

## **Terminology: Where is Russian Science Today?**

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### **Introduction**

For the last three years many articles have been published, striking the balance and marking out perspectives of sciences and separate scientific directions and schools in the twentyfirst century. It is expedient now to perform this task as well for a discipline dealing with terms and collections of terms (this discipline is generally known as terminology or terminology science) and to outline its perspectives. One should reckon that 80 - 90% per cent of new lexis entering developed languages (using a conservative estimate by some experts) are terms and other special lexical units, the intellectualisation of the language acknowledged by many scientists being primarily referred to the wide usage of the special lexicon in the language.

In the history of domestic terminology science it is possible to detect four periods [Grinev, Lejchik 1999]:

- The preparatory period of selecting and primary processing of the terms and definitions related to special concepts, which starts from the beginning of regular translation of the terms and compilation of the first Russian terminological dictionary in 1780 up to the end the 1920th;
- The first period (1930th -1960th) characterised by a theory of terminology coming into being and high activities of the two major experts with technical educational background – D.S. Lotte and E.K. Drezen, who promoted an engineering approach to terminology that determined greatly the future practice in standardisation and internationalisation of terminology. Within the same period of time, significant contribution to the development of terminological theory was brought by two outstanding domestic linguists, A.A. Reformatsky [Reformatsky 1959; Vinokur 1939] and G.O. Vinokur, whose works in this field have exercised a decisive influence of linguistics on the development of Russian terminology science;

- The second period (1970th -1990th) is marked by the fact that terminology is becoming an independent discipline. Different views on special lexicon and the ways it has improved are specified, scientific efforts of theoreticians and practitioners in terminology meet the efforts of linguists, logicians, specialists in information science to define the subject and objectives of terminology science, to improve its methods and to articulate its basic problems.

This period is also characterised by the development and interaction of terminological committees within the framework of academies of sciences in the republics of the former Soviet Union. Terminological activity at the state and the industrial level intensifies, giving primary attention to techniques of developing normalised terminology. Over this period only in Russia some scientific conferences, meetings and symposiums were carried out, about ten monographs were written, about twenty collections of articles were published and more than 1000 doctor's and candidate dissertations advised. Besides this, thousands of terminological and encyclopaedic dictionaries were developed – from polytechnic and general sci-tech dictionaries up to highly specific ones were created. Among the works of domestic terminologists of this period should be mentioned investigations by L.N. Beljaeva, L.I. Borisova, L.Ju. Bujanova, A.S. Gerd, B.N. Golovin; S.V. Grinev, V.P. Danilenko, G.A. Dianova, A.D. Hajutin, T.L. Kandelaki, R.Ju. Kobrin, Z.I. Komarova, T.B. Kryuchkova, O.D. Mitrofanova, V.I. Mihailova, S.E. Nikitina, A.V. Superanskaja, V.D. Tabanakova, V.A. Tatarinov, L.B. Tkacheva, N.I. Tolstoy, O.N. Trubachev, N.V. Vasiljeva, M.N. Volodina.

- The third period (since 1990<sup>th</sup> up to now) started with an evident decline of scientific research in the sphere of terminology studies caused by deep and difficult changes in the social life of the former USSR but, then, it is followed by gradual renewal.

In the **first part** of this review we will cite terminological problems in the focus of the Russian terminology school in the twentieth century. Discussion of these problems, in our opinion, has brought the most significant results to the Russian terminology science. In the **second part** of this review we will try to list the most pressing problems of the terminological domain in order to circumscribe its future in the years to come.

## **Part I**

### **I.1 Nature of the *term***

This problem has been discussing in Russian terminology science already in the first publications by D.S. Lotte and E.K. Drezen and since that time it was repeatedly highlighted in works by different linguists and logicians. In a number of

works the term is accepted to be a word or word collocation of a natural language, – in other words, the language nature of the term is maintained, and the differences in opinions are reduced to the acceptance of greater or smaller specificity of substantial, formal and functional structure of the term. So, D.S. Lotte held the view that the *term* is a special *word* [Lotte 1961; 1971; 1982], but G.O. Vinokur considered "the term to be not a special word/words, but only a word/words with the specific function", and claimed that "any word could perform a role of a term, however trivial this word might be" [Vinokur 1939, p. 5]. The disagreements can be removed if we proceed from the assumption that the term borrows from the lexical unit of a natural language only what can be called its language substratum, and the most principal character of the term remains in its terminological nature, i.e. its ability to designate a specific general concept in the system of all concepts within a special area of knowledge or activity.

There are also some viewpoints, according to which the term is not always a word or word collocation of a natural language, since it can be occasionally a non-language sign as an element of a special symbolic (semiotic) system. However the conceptual content of this sign requires a special explanation (interpretation or definition) in a natural language. It is also postulated that the quality of being a term manifests itself in a different degree and is a graduated, "scaled" property of a sign, that makes different signs, from this point of view, "more terms" and "less terms" and justifies speaking of the "termness" of a word or a word collocation [Shelov 1998].

In most cases we could assume that attributes of the strict logical concept are imposed "from above" on the substantial structure of the term and, thus, the term represents a compound multi-strata product, in which the natural language substratum and logical superstratum are available. Accordingly, they form "bottom" and "top" strata, enclosing the "term's core" with its specific conceptual, functional and formal structure that interact with the language substratum and the logical superstratum [Lejchik 1986].

## **I.2. Term and definition of terminological concept**

Until recently there was no unequivocal answer to the question, whether the definition of a terminological concept is an obligatory attribute of a term (compare a rather typical wording, a kind of "Under the term we mean a word (or a word collocation) naming a special concept and requiring its definition"[Danilenko 1977, p.15]).

Some special investigations, however, demonstrate that there can be terms which have no definition at all (especially, when a special area has just come into being or is in the process of radical reorganisation). In such cases, there exist definitions of concepts for which that have no verbal term (i.e. a term expressed by a word or a word collocation of natural language) to designate this concept (for example there is no verbal term for the chemical dimension  $pH$ ), at last, there are terms having a

set of definitions for their concepts even within the framework of the same area of knowledge.

Besides, it is worth recalling that some terms have been convincingly demonstrated to be completely motivated; consequently, they need no definition at all. These terms are usually qualified as completely motivated, as their concepts are absolutely motivated by their conceptual constituents. For example if we designate  $S(x)$  as the conceptual contents of the term  $x$ , we could illustrate the case with the following term collocations:  $S(\textit{product of simple groups}) = S(\textit{product of groups}) + S(\textit{simple group})$ ,  $S(\textit{spectrum of the normal operator}) = S(\textit{spectrum of the operator}) + S(\textit{normal operator})$ ,  $S(\textit{cell of operative memory}) = S(\textit{cell of memory}) + S(\textit{operative memory})$ ,  $S(\textit{carrier magnetic record}) = S(\textit{carrier of record}) + S(\textit{magnetic record})$  etc. Here *product of groups* and *simple group* are lexical and syntactic constituents of the term *product of simple groups*; *spectrum of the operator* and *normal operator* are lexical and syntactic constituents of the term *spectrum of the normal operator*; *cell of memory* and *operative memory* are lexical and syntactic constituents of the term *cell of operative memory*; *carrier of record* and *magnetic record* are lexical and syntactic constituents of the term *carrier magnetic record* etc. The corresponding term constituents were treated by D.S. Lotte as terminological elements of terms [Lotte 1961; 1971; Kandelaki 1977]; the concept of 'subterm' as a term component of a separate terminological unit has been brought forward in some other publications [Shelov 1998]. Whatever these constituents are called, the fact remains that they absolutely motivate the conceptual meaning of the terms which therefore do not lack a definition.

In other words, the triad "term – concept – definition" does not reflect rigid one-to-one correspondence, but, more likely, mobile interdependence of the triad's members where each place can be occupied by one, two or more members or not occupied at all.

Further, the logical types and forms of a definition representation can be rather various. It has been found that in the sphere of terminology, the linguistic analysis of definitions is of no less importance than the logical analysis. So, from the logic point of view, terminological definitions could be divided into nominal and real, explicit and implicit, intensional and extensional, synthetic and analytic, operational, genetic, stipulative and some others [Kvitko et al 1986; Superanskaja et al 1989]. From the linguistic point of view, terminological definitions could be classified in a different way – with such basic types as the following: generic, operational, contextual, enumerative (extensional), common and non-specific definitions [Shelov 1998]. The distinction between monomorphic and polymorphic definitions has also turned out to be critical both for logic and linguistics since polymorphic definitions admit some various interpretations. As they occur in different types of texts, this enables us to maintain that the conceptual contents of terms can be expressed using both strict text definition (monomorphic definitions), and text definition, admitting more than one interpretation (polymorphic definitions) [Shelov 1998].

