of the technical term or in one of its structural elements if the technical term is multi-component. Each terminology has specific regularities in structure and semantics of its constituents, the choice of term elements some of which becoming very productive "building blocks" for this particular sphere to coin new technical terms (Latu 2015a). The most obvious example in the field of nanotechnology is the terminological element "nano" which is extremely productive and abounds throughout the terminological corpus. The analysis of the structure and composition of the terminology of nanotechnology showed that multi-component technical terms predominate over the one-component. "The terminology of nanotechnology is characterized by the extensive use of abbreviations and a variety of their types. Three-and four-component structure predominates in abbreviated technical terms. A large number of recently coined technical terms contribute to the evidence that the English nanotechnology terminology is quite young" (Razduev, Latu, Mironenko 2015).

The correlation between a technical term and its definition is very important as they are both related to the same concept. The presence of the definition aimed at a specialist of the field is a very strong clue that the word is technical (Chung, Nation 2003). Moreover, the technical terms of one terminology are used to define other technical terms of the field of knowledge that express the adjacent concepts. As D. Lewis (1970) justly points out, "A term correctly defined by means of other terms that admittedly have sense and denotation can scarcely be regarded as a mere bead on a formal abacus". Due to the fact that "a technical term is considered to be "the name" of a concept while a definition is the extended comprehensive interpretation of this name" (Superanskaya 2003), an important issue is the correlation between the representation of defining features of the concept in the inner form of a technical term that its terminological elements may convey and the content of its definition. The analysis of definitions and the semantics of technical terms in some cases helps to reveal the types of defining features that are frequently expressed and rate them according to significance and productiveness (Gavrilova 2006). Among these are function, size, colour, etc. and some logical categories (Latu 2015b). The information reflected in the inner form of a technical term and its definition does not always coincide. One of the reasons is that the feature of the

concept that seemed to be important at one point when the technical term was coined is no longer considered to be such or is not seen as defining from the scientific point of view to be included in the content of the definition that outlines the specificity of the concept among the other similar to it in the system of knowledge.

METHOD

In this study we focus on the young developing terminologies of nanotechnology and mediation which represent different subject areas of modern science and from which the examples are drawn. The methods used for linguistic analysis determine the course of the research algorithm. Primarily we collected technical terms of the spheres of nanotechnology and mediation using the method of random selection as well as their definitions aimed at the specialists only from various specialized sources including text and electronic terminological dictionaries and specialized Internet sites. Usually more than one definition for each technical term was added to the corpus, for it is obvious that they may differ in structure and in content in different sources. The number of technical terms selected for the study comprised 1,500 in the sphere of nanotechnology and 450 in the sphere of mediation. The corpus of definitions constituted 2,300 in the sphere of nanotechnology and 720 in the sphere of mediation. The next step was the structural analysis of the technical terms that helped to identify the main and classifying terminological components in their structure. This made it possible to study their semantics by means of component analysis and detect the features of the concept that they convey as well as classify them into types. Then the definition analysis was applied to reveal the defining features reflected in the content of their definitions. Consequently, the comparative analysis was used to study if the defining features conveyed by the semantics of the main and/or classifying terminological components correlate with those reflected in their definitions. At this stage the statistical analysis was applied.

RESULTS AND DISCUSSION

Nanotechnology is a field of fundamental and applied science and technology, dealing with the theoretical foundations, practical methods of research, analysis and synthesis, as well as methods of production and application of products with a certain atomic structure by means of controlled manipulation of individual atoms and molecules. Nanotechnology studies objects, phenomena and processes conducted at the nanoscale, which is about 1 to 100 nanometers. Nanotechnology is a relatively new field of knowledge that has been formed on the basis of other science fields, such as chemistry, biology, physics, materials science, and engineering. The history of nanotechnology formation testifies to the fact that the major part of nanotechnology technical terms are mainly borrowed from other sciences (according to our estimate, about 63.2% of the terminological selection) and only a smaller part (36.8%) consists of newly coined nanotechnology technical terms.