### I.3. Language structure of the term

Linguistic analysis of special lexicon, first and foremost, of terminology and the terminological system (in separate disciplines and narrow industry branches), has always been the subject of domestic dissertations. A great part of these works has been devoted to the linguistic description of the language structure of the terms – their word formation, as well as their syntactic and semantic characteristics.

At the same time it has been demonstrated that in order to assess and select terms properly, the analysis of the language term structure should entertain specific terminological aspects of special lexicon. In particular, the concept of *term element* introduced by D.S. Lotte (terminoelement, in Russian) turned out to be extremely fruitful [Lotte 1961; 1971; Danilenko 1977; Kandelaki 1977]. Referring to a morpheme in a single-word term, to a word (or even word collocation) in a multi-word term, a term element also should correspond well to a corresponding concept or concept character within a special domain. If this is the case, we disagree with one of the traditional recommendations: “the term should be short” and consider it to be erroneous and inadequate to the nature of the term. Moreover, the tendencies in term formation of recent years manifest that more and more frequently we meet multi-word terms and term collocations; single-word terms occur less frequently than multi-word collocations, which hold their ground and do not concede a single point to single-word terms [Lejchik 1981].

Thus, linguistic analysis of multi-word term language structure, oriented to principal concepts of motivation and term elements, enables us to detect semantic differences between multi-word compound terms and term collocations (these differences are of extreme importance since, for example, in drawing up terminological dictionaries, compound terms are included in the dictionary, and term collocation are not [Lejchik 1981]).

In a number of publications, various types of formal structures used for the coining of Russian terms have been analysed and assessed, some of them being very far from characteristic of the general language. Among the types of term formal structures we find non-derivative words – *glaz* (*eye*), derivatives provided with new affixes – *pozitron* (*positron*), *mini-kuri* (*mini-hen*), compound words – *zubrobizon* (*wisent-bison*), *mestozhitel'stvo* (*residence*), *vperedzmotrjashchij* (*look-out*), abbreviations of different types (including word-like units – *tokamak* (*tokamak*), apocopes – *retro* (*retro*), *morph* (*morph*), compound abbreviations – *remstrojkontora* (*construction and repair company*), *MGD-generator* (*MGD-generator*), telescopic words – *reanimobilj* (*reanimobile*), "chained word-collocations" – *sotskul'tbyt* (abbreviated word collocation of *social and cultural every day life* (in Russian)), symbol-words, as they were called by V.P. Danilenko – *i-oblastj* (*i-area*), pattern words – *V-klapan* (*V-valve*); word collocations including from 2 up to 14 – 15 words are attributed as multi-word terms [Danilenko 1977, p. 132 – 133; Kobrin 1979, p. 7].

Within the framework of the language study of the term, a **problem of variational (dimorphic) terms and the limits of terminological variation** has always been in the focus of investigation. This concern has been a topic of discussion from the very beginning of terminology science in Russia. Truly, initially it was solved in too positive and straightforward a manner. So long as terms were viewed as special words that toe the line of special requirements, any terminological variants (including synonyms and morphological variants) were prohibited in the process of term ordering and standardisation (except for the brief variants – brief forms of the terms). Subsequently it was demonstrated, that the quality of having variants is inherent in terminology and cannot be completely overcome as, first, there exists a language substratum of the term and, second, in the concept designated by the term, different attributes can evolve, according to which the concept can be named. Nowadays it is most common to take identity of the term's concept as a natural limit of its variants within the framework of the same theory and, accordingly, the same terminological system [Alternativeness 1982]. The comprehension of the fact that terminological variants are irremovable from the text has forced terminologists to introduce changes in the normative document governing the development of terminological standards so as to soften its previously rigid specifications: "For each concept there should be one and only one standardised term" [Brief Manual 1979; Recommendation 1989]. Besides, spheres of application of unified and standardised terms, as well as the validity of the terminological standards, have been precisely limited, which, in its turn, has suppressed the quoted rule in all its rigour.

#### **I.4. The nature of terminological systems**

Already D.S. Lotte discussed the nature of scientific terminologies, meaning the ordered sets of the terms as opposed to the non-ordered ones [Lotte 1961, p. 72 - 73]. Nowadays the view is predominant that spontaneously developing terminologies are mostly incomplete, logically slack and parameters in these systems differ from deliberately and meaningfully ordered or designed terminological systems. Terminology includes terms and "preterms" as its units, but terminological systems include only terms. To be sure, we have some articulate and harmonious terminologies such as chess terminology, craftwork terminologies, such as those for weavers or coopers, but these are rather exceptions to the rule. In the meantime there are a many designed terminological systems – to start with microsystem as narrow as "Metal Band Surface Deficiencies" and to end with a multi-branched macrosystem such as the taxonomy of animals and plants by C. Linnaeus. As an adequate theory establishes a new foundation of the subject field, terminology seems to transform into terminological system. Some "pre-terms" and "quasi-terms" become involved in the terminological system, some others are substituted by terms that are optimized with regard to a correlation between their semantics and form, and, finally, new lexical units are introduced into the terminological system to make it complete and logically rigorous [Lejchik 1981]. This was the case with chemical terminology after the periodic law had been detected by D.I. Mendeleev and the natural system of elements had been established in chemistry.

Major advances have been also achieved in discussing terminological systems. Initially, the conceptual structure of any terminology was thought by some authors to be a generic hierarchy of a tree type. Later on it has been demonstrated that the conceptual structure of terminology is of a much more general type – it is basically determined by the term definition system and term motivation as expressed by the term elements. It can be represented as a level structure where the notion of conceptual level is a natural generalisation of the common idea of level in a generic term hierarchy or monohierarchy. It has been feasible to develop and justify levels in a conceptual structure of terminology and then to successfully use these levels for different applications – to represent the conceptual hierarchy in a thesaurus or ideographic dictionary, to specify the order of terms to be understood and learned as this or that discipline is taught, etc.

### **I.5. Infancy and the development of terminologies and terminological systems**

Nowadays there exist many research efforts devoted to the state of the art and history of terminology formation and development (O.N. Trubachev, N.I. Tolstoy, Ju.S. Sorokin, L.L. Kutina, A.S. Gerd, F.P. Sorokoletov etc.). This problem is illuminated in two different ways: either the author's terminology is described (for example, a monograph of Ju.K. Lekomtsev describes some individual authors' terminological systems in the field of linguistics – these of L. Hjelmslev, S.Z. Harris, R.Jacobson and M.Halle [Lekomtev 1083]), and some studies describe language development of terminology in different periods of time. In particular, it has been demonstrated that semantic ways of term formation prevailed in the Russian terminology of the eighteenth century, word derivation was dominant in the nineteenth century, and borrowing and integrated devices of creating terms is the most typical of the twentieth century [Grinev 1993].

In some works the most important terms (consequently, most productive terms) and term elements were singled out. A fair number of terminological microsystems (terminological nests) are constructed by means of these terms (with reference to the Russian political lexicon, T.V. Shmeleva called these words the “key words of the current moment”). For example, in 1980s these were *information* and *robot*; in the 1990s – *space (field)*, *virtual*. These processes are objects of investigation within historical terminology science. It studies, first, the history of separate terms: changes in their semantics, facts of renaming and the reasons for these changes – epistemological, logical, psychological, including subjective and social factors (the term *narcotizer* was replaced by the term *anaesthesiologist*), reasons for coexistence of both old and new terms, etc. Second, it also studies the processes of terminology and terminology system formation as a whole.

One factor that is highly peculiar to special spheres of knowledge and activity is a specific period of the initial concept designation (V.V.Keltujala). In this period, quite often an extended period of time, there are lexical units which could be considered as “pre-terms” (for example, W.C. Roentgen has coined a name for the beams he had discovered, *X-beams*); subsequently “pre-terms” can be either replaced by terms that are optimal in their semantic and formal structure (*X-ray*

*radiation*) – in particular, by short variants (*the young of hausen and sterlet* is replaced by *bester*) – or become naturalised as terms, and even normative terms. Among these terms are numbered some of the successful author's neologisms (*korablj-sputnik* (ship-sputnik) coined by S.P. Korolev).