All nanotechnology technical terms can be divided into one- and multicomponent units. Both groups have semantic features that are expressed in the motivated name (the inner form) of the technical term (e.g. the multicomponent technical term ***nanotube*** consists of the classifying component "*nano*" that conveys the semantic feature of *size/scale* and the main component *"tube"* that conveys the semantic feature of *form*) that sometimes may represent the defining features of the concept that are normally reflected in the definition. One-component and one-word terms in the sphere of nanotechnology may convey the semantic features of the following types: *action, image, structure, size/scale, form, function, place, number, temperature, producer*. Nanotechnology technical terms are mainly multi-component and represent terminological combinations of one or several classifying and one main component. A terminological word-combination, just as a one-component (one-word) term, performs a nominative function due to the fact that it names an object, phenomenon, action, or process. The components (either the main component, or the classifying one, or both) of a multi-component technical term may or may not convey a semantic feature that is a defining feature of the expressed concept mentioned in its definition. Multicomponent terminological units are described, according to the semantics of the classifying component, by such semantic features, as *size/scale, structure, producer, substance, action, intensity, affiliation, form, colour, place, temperature, image, weight, number*. Just the same as in the case of mediation terms, the correlation between the inner and outer forms of multi-component nanotechnology technical terms is expressed through *qualification* and *association*. Nanotechnology terms are mainly motivated through qualification (71.3%) patterns, and their motivation is explicit, e.g. ***concentrated*** **beam,** ***self-ordering*** **algorithm,** ***wet-dry*** **nanotechnology**, etc. The connection between the classifying and main components in multicomponent nanotechnology terms is made less frequently through association (14.2%), an indirect linking of attributes of some non-material phenomenon (for example, metaphor). Thus, the term "*Grey/Gray Goo*" refers to out-of-control self-replicating nanorobots threatening and consuming life on Earth while building more of themselves (a hypothetical end-of-the-world scenario known as ecophagy ("eating the environment")). In a worst-case scenario, all of the matter in the Galaxy could be turned into goo killing the Galaxy's residents. The disaster could result from an accidental mutation in a self-replicating nanomachine used for other purposes, or possibly from a deliberate doomsday device (Nanodic.com). Since "goo" stands for a sticky or slimy substance and, even though metaphorically expresses an image of a large mass of replicating nanomachines (that may or may not actually appear to be goo-like), is not considered to be a defining feature for the expressed concept and for this reason simply does not appear in the definition. The definition also lacks the semantic feature grey/gray of the type colour. This means that the defining features of the expressed concept **grey/gray goo** are not reflected in the name of

the term the semantics of which conveys the naïve perception of this phenomenon. In this case both the classifying component "*grey/gray*" and the main component "*goo*" represent the features that do not appear in the definition.

As a result of the component and semantic analyses of 1500 nanotechnology technical terms and their definitions, it has been revealed that the most productive types of the semantic features represented in the main components of the terms are *action* (for example, in such technical terms, as *3D* ***fabrication****, active* ***rectification****, absorptive* ***transition****,* ***actuation***, *adatom* ***diffusion****, AFM-based* ***nanofabrication****, analytical* ***ultracentrifugation****, atomic beam* ***decollimation****, atomic* ***manipulation****, beam* ***acceleration****, artificial intelligence* ***analysis****, elastic scattering* ***analysis****, 3D* ***nanostructuring****, active stimulated light* ***scattering****,* ***nanomanufacturing***, etc.), *structure* (***nanostructure****, active* ***nanostructure****, chemical vapour deposition-synthesized* ***heterostructure****, fractal* ***structure***), *size/scale* (***mesoscale****,* ***megascale****, microscopic* ***scale***), *form* (*allotropic* ***form****, carbon nanotubes* ***formation***, *self-assembled* ***monolayer***), *function* (***biofunctionalization***, *contrast transfer* ***function***), *place* (*biological* ***template****, biomolecular* ***template****,* ***substrate***, etc.). Consequently, the technical term ***nanomanufacturing*** with the productive semantic feature of the type *action* has a definition as follows: "a term used to describe either the *production* (*action*) of nanoscaled (*size/scale*) materials, which can be powders or fluids, or to describe the manufacturing (*action*) of parts "bottom up" from nanoscaled (*size/scale*) materials or "top down" in smallest steps for high precision, used in several technologies such as laser ablation (*action*), etching (*action*) and others. Nanomanufacturing should not be confused with molecular manufacturing (*action*), which refers specifically to the manufacture (*action*) of complex, nanoscale structures by means of nonbiological mechanosynthesis (and subsequent assembly (*action*))" (Nanodic.com). Here the semantic features of the inner form of the technical term appear to be defining features of the concept as they appear in the definition.

The technical term ***nanostructure*** (the defining feature *structure*) has several definitions: 1) is a structure (*structure*) with arrangement of its parts in the nanometre scale (*size/scale*); 2) structures (*structure*) made from nanomaterials; 3) is a structure (*structure*) with arrangement of its parts in the nanometre scale (*size/scale*). As we see, all the definitions reflect the semantic feature of structure (http://www.nanodic.com/General/Nanostructure.htm).

Most common semantic features in the classifying components of nanotechnology terms reflected in their definitions are of the type *size/scale* (for example, ***thin*** *film,* ***nano****layer,* ***macro****porous,* ***giant*** *magnetoresistance,* ***nano****tube,* ***nano****composite,* ***micro****balance,* ***micro****pore,* ***meso****pore,* ***nano****transistor*, ***nano****clay,* ***nano****cluster*), *structure* (***nanocrystal*** *array,* ***single-walled*** *carbon nanotube,* ***multi-walled*** *carbon nanotube,* ***nanoporous*** *sensor,* ***nanostructured*** *graphite,* ***nanocrystal*** *alloy*), *action* (***absorbing*** *nanoparticle*, *conical* ***scanning*** *beam, drug-*

delivery *nanorobot*), *substance/material* (***copper-containing*** *nanoparticle,* ***carbon*** *thread,* ***iron-containing*** *nanocomposite*), *intensity* (***accelerated*** *beam,* ***high energy*** *laser beam*), etc.

For example, the technical term ***thin*** **film** (the defining feature is *size/scale*) is defined as follows: 1) films with thickness less than 100 micro (*size/scale*); 2) a film one molecule thick (*size/scale*); often referred to as a monolayer (*structure*) (Nanodic.com). The term ***carbon nanotube*** (the defining feature is *material/ substance*) is defined in the dictionary as follows: **carbon** nanotubes are allotropes of carbon (*material/substance*) with a nanostructure (*structure*) that can have a length-to-diameter ratio greater than 10,000,000 and as high as 40,000,000 as of 2004 (Nanodic.com).

Some types of the semantic features such as *producer* (even though they appear in the inner form of some technical terms) are not considered to be defining (***Fresnel*** *zone plate,* ***Lengmuir-Blodgett*** *technology,* ***Lengmuir-Blodgett*** *trough,* ***Abrikosov*** *vortex*) because they do not define the scope of the concept within the field of knowledge it refers to but only point at the person who made the discovery. For this reason they are not mentioned in term definitions. For example, an Abrikosov (*producer*) vortex is defined as a vortex of supercurrent (*evaluation*) in a type-II superconductor (*evaluation*). The corresponding definition does not reflect the semantic feature of the type *producer* represented in the classifying component of the term, but, being a more extended syntactic structure, has the semantic feature of *evaluation* (super-).

Multi-component nanotechnology terms can have several semantic features expressed by both classifying and main components, for example, ***nanoscale carbon structure*** = *nanoscale (size/scale) + carbon (substance/material) + structure (structure)*. Some or all of them can be represented in the definition.

The correlation of the semantics expressed by the inner form of the technical term components and the semantics of its definition in nanotechnology may be illustrated as follows. The results of the analysis of the selected definitions have showed that the majority of definitions (about 74.7% (1,718 definitions)) reflect the semantics of both the main (+m) and at least one of the classifying components (c+):

(c+c+m) **mesoscopic** (*size/scale*) **physics**
is a *subdiscipline* of condensed matter *physics* that deals with materials of an *intermediate length* (*size/scale*) (Mesoscopic physics, 2005).