Special interest within the framework of historical terminology science is aroused by the terminological neologisms. The French researcher L. Guilbert, as well as the Russian linguists V.G. Gak and V.V. Lopatin, and the Canadian G. Rondeau were the first to give a systematic description of why this kind of terms comes into being, what their semantics are like, what the criteria of being a “new term” are and how to choose the right way to designate a new concept. To fulfil this assignment they have activated some assumptions of nomination theory and designated a new offshoot of terminology science – neonymy. Of all types of term coinage some are selected more or less deliberately to meet the requirements of designating newly recovered and newly constructed articles in special domains. This process involves the reinterpretation of common lexical units, borrowings from one language to another one or from one terminological system to another one (frequently also followed by reinterpretation), word derivation and the creation of two or multi-word collocations.

#### **I.6. What is spontaneous/conscious and what is natural/artificial in terminologies and terminological systems**

In opposing terms and common (general language) words, some linguists, affirm consciousness (in creating the term) as its distinctive feature. Actually, consciousness is not absolutely specific to term formation (the process of word formation is conscious on the whole); in contrast to spontaneity, consciousness is characteristic of selection of this or that way to coin terms because in the sphere of terminology, word formation devices given to a terminologist are limited and specialised as compared with all expedients of the general language. So one should not discuss the opposition between “conscious – spontaneous”, but rather the specific exhibition of consciousness in terminological activities. Besides, while designing terminological systems, lexical units of a general (natural) language are used on parity with some artificially created items, which are constructed to occupy vacancies (*lacunae*) amid the natural language signs (cf. the above mentioned symbol-words, pattern-words etc.).

#### **I.7. Terminology systems and scientific knowledge.**

This problem is examined basically by logicians and philosophers specialising in the methodology of science. It has been demonstrated that there is no direct dependence between the growth of scientific knowledge and the development of terminology systems (their perfection or increase in volume) [Petrov 1982].

On the one hand, the construction of terminology systems and the selection of their separate units can lag behind the cumulative knowledge of a discipline: the object is already recognised, it is already mentally identified, but no designations have yet been found for it. On the other hand, some terms come into being designating

objects and articles not yet discovered or expressing concepts that have not yet been created as real objects (Leonardo da Vinci coined the term *helicopter* in the margins of a manuscript, XV-XVI c.); terms like this are called of prognostic or hypothetical terms. And finally, it should be realised that terminology might develop purely spontaneously and need not conform to any theoretical knowledge to function.

On the whole, terminology systems mirror the deepening of human knowledge, the process of world exploration, and terminological theory should analyse the way terminology accomplishes this function. In this regard, a processed set of terms (for example, normalised or standardised terminology) does not merely reflect this or that knowledge domain, but also the theory or theories underlying the foundation of the subject field and giving a description of subject field, with deeper or flatter conceptual penetration into its objects. In this context it is arguable that a highly developed scientific theory can do without a terminological system, although disciplines exist that have not developed their theories or do not require any. It should also be emphasised that some disciplines may simultaneously exploit several term systems that approximately correspond to different schools or directions of research (as occurs, for example, in physics, in linguistics, etc.).

#### **I.8. The term and the text.**

Within the framework of this problem the foundation of a terminological theory of the text were laid down [Lejchik 2002]. Its development has demonstrated that terms occur not only in scientific and technical texts, but as well in publicistic and even art texts (this was maintained by A.D. Hajutin as far back as 1972 [Hajutin 1972, p. 99 - 101]). It has been demonstrated that in solving the problem of “the term and the text” (“the term and its context”), two approaches can be applied that give different theoretical and practical results – textual analysis of the term (“from term to the text”) and terminological analysis of the text (“from text to the term”). Terminological theory of the text, which has gradually turned into the foundation of the functional terminology theory, has enabled terminologists to study the terminological structure of various texts, to investigate terminological saturation of the text and to carry out statistical terminological research of the text. This approach has also distinguished between the really functioning terms and “ideal” terms, to which normative terminology aspires [Kvitko et al. 1986].

#### **I.9. Terminology as a science**

In the last quarter of the twentieth century a discussion took place on the question whether terminology science should be to considered as a linguistic discipline. A significant number of linguists and some terminologists deem that terminology science lies entirely within modern linguistics, as its terminology’s subject are constituted by lexical units of a natural language [Tatarinov 1996].

However in-depth study testifies, first, that terminology science deals not only with terms (as a class of lexical units of languages for specific purposes) but with terminology systems as well (which is not completely a linguistic category).

Secondly, theoretical topics in linguistics are not purely linguistic, but might be philosophical as well, logical, etc., while problems solved by terminology applications are mainly non-linguistic. Finally, the methods used in terminology activities are also heterogeneous and miscellaneous, lying far outside the scope of linguistics. Within terminological studies methods of fundamental sciences are evolved, – such as methods of linguistics, philosophy, cognitive science, methods of formal, dialectic and mathematical logic, as well as methods of the theory of classification and semiotics [Kobrin 1979]. Some proper methods and methods of adjacent sciences are also employed in terminology, – these are computer science, the theory of coding, the philosophy of science, and the theory of standardisation. With some degree of convention, dozens of subject disciplines could be attributed to the disciplines adjacent to terminology – natural, technical, social, humanitarian sciences. Based on this argument, the conclusion has been drawn that terminology is a complex cross-disciplinary science. To place terminology within the system of modern sciences, one of its founders the Austrian scientist E. Wüster affirmed terminology doctrine (Terminologielehre) to be a boundary area between linguistics, logic, ontology, computer science and the subject sciences. In the domestic literature on the subject, one usually names linguistics, logic, psychology, cybernetics, computer science, general theory of systems and some others listed above, whose subject and methods greatly influence terminology science.

According to the criteria cited here (the availability of its own subject and methods, regularities, etc.) terminology, most obviously, is a discipline that evolved from linguistics and incorporated some other basic and adjacent spheres of knowledge. Furthermore, terminology science includes two closely interconnected subdisciplines – theoretical and applied terminology [Lejchik, Biesiekirska 1998].

**Within the limits of theoretical terminology** some subdivisions – and first of all linguistic terminology – are allocated. The generic and ontological connection of terminology science with linguistics is evident since the list of scientific activities in the two disciplines is very much alike; however, the contents of activities differ. General terminology, as well as general linguistics, is engaged in the problems of lexicon, semantics, word formation, word collocations, as well as in the problems of origin and the development of languages and language units, but it deals with these problems with respect to specific material – the lexicon of languages for specific purposes. This lexicon differs from general languages in semantics, usually by virtue of greater accuracy, in word formation by virtue of a limited number of models used in the production of its units and by some highly specific word formation expedients, particularly, in terminology. Within the scope of terminology science its subdivision “Epistemology of Terms” deals with the epistemological aspects of terminology, with the role that terms play in scientific cognition, and with the role of terminology formation in concept formation and concept development with respect to scientific theories. From this point of view, the subdivision “Logical aspects of terminology” is highly specific. It manifests the fact that terminology science is quite able to enrich the device of formal and mathematical logic, in that it is also engaged in the problems of the correlation

between concepts, in the problems of term allocation while operating with different concepts, and in the problems of definition and classification.

Finally, the subdivision of functional terminology, closely connected with functional linguistics, studies the specificity of term functions and has already added new functions to the list of habitual functions ascribed to words: heuristic, arbitral, etc. [Grinev 1993]

**Within the limits of applied terminology**, the number of various directions of its activity changes from six up to nine, in the opinion of the different scientists. What unites them all is the goal of obtaining applied results that are used within the frameworks of terminology science as well as outside these frameworks – in science, industry, business, and in the sphere of management.

The first and most advanced subdivision of applied terminology is terminological lexicography, or terminography, which some terminologists consider to be a boundary territory between theoretical and applied terminology, and others in general allocate it outside terminology. Terminography, which came into being much earlier than terminology itself appeared, has achieved significant success: by the end of 1980s about one hundred dictionaries were being published annually in the USSR, most of which constitute dictionaries of special lexicons – encyclopaedic, ideographic, translation, educational dictionaries, frequency word lists, dictionaries of new terms, etc. Reliable techniques for working out different terminological dictionaries were developed, including a workbook by S.V. Grinev [Grinev 1993]. Over this period, a transition was marked from the traditional form of paper dictionaries to electronic and computer dictionaries.

Extremely ramified and rich in results is the unification (harmonization) of terms, which exemplifies the performance of an applied task, not characteristic of linguistic methods of work involving general lexical units. Several methods for term unification take place: the ordering of terminology that ends in working out collections of recommended terms for a separate field of knowledge (there are approximately 120 collections of recommended terms published by the Committee of Scientific Terminology as part of the fundamental research of the Russian Academy of Sciences [Brief Work-Book 1979]); the standardisation of terminology that ends in developing terminological standards (there are more than 800 state terminological standards of the Russian Federation, which were elaborated by different organisations under the supervision of the All-Russia Research Institute for Classification, Terminology and Information on Standardisation and Quality (VNIKI), and there are in all approximately 20,000 valid national and international terminological standards in the world [Recommendation 1990]); development of international normative dictionaries, which is carried out sometimes with participation of authorised representatives from Russia (including a multi-volume dictionary in electrical engineering); terminology harmonisation, which involves the mutual co-ordination of terms at the national and international levels.

For the last 50 years, the translation of terms within the framework of the technical and scientific translation of special literature and documents has significantly increased [Tsitkina 1988]. In the field of the terminological study of the languages of the former Soviet Union, serious and extensive investigations were carried out – both in the republics of the SU, and in Moscow, mainly in the Institute of Linguistics of the Russian Academy of Science (V.Ju. Mihaljchenko, M.I. Isaev, K.M. Musaev etc.). As an important result of these investigations, it is necessary to mention hundreds of the published terminological translation dictionaries, usually with the Russian language as an entry language and national language as a target language [Stepanov 1983].

On the frontier between applied terminology and text editing of various language styles and genres, lies the subdiscipline of terminological editing (including the recommendation of how an editor should deal with the terms) [Kvitko et al. 1986]

On the basis of terminography and modern computer science, cybernetics, and systems of artificial intelligence, starting from middle of the twentieth century computer processing of the special information has been rapidly increasing on a large scale. In this connection it is highly desirable to note the interaction between applied terminology and new, but fast-paced discipline of knowledge engineering, where the experts have actively combined methodologies from computer science and terminology science – starting from thesauri for information retrieval systems and ending in terminological data banks and terminological knowledge bases, that have been working out lately [Shelov 1998; 2001].

## **Part II**

In spite of the significant results achieved by Russian terminology science that we have cited above, it would have been totally wrong to claim that all problems have been solved in this young and quickly developing discipline. The century that just passed has left to the century to come an array of difficult missions and problems in terminology. Making no pretence to completeness, we should like to note the following as the most topical among them:

**II.1. Integrated analysis and classification of the language units in science in order to** answer the questions: what other units, other than the terms, are available in the language of science? What place do they take in the classification of scientific lexicon? What role do they play in scientific communication? How do they correlate with proper terms and how should terminography deal with them? Presumable classes of these units are nomenclature, pragmonyms, professionalisms, items of professional vernacular, units of scientific and technical substandard language and slang, etc. [Shelov 1985]

**II.2.** In connection with the problems already discussed, it is necessary to continue language studies with respect to the **variation of terms and the limits of**

**variation in terminology.** From this point of view the concept of *termeme* introduced by some researchers deserves close attention [Skuinja 1988]. The term *termeme* was introduced to denote a unit more general than a separate term and to cover not only the designation of identical special concepts but also the denotations that preserve the specificity of the conceptual contents within the limits of the same denotatum situation (cf. *parallel straights, parallelness of straights, straight parallel to a straight* etc.). Linguists' attention has been involved with the similar semantic relations in everyday language for a long time and developed special conceptual and terminological devices for its investigation long ago (cf. concepts of nexus and junction in linguistics).

**II.3.** It seems both essential and potentially fruitful to launch a **systematic study of different interpretations of the same terms** (i.e. terms that are identical in the form, but differ in their meanings) used in the various scientific theories within the framework of the same subject field. These arguments lead us to believe that we can expect important results here based on a series of research projects in what is now called cognitive terminology, – the results of which contribute in particular to the highly disputable question of whether it is necessary to distinguish between a terminological concept and a terminological notion. However, the problem is not just to demonstrate different meanings of the terms identical in their form in various theories; the problem is quite different – to demonstrate that **the same term, while keeping its meaning completely unchanged at some level of understanding, still can be interpreted in a totally different manner at a deeper level of understanding.** It looks rather plausible that exactly in this way, a great variety of views and conceptions come into being, on the one hand, and unity and totality of a science is still supported, on the other hand.

In a general form the idea that some part of terminology is open to various interpretations and different comprehension has been maintained (though not using the same arguments) by many authors – L.M. Alexeeva, B.Ju. Gorodetsky, V.V. Nalimov, S.E. Nikitina [Nikitina 1987], Ju.A. Shreider, – however linguistic investigations of concrete terminological data from this point of view are actually absent.

**II.4.** The significant portion of research projects in terminology science should be aimed at **practical missions of knowledge presentation and processing.** Information specialists, employees of libraries and publishing houses, programmers working out computerized information technologies or developing electronic libraries and directories, etc., hence, all appropriate state and private enterprises might make use of the appropriate terminological tools that can function with respect to knowledge presentation and processing systems.

## **Conclusion**

For the last 70 years terminology science has passed through a difficult period in Russia. As a “maturity index” of a science we can count the number of readers, textbooks and manuals on the subject (in domestic terminology science there are

ten), the number of publications (the index of publications in terminology by V.A. Tatarinov totals up to 1600 items [Tatarinov 1998]), dictionaries (Shajkevich and Bergelson's review noted 1685 dictionaries published from 1950 up 1979 that contain contributions to the Russian lexicon [Shajkevich, Bergelson 1986]). Conferences, symposiums and meetings on terminological problems were regularly carried out, the working seminar on methodological problems of a scientific and technical terminology functioned constantly in Moscow, training courses in the fundamentals of terminology have been organised by universities, colleges and institutes. There are state and public organisations engaged in scientific and applied activity in this sphere, the doctor and candidate's dissertations have been advised, the terminological dictionaries of different types, monographs, collections of articles and magazines with articles on terminological subjects have been published. Some works of the domestic authors have been translated into German and English and published in the terminology reader compiled by C.Laurén, H.Picht. *Ausgewählte Texte zur Terminologie*. – Wien, 1993. In Austria a book by B.Moschitz-Hagspiel, *Die Sowjetische Schule der Terminologie* (1931-1991) was also published in Vienna in 1994, in which the achievement of the Soviet terminological school is covered objectively for the years of 1931-1991. The English-oriented reader provides the opportunity to introduce Western readers to some of the Russian publications in terminology by means of the compilation "Selected readings in Russian terminology research" (Vienna: TermNet, 1993).

The present article gives a very short review of the present state of art in the Russian terminology science; the extremely brief bibliography that follows it just exemplifies discussion on the points we have touched earlier. In no way does it exhibit the treasure of scientific thought in this field of knowledge for decades of its development, but the interested reader may find the following most important information on the subject in the appendices 1, 2, 3 and 4:

- Appendice 1: The list of the basic research centres of Russia in the field of a terminology and brief description of their activity;
- Appendice 2: The brief bibliography on terminology techniques (development, normalisation, unification and standardisation of terminology: description and recommendations);
- Appendice 3: The brief bibliography of the textbooks, bibliographies, readers, reviews, dictionaries and directories on terminology science prepared by Russian terminologists;
- Appendice 4: The list of the monographic publications of the domestic authors on terminology since 1991 up to now.

Russian terminology science enters the new century updated and disposed to optimism. The qualification of "terminologist" is recognised by some international educational bodies. In assessing future development of terminology science for a decade to come, there are grounds to hope that Russian terminologists will keep strengthening their connections with foreign colleagues and, in particular, with

terminologists from the countries of Central and Northern Europe. It is extremely important to orient some terminology applications to the development of a new generation text and knowledge processing systems, artificial intelligence systems. As a scientific discipline Russian terminology should pass in the future from the description of facts (significant results have been achieved in this sphere) to their explanation, to articulation of general laws concerning term formation and function, to submission of scientifically based solutions and recommendations for social practice.