About 15.3% (352) of definitions have certain information concerning the semantic features of the main component (-c/+m):

(-c+m) **nanocone** (*size/scale*) (*form*)
nonplanar (*form*) graphitic (*substance/material*) structure (*structure*)
(Nanodic.com).

Almost 7.2% (166) of definitions reflect only the semantics of the classifying component(s) (c+/-m), for example:

(c+c+c+-m) nanostructured (*size/scale*) (*structure*) lipid (*substance/matter*) carriers (*action*) nanoparticles (*size/scale*) composed of a mixture of lipids solid or liquid (*substance/matter*) at room (body) temperature (*temperature*). The mixture allows higher drug incorporation (Nanodic.com).

About 2.8% (87) of definitions fail to reflect *all the defining features* of either main or classifying components (-c/-m):

(-c-m) **grey** (colour) **goo** (substance)

As for the mediation terminology, it expresses a field of knowledge that is a relatively new form of out-of-court settlement that was officially introduced in the effort to lower down the number of civil cases in the courts. This explains the fact that only 6.25% of the mediation terminology (MT) is represented by newly coined words which were introduced to refer to mediation related concepts and 93.75% of the mediation terms are lexical units that have passed through the processes of terminologization (specialization or extension of the original meaning of the words from the neutral vocabulary) or terminological units borrowed from related scientific and professional spheres (law, psychology, etc.). The outer form of a mediation term with *transparent motivation* reflects unique features of this term, linking formal set of specifications (structure, sound) with the deep semantics. As a result of semantic analysis of MT we have identified the following groups of motivated terms in mediation.

All the mediation terms formed by specialization of English neutral words (9.2%) are motivated and despite the identical sound forms, mediation terms differ from the words from general vocabulary in terms of semantics since specialization redefines the meaning of the word, specifying a certain part of its semantics (e.g. *interest, position, avoidance, award)*. Transparency of motivation of these terms is most explicitly traced at the very time of semantic transfer and formation of the secondary semantics (namely at the time of coining a term), as over time due to frequent use of the term motivations are not recognized so clearly.

The largest group of motivated terms within MT is represented by multi-component constructions in which one of the components directly or indirectly reflects a semantic feature of certain type. As a functional-semantic category motivation is realized in multi-component mediation terms, identifying several types of correlations between inner and outer form of the term. This correlation can be expressed thorough *association* and *qualification*.

Unlike association, that is always expressed indirectly by linking attributes of the phenomena, qualification is expressed through direct identification of the semantic features within the main and classifying components of the term. Terms motivated through qualification patterns represent the majority of motivated

terminological units within MT(67.5%), which means that the motivation of most mediation terms is explicit (*adversarial* approach, *punitive* damages). Mediation terms motivated through the association patterns (12.9%) are, however, of particular interest for implicitly expressed motivation can be traced in different types of associations (abstract image, metaphor etc). For example, the mediation term "*Golden Bridge*" that refers to a successful implementation of the mediator strategy to reach a compromise between the parties is formed on the basis of the metaphor: ("*bridge"* – a symbol of the established relations between the disputants, and the attribute "*golden*" points to the successful nature of these relations).