## Literature

- Alternativeness as a Property of Language System (Proceedings of the Conference) /In 2 parts (Вариантность как свойство языковой системы: Тез. док. /В 2 частях. - М., 1982).
- Brief Work-Book on Development and Ordering of Scientific and Technical Terminology (Краткое методическое пособие по разработке и упорядочению научно-технической терминологии. - М.: Наука, 1979).
- Danilenko V.P. Russian Terminology: an Attempt of Linguistic Description (Даниленко В.П. Русская терминология: Опыт лингвистического описания. - М., 1977).
- Denisov P.N. On some General Aspects of the Study of Scientific Languages //Modern Problems of Terminology in Science and Engineering (Денисов П.Н. О некоторых общих аспектах изучения языков науки //Современные проблемы терминологии в науке и технике. - М., 1969).
- Denisov P.N. On some aspects of the Study of Scientific Languages //Problems of Language of Science and Engineering: Logic, Linguistic, Historic and Scientific Aspects of Terminology (Денисов П.Н. Еще о некоторых аспектах изучения языков науки// Проблемы языка науки и техники: Логические, лингвистические и историко-научные аспекты терминологии. - М., 1970).
- Grinev S.V. Introduction to Terminology Science (Гринев С.В. Введение в терминоведение. - М.: Московский Лицей, 1993).
- Grinev S.V., Lejchik V.M. On the History of Domestic Terminology Science (Гринев С.В. Лейчик В.М. К истории отечественного терминоведения //Научно-техническая информация. Сер.1. - 1999. - № 7).
- Kandelaki T.L. Semantics and Motivation of Terms (Канделаки Т.Л. Семантика и мотивированность терминов. - М.: Наука, 1977).
- Kobrin R.Ju. On the Principles of Terminological Work while Developing Thesauri for Information Retrieval Systems (Кобрин Р.Ю. О принципах терминологической работы при создании тезаурусов для информационно-поисковых систем //Научно-техническая информация. Сер. 2. - 1979. - № 6)
- Kriuchkova T.B. Particularities in Formation and Development of Political Lexicon and Terminology (Крючкова Т.Б. Особенности формирования и развития общественно-политической лексики и терминологии. - М., 1989).
- Kvitko I.S., Lejchik V.M., Kabantsev G.G. Terminological Problems of Editing (Квитко И.С., Лейчик В.М., Кабанцев Г.Г. Терминоведческие проблемы редактирования. - Львов, 1986).
- Lejchik V.M. Optimum length and optimum structure of the term //Problems of linguistics (Лейчик В.М. Оптимальная длина и оптимальная структура термина //Вопросы языкознания. - 1981. - № 2 (also translated in French)).
- Lejchik V.M. Elements of Terminological Text Theory (Лейчик В.М. Элементы терминоведческой теории текста //Стереотипность и творчество в тексте: Межвузовский сборник научных трудов. - Пермь, 2002. - С. 63 - 77.
- Lejchik V.M. On Linguistic Substratum of the Term (Лейчик В.М. О языковом субстрате термина //Вопросы языкознания. - 1986. - № 5).

- Leitchik V.M., Biesiekirska L. Terminology Science: Subject, Methods, Structure (Лейчик В.М., Бесекирска Л. Терминоведение: предмет, методы, структура. – Bialystok: Univ. w Bialymstoku, 1998).
- Lekomtsev Ju.K. Introduction to the Formal Language of Linguistics (Лекомцев Ю.К. Введение в формальный язык лингвистики. – М., 1983).
- Lotte D.S. Problems of Borrowing and Ordering Foreign Terms and Term Elements (Лотте Д.С. Вопросы заимствования и упорядочения иноязычных терминов и терминов-элементов. – М.: Наука, 1982). – 150 с.
- Lotte D.S. Brief Forms of Scientific and Technical Terms (Лотте Д.С. Краткие формы научно-технических терминов. – М.: Наука, 1971).
- Lotte D.S. Foundations of Constructing Scientific and Technical Terminology. Problems of Theory and Techniques (Лотте Д.С. Основы построения научно-технической терминологии. Вопросы теории и методики. – М.: Изд-во АН СССР, 1961; partly translated in H.Picht, C.Laurin. Ausgewählte Texte zur Terminologie. – Wien, 1993. – P. 159 – 205).
- Modern Problems of Russian Terminology (Современные проблемы русской терминологии. – М.: Наука, 1986).
- Modern problems of Terminology in Science and Engineering (Современные проблемы терминологии в науке и технике. – М.: Наука, 1969).
- Nikitina S.E. Semantic Analysis of the Language of Science: On the Data of Linguistics (Никитина С.Е. Семантический анализ языка науки: На материале лингвистики. – М., 1987).
- Petrov V.V. Semantics of Scientific Terms (Петров В.В. Семантика научных терминов. – Новосибирск, 1982).
- Problems of Terminology /Proceedings of All-Union Terminological Meeting (Вопросы терминологии: Материалы Всесоюз. терминологического совещания. – М., 1961).
- Reformatsky A.A. What is a Term and what is Terminology (Реформатский А.А. Что такое термин и терминология. – М.: Ин-т языкознания АН СССР, 1959; partly translated in H.Picht, C.Laurin. Ausgewählte Texte zur Terminologie. – Wien, 1993. – P. 206 – 220).
- Recommendations. Development of Standards on Terms and Definitions. P 50-603-1-89 /Beloozerov V.N., Butseva I.P., Gagarin A.P., Grinev S.V., Korchjomkina A.S., Leitchik V.M., Nalepin V.L., Prohorov V.N., Savilov E.S., Shelov S.D. /Change № 1 P 50-603-1-89 Recommendations. Development of the standards on the terms and definitions /Grinev S.V., Leitchik V.M., Nalepin V.L., Prohorov V.N., Savilov E.S. (Рекомендации. Разработка стандартов на термины и определения. P 50-603-1-89 /Белоозеров В.Н., Бурцева И.П., Гагарин А.П., Гринев С.В., Корчёмкина А.С., Лейчик В.М., Налепин В.Л., Прохоров В.Н., Савилов Е.С., Шелов С.Д. – М.: ВНИИКИ, 1990. /Изменение № 1 P 50-603-1-89 Рекомендации. Разработка стандартов на термины и определения. / Гринев С.В., Лейчик В.М., Налепин В.Л., Прохоров В.Н., Савилов Е.С. – М.: ВНИИКИ, 1993).
- Skuinja V. On the Parts of Speech in Terminology and on the Concept of Termeme (Скуиня В.П. Об отношении к частям речи в терминологии и о понятии терминемы //Научно-техническая терминология. – 1988. – Вып. 12. – С. 5 – 8).
- Shajkevich A.J., Bergelson M.B. State of the art in Scientific and Technical Lexicography: a Review (Шайкевич А.Я., Бергельсон М.Б. Современное состояние научно-технической лексикографии //Перевод научно-технической литературы. Сер. 1. Теория и практика научно-технического перевода. Обзорная информация. Вып. 12. – М.: ВЦП, 1986).
- Shelov S.D. Definition of Terms and Conceptual Structure of Terminology (Шелов С.Д. Определение терминов и понятийная структура терминологии. – СПб, 1998).

- Shelov S.D. Towards an Evaluation of the Conceptual Level of a Term //Quantitative Linguistics. – 2001. – V.60. Text as Linguistic Paradigm: Levels, Constituents, Constructs. Festschrift in Honour of L.Hrebicek /Ed.by:L.Uhlirova et al. – Trier: WVT, 2001. – P. 256 – 265.
- Shelov S.D. Development of Terminological Knowledge Base and Analysis of Conceptual Term Structure (Шелов С.Д. Построение терминологической базы знаний и анализ понятийной структуры терминологии //Научно-техническая информация. Сер. 2, 1998. - N 5. - С.1 – 16).
- Shelov S.D. A Category of Scientific and Technical Terms: Three Approaches to Isolating Nomenclature Names //Automatic documentation and mathematical linguistics. – 1985. – V. 19. – N 2.
- Stepanov G.V. Modern Scientific and Technical Terminology in Languages of the USSR Peoples and Abroad (Степанов Г.В. Современная научно-техническая терминология на языках народов СССР и за рубежом //Проблемы разработки и упорядочения терминологии в академиях наук союзных республик. – М. 1983).
- Stepanov Yu.S. Constants: Dictionary of Russian Culture. Tentative of Research (Степанов Ю.С. Константы: Словарь русской культуры. Опыт исследования. – М., 1997).
- Superanskaja A.V., Vasiljeva N.V., Podolskaja N.V. General Terminology Science: Problems of its Theory (Суперанская А.В., Подольская Н.В., Васильева Н.В. Общая терминология: Вопросы теории. – М.: Наука, 1989).
- Superanskaja A.V., Vasiljeva N.V., Podolskaja General Terminology Science: Terminological Activity (Суперанская А.В., Васильева Н.В., Подольская Н.В. Общая терминология: Терминологическая деятельность. – М.: Наука, 1993).
- Tatarinov V.A. Index of Works Published by Domestic Terminologists in the XXth century (Татаринов В.А. Указатель работ, опубликованных отечественными терминологами в XX веке. – М.: Московский Лицей; Русский Филологический Вестник, 1998).
- Tatarinov V.A. Theory of Terminology Science. V. 1. Theory of the Term: History and Present State of Art (Татаринов В.А. Теория терминоведения. Т. 1. Теория термина: история и современное состояние. - М., 1996).
- Terminology and Speech Culture (Терминология и культура речи. - М.: Наука, 1981).
- Tsitkina F.A. Terminology and Translation: towards Foundations of Comparative Terminology Science) (Циткина Ф.А. Терминология и перевод: К основам сопоставительного терминоведения. – Львов, 1988).
- Vinokur G.O. On Some Phenomena of Word Formation in Russian Technical Terminology (Винокур Г.О. О некоторых явлениях словообразования в русской технической терминологии // Труды Московского института философии литературы и истории Филологический факультет. - Т.5. - М., 1939).
- Volkova I.N. Standardisation of Scientific and Technical Terminology (Волкова И. Н. Стандартизация научно-технической терминологии. – М., 1984.)

## **Appendix 1.**

### **LIST OF THE RUSSIAN RESEARCH CENTRES IN THE FIELD OF TERMINOLOGY**

#### **I. Committee for Scientific Terminology in Fundamental Research, Russian Academy of Sciences (CST)**

**The Committee for Scientific Terminology in Fundamental Research (CST)** is one of the leading scientific organisations in Russia. It works in the fields of basic terminological research, normative terminology in various knowledge areas, lexicography, terminological expertise, applied terminology, etc. Along with these traditional directions the **CST** is now actively developing modern computer-based terminology information systems. The goals of the **CST** have full support from the Russian Academy of Sciences.

The problems of computerisation, knowledge engineering, artificial intelligence, information processing, and data communications for terminology are being considered in close relation with other institutes in the Academy, in particular with the Institute for Information Transmission Problems. The **CST** organises the work of dozens of special problem teams for terminology in concrete fields, in which hundreds of the best experts in these fields are taking part.

The current research directions of **CST** include the following:

1. The development of terminology support for the fundamental sciences.
2. The semantic theory of terminology.
3. Terminology processing for knowledge representation.
4. Terminological concept systems.
5. Terminological dictionaries and thesauri.
6. Terminology data banks.
7. Development of a computer-based system “Assistant of Terminologists” which along with traditional termbanks will contain repositories of non-verbal representations of concepts and advanced software for user-friendly dialogues.

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## **II. All-Russian Research Institute for Classification, Terminology and Information on Standardisation and Quality (VNIKI)**

Standardisation of scientific and technical terminology for the needs of the Russian economy is carried out by the **All-Russian Research Institute for Classification, Terminology and Information on Standardisation and Quality (VNIKI)**, which acts on behalf of the State Committee of the Russian Federation for Standardisation and Metrology (GOST R), by managing plans for the development of national standards on terms and definitions. Standardisation of terminology is becoming especially important in the context of constantly enhancing international scientific and economic co-operation and development of interstate trade relations as well as in the context of draft Federal Law “On the fundamentals of technical regulation in the Russian Federation”. Therefore standardisation of terminology is an indispensable condition for accelerating technical progress, improving product quality and reliability, and facilitating broad-scale and effective computerisation and further development of international scientific and economic co-operation.

Standardisation of terminology facilitates the improvement of the expert training quality. Besides it has a great significance for the computerisation of information processes. Terminology ordering and standardisation are not merely the result of people having recognized the appropriateness of this activity and its relationship in one or another field of science and technology, but they also facilitate the development of these spheres of activity as well. Standardisation of terminology ensures an exact observance of the established terminology and allows for the exclusion of inadmissible terms and synonyms.

State supported standardisation of legally-binding terminology provides for:

- The development of standards on terms and definitions on the basis of a common procedure in a specified order and strictly established form;
- Wide discussion and consensus on draft standards with all interested organisations and persons;
- Expertise examination and approval of the standard according to common rules;
- The assurance of a planned implementation of the standardised terminology;
- A regular check-up and a planned revue of standardised terminology.

In 1989 **VNIKI** developed a methodical document “Recommendations. Development of standards on terms and definitions”. This guide sets down a common order and scope for works involving the standardisation of scientific and technical terminology over all stages of standards development, with regard to the specificity of a standardisation object. It is stressed that the main purpose of the scientific and technical standardisation of terminology is to determine unambiguously understandable and non-contradictory terminology in all forms of documentation and literature in the field of standardisation work or using the results of this work. In 1993, Specialists at **VNIKI** together with the leading

experts in our country developed another methodical document P 50-603-2-93 "Methodological recommendations on terminology harmonisation on the national and international level", which is harmonised with ISO 860 "Harmonisation of concepts and terms". This document has a positive effect on conducting work on the harmonisation of national and international systems of concepts and addresses the problems involved in working-out common technical language in specific fields of standardisation.

One striking example illustrating the process of implementing international terminology standards is the development of GOST 1.12-99 "State system for standardisation of the Russian Federation. Standardisation and related activities. Terms and definitions". This document was based on Guide ISO/IEC 2 "Standardisation and related activities General vocabulary" and has brought terminology in the field of terminological activity, metrology and certification into conformance with the terminology accepted in ISO and IEC.

At present preparation of the relevant CIS (Commonwealth of the Independent States) standard "Interstate standardisation system. Standardisation and related activities. Terms and definitions" is nearing its completion. The purpose of this project is to provide terminological support for mutual understanding between different bodies within CIS engaged in standardisation and/or involved in assessing the conformity of products, processes and services to normative requirements. Most ISO and IEC standards and foreign national regulations entering the Collection of GOST R are being translated into Russian, and authentic Russian versions for more urgent projects in progress are being prepared. The availability of the Russian version of an international (regional) terminological standard ensures its uniform non-contradictory interpretation and adequate reflection in the form of a national normative document.

The successful standardisation of terminology work is impossible without advanced terminological databases. In response to the need for information and terminological support on the part of national economy, **VNIKI** developed computerised "Terminology" data banks to provide customers with reliable terminology. This project is based on the terminology data bank "ROSTERM", which contains more than 115,000 standardised terms taken from normative documents of the Russian Federation and international (regional) standards, together with definitions and references to their sources, as well as English, French and German equivalents. "ROSTERM" covers many subjects and contains terminology used in different fields of science and technology. Terminology concerning general and interdisciplinary concepts in the fields of environmental protection, reliability and quality, metrology, monitoring and testing, certification, occupational safety and health and in such branches of science and economy sectors as engineering and instrument manufacture, electronics, electrical engineering, metallurgy, the food industry, and agriculture is widely represented in "ROSTERM". Using "ROSTERM", terminological vocabularies and manuals as well as problem-oriented data bases containing standardised terminology are

developed. In particular, highly comprehensive vocabularies and problem-oriented databases for such fields as nuclear technology, computerisation and information technology, communication and communication systems, telecommunications, electric engineering, engineering, electronics, radio electronics, etc. have been developed. All vocabularies and manuals are also available in electronic form for speedy retrieval of the needed terminological information.

Standardisation of terminology in international co-operation ensures the mutual understanding between the specialists of different countries. For the sake of this purpose **VNIKI** terminologists and specialists are open to any co-operation on this problem.

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### **III. Omsk Institute of Terminology and Translation (OmTerm)**

OmTerm was founded in 1978 for supporting the foreign economic activity of Omsk enterprises. OmTerm is a member of the International Specialized Terminology Organization (ISTO), the International Federation of Terminology Banks/Centers (IFTB/C), the International Organization for Unification of Terminological Neologisms (IOUTN), the World Wide Round Table for Rapprochement of Races, Nations and Religions (WWRTRRNR), the Head of Asian Continental Secretariat, ISTO.

OmTerm is engaged in compiling dictionaries and text books to support economic and business contacts with foreign partners. Its basic product is:

- Bilingual dictionaries of innerbranch terms on the most current scientific and technical fields.
- Specially prepared text books on Everyday and Business English.
- Translation (descriptions, instructions, specifications, advertisement etc.), interpretation: synchronous (conferences, congresses, symposiums), step-by-step (talks, meetings) and on-site interpretation, including the installation and set-up of interpreting equipment.

**OmTerm** runs:

- Intensive courses for foreign languages (English, German, French, Italian and Spanish): Everyday and Business.
- Intensive courses for languages for special purposes (terminology and translation).
- Training of interpreters and translators: bachelor of science (4 years) - translator in the sphere of International business; qualified specialist (5 years) - linguist-translator.

More than 65 English - Russian, German - Russian and French - Russian dictionaries developed by **OmTerm** are intended for specialists and businessmen co-operating with foreign countries. They are compiled on the base of the world scientific and technical literature and documents published for the last decade and include from 2000 to 6000 innerbranch terms and cover the following subject fields and disciplines: bank and financing activity (e -r), bank business (g -r), foreign trade (e -r), computers (e -r), flexible automatic systems (g -r), internet (e -r), informatics (e -r), inflation (e -r), tank design (e -r), commercial knowledge of commodities (e -r), computer informatics (e -r), space medicine (e -r), cold and cryogenic technique (e -r), cryomedicine and cryobiology (e -r), air vehicles (e -r), macro- and microeconomics (e -r), marketing (e -r), mathematics (e -r), foreign trade (e -r), management (e -r), mobile systems of communication (e -r), taxes (e -r), oil chemistry (e -r) and many other topics.