The component and semantic analyses of 720 mediation terms revealed that 67.4% of the main components within MT are represented by verbal nouns with the semantic feature *action* (*re**conciliation**, joint fact-**finding**, collaborative problem-**solving**, collaborative **planning**, area-wide **bargaining, anchoring, re**framing,** third party **intervention,** conflict **analysis,** conflict **avoidance,** confidential **listener, stereotyping, creating** doubt, reality **testing, counseling***).Other semantic features represented in the main components of the mediation terms are *state* 2.9% (*post-settlement **blues,** dueling experts **syndrome***), *evaluation* 1.2% (***neutrality, impartiality***), *territory* 0.9% (*ZOPA -**Zone** of Possible Agreement*), *image/ form* 1.2% (***phantom,** satisfaction **triangle***). As noted above, the information reflected in the inner form of a mediation term and its definition does not always coincide. However, the data retrieved from the MT semantic analysis show that the semantic features of the inner form of the analyzed mediation terms represented in their *main components* always correlate with the defining features of the concept expressed in the definition. For example, the term ***reality testing*** with a productive semantic feature *action* is defined as "a tool used by mediators that involves *displaying (action)* to a party the picture they have drawn of their position, and *encouraging (action)* them to *test (action)* what they see" (Peterson 2008). The term ***ZOPA*** with the productive semantic feature of a type *territory* is defined as follows: "an acronym which means Zone of Possible Agreement. It is the range or area (*territory*) in which an agreement is satisfactory to both parties involved in the negotiation process. (Peterson 2008). In both examples the semantic features of the inner form (*action, territory*) appear in the definitions that presents a ground for referring to these features as *defining* for the considered concepts.

Most common defining features to be found in the semantics of the classifying components within MT are *evaluation 15.8% (**W**ATNA - **Worst** Alternative to a Negotiated Agreement, **BATNA -Best** Alternative to a Negotiated Agreement, **bad** faith, **good** faith, **trusted** third party, **good** offices, **good** faith bargain, **appropriate** method, **soft** bargaining)*, *result* 4.2% (***win-win** approach, **win-lose**-approach, **peace**building*), *time* 2.8% (***pre**-hearing review, **post**-settlement blues, **early** neutral evaluation, **gradual** reduction in tension*), *image/ form* 1.3% (*"**golden bridge**"*

strategy, ***zipper*** *clause*), *territory* 1.1% (***out-of-court*** *method,* ***workplace*** *mediation,* ***area-wide*** *bargaining*).

Some types of the semantic features as (*time, result, territory*) always appear to be defining features of the concepts and are reflected in the definitions. For example, the term ***post-settlement blues*** has the definition that reflects the semantic feature *time*: "this term describes the feelings of regret experienced by some negotiators soon after (*time*) agreeing to a settlement. They have difficulty remembering events during the negotiation that caused them to relent on certain terms within the agreement and afterwards wonder if they may have given away too much" (Peterson 2008).

However, not all the semantic features of the inner form represented in the *classifying components* of the terms are among the defining features of the mediation concepts as some of them (e.g. *evaluation, image*) are irrelevant and refer to insignificant associations and not actual characteristics of the concept. For example, the terms ***bad faith*** (*evaluation),* ***shuttle mediation*** *(image),* "***golden bridge****" strategy" (image)* have the definitions which do not reflect the named semantic features of the classifying component: ***bad faith***: "when parties attend a mediation with undisclosed motives and without a willingness or ability to come to an agreement"; ***shuttle mediation***: "a form of mediation where the mediator shares information between the parties and assists them to come to an agreement without the disputants meeting in the same room"; "***golden bridge****" strategy*: "... refers to the act of finding a face-saving path for a party within a dispute to retreat from his or her formerly irretractable position" (Peterson 2008).

The results of definition analysis showed that 14.2% (101) definitions slot in information concerning defining features of the main component (+m):

(-c-c+m) **dueling** (*action*) **experts** (*operator*) **syndrome** (*state*)
a common *pattern of behavior (state)* which usually escalates, rather than resolves, conflict (Peterson 2008).

In 83.61% (602) definitions the semantics of both main and classifying components is reflected (+m+c):

(+c+c+m) **early** (time) **neutral** (operator) **evaluation** (action)
the use of a *neutral* (operator) to give his *opinion* (evaluation) on a matter often of the *potential* (time) outcome of the dispute (Peterson 2008).

2.36% (17) definitions fail to reflect *all the defining features* of either main or classifying components (-m/-c):

(+c+m-c-c) **worst** (*evaluation*) **alternative** (*result, outcome*) **to negotiated** (*action*) **agreement** (*result*)
a measure developed by Roger Fisher and William Ury of the Harvard Negotiation Project which enables parties to evaluate their options with the *worst (evaluation)* possible *scenario (result/outcome)* (Peterson 2008).

CONCLUSION

The results of the definition analysis allow us to conclude that nanotechnology is a relatively new science that is why the defining features of the concept are not always reflected in the inner form of the technical terms and conveyed by the semantics of the classifying and/or the main components. Some semantic features reflected in the inner form of the technical terms are not defining and express additional information about the concept such as colour, the scholar or metaphorical images that represent naïve perception of the phenomenon. Thus, about 21.5% of technical terms fail to represent certain defining features reflected in the definitions by the main or classifying components, and about 3.8% of technical terms fail to reflect all the defining features in both the main and classifying components. The results of the definition analysis lead us to conclude that one of the pressing issues within MT is a lack of reflection of terms' defining features both in the wordings of definitions and in the inner form of the corresponding technical terms. The presence of the defining features reflected in the definition in the name of the term is a prerequisite for ensuring the adequacy of the terminology interpretation. At the same time shortened, incomplete definitions of terms also do not provide enough information about the procedure and do not reveal some characteristics of processes, situations, phenomena and material objects of mediation.

Acknowledgements

The authors express their gratitude to the Ministry of education and science of the Russian Federation (project No. 14.Z56.16.4913-MK "The integrated cognitive study and development of prototypic technical term definition model based on frame and semantic network analysis"; project No. 2511 "The etymological analysis of the legal terminology in mediation for the development of legal awareness of citizens") and Russian Foundation for Humanities (project No. 15-04-00392 Systematization and standardization of mediation terminology in Russia).

References

Abrikosov, A.A. (1957). The magnetic properties of superconducting alloys. Journal of Physics and Chemistry of Solids, 2(3): 199-208.

Anokhina, A. (2005). Analysis of the terminology used in the field of virtual learning. *Educational Technology & Society*, 8 (3): 91-102.

Chung, T.M., Nation, P. (2003). Technical vocabulary in specialised texts. *Reading in a Foreign Language*, 15 (2): 103-116.

EC. (2010). Scientific basis for the definition of the term "Nanomaterial" European Commission, Scientific Committee on Emerging and Newly Identified Health Risks (SCENHR). Brussels, Belgium. Available at http://ec.europa.eu/health/scientific_committees/emerging/docs/scenihr_ o_030.pdf. Accessed 10 September 2016.

Flowerdew, J. (1992). Definitions in science lectures. *Applied Linguistics*, 13(2), 202-221.

Flowerdew, J. (1993). Concordancing as a tool in course design. *System*, 21(2): 231-244.

Gavrilova, O. (2006). Types of information about living beings in the semantics of their names. *Proceedings of the International Scientific Conference "Nomination and Discourse"*, 1: 112-113.

Hayakawa, S.I. (1990). *Language in thought and action*. San Diego: Harcourt, 196.

Latu, M.N. (2015 a). Some productive mechanisms of coining new technical terms in developing terminologies. *Asian Social Science*, 11 (6): 157-162.

Latu M.N. (2015 b). Peculiarities of logical categories representation in the underlying forms of technical terms. *Issues of cognitive linguistics*, 2: 100-106.

Lewis, D. (1970). How to Define Theoretical Terms. *The Journal of Philosophy*, 67 (13): 427-446.

Liden, G. (2011).The European Commission Tries to Define Nanomaterials. *Ann. Occup. Hyg*., 55 (1): 1-5.

Mesoscopic physics. (2005). McGraw-Hill Encyclopedia of Science and Technology. The McGraw-Hill Companies, Inc.

Nanodic.com. All About Nano. URL: http://www.nanodic.com/

Peterson, N. (2008) The Mediation Dictionary. Lulu, 59.

Razduev, A.V., Latu, M.N., Mironenko, Y.V. (2015). Evolution and present state of the English nanotechnology technical terms. *European Journal of Science and Theology* 11 (3): 79-88.

Superanskaya, A.V., Podolskaja, N.V., Vasiljeva, N.V. (2003). General Terminology: Theoretic problems. Moscow: URSS, 248.

Wessels, D. (2010). Issues of lexicology in language for special purposes. *Annals of the University of Craiova,* 11 (1): 198-213.