**OmTERM** is engaged in 4 international projects:

- Compiling the bilingual dictionaries of innerbranch terms on the most topical scientific and technical fields and international business under the auspices of the joint project with the International Federation of Terminology Banks and Centres.
- Compiling the World-wide Encyclopaedia of International Terms in conjunction with the project of International Organisation of Terminological Neologisms.
- Composition and edition of the joint Russian-French Collection of scientific works on terminology “Synergie-Russie”.
- Co-ordination of terminological work in the countries of the Asian Continent. Participants: CPR, South Korea, Japan, Mongolia, Iran, Turkey, Israel, Jordan, Kazakhstan and others.

The **OmTERM** activity is appraised with 4 International Awards: The Bell of Reconciliation, The Diploma for Terminology Work, The Medal for the Achievements in XX Century, The International Cultural Diploma of Honour.

**Director: Prof. Liudmila Tkacheva, President of ACS, Vice-president of ISTO, IFTB/C, JOUTN, WWRTRNR, member of DS LSP.**

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## Appendix 2

### BRIEF BIBLIOGRAPHY OF THE RUSSIAN PUBLICATIONS ON METHODS AND TECHNIQUES IN TERMINOLOGICAL ACTIVITIES

#### (Development, Normalisation, Unification and Standardisation of Terminology: Description and Recommendations)

- Brief Work-Book on the Development and Ordering of Scientific and Technical Terminology (Краткое методическое по разработке и упорядочению научно-технической терминологии. – М.: Наука, 1979).
- Gerd A.C. Foundation of Scientific and Technical Lexicography (How to Work out a Terminological Dictionary) (Герд А.С. Основы научно-технической лексикографии (как работать над терминологическим словарем). – Л.: Изд-во Ленинградского ун-та, 1986).
- Danilenko V.P., Skvortsov L.I. Normative Foundations of Terminological Unification (Даниленко В.П., Скворцов Л.И. Нормативные основы унификации терминологии //Культура речи в технической документации (на материале ГОСТов и специальной литературы). – М.: Наука, 1982).
- Kapuller E.L., Lejchik V.M., Chernavina L.I., Shelov S.D., Jakimovich Ju.K. Recommendations for Development of Terminological Dictionaries (Капуллер Е.Л., Лейчик В.М., Чернавина Л.И., Шелов С.Д., Якимович Ю.К. Рекомендации по разработке терминологических словарей /Под общ. ред. А.С. Герда. – М., ВНИИЭГАЗПРОМ, 1988).
- Lotte D.S. Foundations of Constructing Scientific and Technical Terminology. Problems of Theory and Techniques (Лотте Д.С. Основы построения научно-технической терминологии. Вопросы теории и методики. – М.: Изд-во АН СССР, 1961).
- Recommendations. Development of Standards on Terms and Definitions. P 50-603-1-89 /Beloozerov V.N., Butseva I.P., Gagarin A.P., Grinev S.V., Korchjomkina A.S., Lejchik V.M., Nalepin V.L., Prohorov V.N., Savilov E.S., Shelov S.D. /Change № 1 P 50-603-1-89 Recommendations. Development of the standards on the terms and definitions /Grinev S.V., Lejchik V.M., Nalepin V.L., Prohorov V.N., Savilov E.S. (Рекомендации. Разработка стандартов на термины и определения. P 50-603-1-89 /Белоозеров В.Н., Бурцева И.П., Гагарин А.П., Гринев С.В., Корчёмкина А.С., Лейчик В.М., Налепин В.Л., Прохоров В.Н., Савилов Е.С., Шелов С.Д. – М.: ВНИИКИ, 1990. /Изменение № 1 P 50-603-1-89 Рекомендации. Разработка стандартов на термины и определения. / Гринев С.В., Лейчик В.М., Налепин В.Л., Прохоров В.Н., Савилов Е.С. – М.: ВНИИКИ, 1993).
- Volkova I.N. Standardisation of scientific and technical terminology (Волкова И.Н. Стандартизация научно-технической терминологии. – М.: Изд-во стандартов, 1984).

### Appendix 3

#### **BRIEF BIBLIOGRAPHY OF THE TEXTBOOKS, MANUALS, BIBLIOGRAPHIES, READERS, REVIEWS, DICTIONARIES AND DIRECTORIES ON TERMINOLOGY SCIENCE, PREPARED BY THE RUSSIAN AUTHORS**

- Hajutin A.D. Term, Terminology, Nomenclature: A Work-book (Хаютин А.Д. Термин, терминология, номенклатура (Учебное пособие). - Самарканд, 1972).
- Golovin B.N., Kobrin R.Ju. Linguistic foundations of terminology: Work-book. (Головин Б.Н., Кобрин Р.Ю. Лингвистические основы учения о терминах: Уч. пос. – М.: Высш. шк., 1987).
- Grinev S.V. Introduction to Terminology Science (Гринев С.В. Введение в терминоведение. – М.: Московский Лицей, 1993).
- Grinev S.V. Introduction to Terminography (Гринев С.В. Введение в терминографию. – М.: Изд-во МПУ, 1995).
- Grinev S.V. Historic Systematised Dictionary of Terms in Terminology: A Work-book (Гринев С.В. Исторический систематизированный словарь терминов терминоведения (учебное пособие). – М.: МПУ, 1998).
- Kijak T.R. Linguistic Aspects of Terminology: A Work-book (Кияк Т.Р. Лингвистические аспекты терминоведения: Учеб. пособие. – Киев: УМК ВО, 1989).
- Lejchik V.M., Shelov S.D. Linguistic Problems of Terminology and Scientific and Technical Translation: a Review (Лейчик В.М., Шелов С.Д. Лингвистические проблемы терминологии и научно-технический перевод //Перевод научно-технической литературы: Обзорная информация. – М.: Всесоюзный центр переводов. – Вып. 18 (Ч. I), 1989; Вып. 19 (Ч. II), 1990).
- Marchuk Ju.N. Foundations of Terminography: Teacher Edition (Марчук Ю.Н. Основы терминографии: Методическое пособие. - М.: Издательство МГУ, 1992 (also translated in French))
- Samburova G.G. Dictionary of a Terminologist: Basic Concepts and Terms of the Theory and Practice of Ordering Special Terminology (Самбунова Г.Г.Словарь терминолога: Ос-новные понятия и термины теории и практики упорядочения специальной терминологии //Сборники научно-нормативной терминологии. Вып. 111. – М.: Наука, 1990. – 39 С).
- Shajkevitch A.J. Problems of Terminological Lexicography: a Review (Шайкевич А.Я. Проблемы терминологической лексикографии //Перевод научно-технической литературы. Обзорная информация. Сер.1. Теория и практика научно-технического перевода. Вып.8. – М.: ВЦП, 1983).
- Shajkevich A.J., Bergelson M.B. State of the art in Scientific and Technical Lexicography: a Review (Шайкевич А.Я., Бергельсон М.Б. Современное состояние научно-технической лексикографии //Перевод научно-технической литературы. Сер. 1. Теория и практика научно-технического перевода. Обзорная информация. Вып. 12. – М.: ВЦП, 1986).
- Shkatova L.A. Onomaseological Problems of Russian Terminology: Manual for Advanced Studies (Шкатова Л.А. Ономасиологические проблемы русской терминологии: Уч. пос. по спецкурсу. – Челябинск: Башк. гос. ун-т, 1982).
- Tatarinov V.A. History of Domestic Terminology Science V.1. Classics of Terminology Science: a Sketch and a Reader; V.2. Directions and Methods of Terminological

Researches: a Sketch and a Reader (Татаринов В.А. История отечественного терминоведения. Т.1. Клас-сика терминоведения: Очерк и хрестоматия. – М.: Московский лицей, 1994. – 408 с.; Т.2. Направления и методы терминологических исследований: Очерк и хрестоматия. – М.: Московский лицей. – Кн. 1. – М.: Московский лицей, 1995. – 334 с.).

Tatarinov V.A. Index of Works Published by Domestic Terminologists in the XXth century (Татаринов В.А. Указатель работ, опубликованных отечественными терминологами в XX веке. – М.: Московский Лицей; Русский Филологический Вестник, 1998).

## **Appendix 4**

### **SHORT LIST OF MONOGRAPH PUBLICATIONS OF THE RUSSIAN AUTHORS ON TERMINOLOGY SCIENCE (since 1991 up to 2001)**

- Alexeeva L.M. Problems of the Term and Term Formation (Алексеева Л.М. Проблемы термина и терминообразования. - Пермь, 1998).
- Alexeeva L.M. Term and Metaphor (Алексеева Л.М. Термин и метафора. - Пермь, 1998).
- Borhwaldt O.V. Russian Terminology on Historic Principles (Борхвальдт О.В. Историческое терминоведение русского языка. - Красноярск, 2000).
- Borhwaldt O.V. Lexis of Gold Industry from Historic Point of View (Борхвальдт О.В. Лексика русской золотопромышленности в историческом освещении. - Красноярск, 2000).
- Borhwaldt O.V. Russian Terminography in the Historic Light (Борхвальдт О.В. Русская терминография в историческом аспекте. - Красноярск, 1998).
- Vujanova L.Ju. Terminological Derivation in modern Russian (Буянова Л.Ю. Терминологическая деривация в современном русском языке. - Краснодар, 1996).
- Vujanova L.Ju. Term as a Unit of Logos (Буянова Л.Ю. Термин как единица логоса. – Краснодар, 2002).
- Felde (Borhwaldt) O.V. Historical Terminology in Theory and Practice (Фельде (Борхвальдт) О.В. Историческое терминоведение в теории и практике. - Красноярск, 2001).
- Grinev S.V. Introduction to Terminography (Гринев С.В. Введение в терминографию. - М., 1996).
- Grinev S.V. Historic Systematised Dictionary of Terms in Terminology Science (Гринев С.В. Исторический систематизированный словарь терминов терминоведения. - М., 1998).
- Grinev S.V. Introduction to Terminology Science (Гринев С.В. Введение в терминоведение. - М., 1993).
- Gvishiani N.B. Terminology in Teaching English (Гвишиани Н.Б. Терминология в обучении английскому языку. – М. 1994).

- Dianova G.A. Term and Notion: Problems of Evolution (Towards Foundations of Historical Terminology) (Дианова Г.А. Термин и понятие: проблемы эволюции (к основам исторического терминоведения). – М., 2000).
- Dianova G.A. The Language of Alchemy (Дианова Г.А. Язык алхимии. – М., 1995).
- Hizhnjak S.P. Juristic Terminology: Formation and Structure (Хижняк С.П. Юридическая терминология: формирование и состав. - Саратов, 1997).
- Im Hyng Su. Formation of Terminological Lexis in the Russian Language (Им Хынг Су. Становление терминологической лексики русского языка. – М., 1995).
- Kazarina S.G. Typological parameters of domain terminologies (Казарина С.Г. Типологические характеристики отраслевых терминологий. - Краснодар, 1998).
- Kogotkova T.S. National Sources of Russian Terminology (Коготкова Т.С. Национальные истоки русской терминологии. - М., 1991).
- Komarova A.I. Language for Specific Purposes: Theory and Method (Комарова А.И. Язык для специальных целей (LSP): теория и метод. – М., 1996).
- Komarova Z.I. Semantic Structure of Special Word and its Lexicographic Description (Комарова З.И. Семантическая структура специального слова и ее лексикографическое описание. – Свердловск, 1991).
- Kulikova I.S., Salmina D.V. Introduction to Metalinguistics (Systematic, Lexicographic and Communicative-Pragmatic Aspects of Linguistic Terminology) (Куликова И.С., Салмина Д.В. Введение в металингвистику (системный, лексикографический и коммуникативно-прагматический аспекты лингвистической терминологии) - СПб., 2002).
- Lejchik V.M., Biesiekirska L. Terminology Science: Subject, Methods, Structure [the title also in Polish: Lejczyk W., Biesiekirska L. Terminoznawstwo: przedmiot, metody, struktura. - Bialystok, 1998] (Лейчик В., Бесекирска Л. Терминоведение: предмет, методы, структура. - Белосток, 1998).
- Lemov A.V. System, Structure and Functioning of a Scientific Term (Лемов А.В. Система, структура и функционирование научного термина. – Саранск, 2000).
- Lisitsina T.A. Language of the Russian Science in the 2-nd Half of the XVIII Century: Terminology of the Art Science (Лисицына Т.А. Язык русской науки II-й половины XVIII века: терминология искусствознания. - СПб., 1994).
- Malina Z.M. – Phraseological Terms and Russian Dictionaries (Малина З.М. Термины-фразеологизмы и русские словари. - М., 2000).
- Manerko L.A. Language of Modern Technology: Core and Periphery (Манерко Л.А. Язык современной техники: ядро и периферия. – Рязань, 2000).
- Marchuk Yu.N. Foundations of Computational Linguistics (Марчук Ю.Н. Основы компьютерной лингвистики. – М., 1999)
- Marchuk Yu.N. Foundations of Terminography (Also published in French) (Марчук Ю.Н. Основы терминографии. – М., 1992 (The monograph was also translated and published in French).
- Matjushenko A.G. Text in the Study of Literature: Aspects of Lexicon and Semantics (Матюшенко А.Г. Литературоведческий текст: лексико-семантический аспект. – М., 1998).
- Melnikov G.P. Foundation of Terminology Science (Мельников Г.П. Основы терминоведения. – М., 1991)
- Prohorova V.N. Russian Terminology (Lexico-Semantic Formation) (Прохорова В.Н. Русская терминология (лексико-семантическое образование) – М., 1996).
- Shelov S.D. Term Definitions and Conceptual Structure of Terminology (Шелов С.Д. Определение терминов и понятийная структура терминологии. - СПб., 1998).

- Sultanov A.H. On the Nature of Scientific Term (Султанов А.Х. О природе научного термина. – М., 1996).
- Superanskaya A.V., Podolskaja N.V., Vasiljeva N.V. General Terminology: Problems of Theory (Суперанская А.В., Подольская Н.В., Васильева Н.В. Общая терминология: Вопросы теории. – М., 1989).
- Superanskaya A.V., Podolskaja N.V., Vasiljeva N.V. General Terminology: Terminological Activities (Суперанская А.В., Подольская Н.В., Васильева Н.В. Общая терминология: Термино-логическая деятельность. - М., 1993).
- Tabanakova V.D. Ideographic description of scientific terminology (Табанакова В.Д. Идеографическое описание научной терминологии. - Тюмень, 1999).
- Tatarinov V.A. History of Fatherland Terminology Science. Classical Authors. Essay and Reader (Татаринов В.А. История отечественного терминоведения. Классики терминоведения. Очерк и хрестоматия. - М., 1994).
- Tatarinov V.A. History of Fatherland Terminology Science. V.2.Directions and Methods of Terminology Research. Essay and Reader. Part 1. (Татаринов В.А. История отечественного терминоведения. Т. 2. Направления и методы терминологических исследований. Очерк и хрестоматия. Книга 1. - М., 1995).
- Tatarinov V.A. History of Fatherland Terminology Science. V.2.Directions and Methods of Terminology Research. Essay and Reader. Part 2 (Татаринов В.А. История отечественного терминоведения. Т. 2. Направления и методы терминологических исследований. Очерк и хрестоматия. Книга 2. - М., 1999).
- Tatarinov V.A. Theory of Terminology. V.1. Theory of Term: History and the State of the Art (Татаринов В.А. Теория терминоведения. Т. 1. Теория термина: история и современное состояние. – М., 1996).
- Tatarinov V.A. Index of Works, Published by Domestic Terminologists in the XX-th Century (Татаринов В.А. Указатель работ, опубликованных отечественными терминологами в XX веке. - М., 1998).
- Volodina M.N. Cognitive-Informative Nature of the Term (Володина М.Н. Когнитивно-информационная природа термина. – М., 2000).
- Volodina M.N. National and International Aspects in Terminological Nomination (Володина М.Н. Национальное и интернациональное в процессе терминологической номинации. – М., 1993).
- Volodina M.N. Term as Means of Special Information (Володина М.Н. Термин как средство специальной информации. – М., 1996).
- Volodina M.N. Theory of Terminological Nomination (Володина М.Н. Теория терминологической номинации. – М., 1997).

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## **ABSTRACT**

### **Terminology: Where is Russian Science Today?**

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Language after the name of A.S. Pushkin, Russia)  
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The present state of the art in Russian terminology is exhibited with special reference to frequently discussed but still highly disputable and unsolved problems. Making a survey of some crucial points in terminology – the nature of the term, the term and definition of terminological concept, the language structure of the term, the nature of the terminological system etc. – the article deals with the contribution of the Russian terminological school to general terminology.

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