

New Platform for Georgian Online Terminological Dictionaries and Multilingual Dictionary Management System

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Abstract

The *English-Russian-Georgian Technical Online Dictionary* is the first ‘digitally born’ online dictionary of Georgian, created in a Multilingual Dictionary Management System (MDMS), specially developed for this project. The *Technical Dictionary* is the third specialized dictionary created by the same lexicographic team since 2009 (after the *English-Georgian Biology Online Dictionary* and *English-Georgian Military Online Dictionary*). Work on specialized vocabulary of different domains has revealed that terminology has evolved, particularly during the last 10 – 15 years. The traditional, standard requirements for monosemy and mononymy are not always observed in actual terminological work. There are numerous instances of terminological synonymy, many terms are polysemous, frequently developed as a result of metaphorical change of the primary meaning; there are many multiword terms consisting of two, three or even more words, giving rise to numerous terminological abbreviations; synonymous terms may belong to different stylistic registers, which requires the introduction of some stylistic labels in terminological entries. Rapid development of science and technology in the 21st century caused the appearance of an abundance of new concepts and consequently new terms. The resulting influx of new terminology into the Georgian language dictates the necessity to provide definitions of such terms alongside their Georgian equivalents. Introduction of collocations and examples of usage of terms is another issue that comes to the foreground of lexicographic description of terms.

These observations about modern terminology, which is discussed in the first part of the paper, became the basis for the development of a new platform for English-Georgian online bilingual terminological dictionaries and MDMS, as outlined in this paper.

Keywords: structural and semantic characteristics of modern terminology, Multilingual Dictionary Management System, a platform for English-Georgian online bilingual terminological dictionaries

1 Introduction

The end of the 20th century and the beginning of the 21st century has been marked by great changes and rapid developments in science and technology. Advanced technologies have penetrated into and drastically changed practically all aspects of our everyday lives. Moreover, the rate of technical progress is constantly increasing, leading to the introduction into our routine activities of certain things which not very long ago would seem to belong to the realm of science fiction. Such rapid development of any field of science implies the spontaneous generation of new scientific terms, and the influx of such terms in nearly every field of knowledge is another characteristic feature of our era.

This great increase in the number of new terms in various domains has caused some changes in the structural and semantic characteristics of modern terminology, leading to new requirements in the presentation of information in terminological entries, including bilingual terminological entries.

The distinction between terminological items and lexical items is also increasingly blurred. The nature of the linguistic items discussed by terminologists has undoubtedly evolved over the last 10-15 years. The inclusion in specialized electronic glossaries and term bases of items such as modal auxiliaries, complete sentences, collocational or phraseological patterns, images, diagrams and pictograms is driven by the needs of the target users and the requirements of modern multilingual communication. In this respect, the road from lexicography to terminology is more a continuum, a cline, rather than a hard-and-fast dichotomy (Fontenelle 2014 : 44).

The aim of the present paper is to share some observations about developments in modern terminology accumulated during the work on three terminological dictionaries in recent years (representing around 50,000 terminological entries altogether), each dictionary comprising many domains in its turn. The *English-Georgian Military Online Dictionary* (2009 – 2010), covering such fields as tactics, operations, maneuvers, trainings, units, personnel, ranks, transportation, weapons, equipment, logistics, and so on. The *English-Georgian Biology Online Dictionary* (2012 – 2014), including terms from the following fields: zoology, botany, paleontology, anatomy, physiology, genetics, immunology, biotechnology, molecular biology, etc. *English-Russian-Georgian Technical Online Dictionary* (2014 - 2016) comprising such fields as electronic and computer technologies, machinery and spare parts, metallurgy, the automobile industry and car-making, road building, information and manufacturing technologies, the mining industry, construction engineering, and so on.

These observations about modern terminology, which will be discussed below, became the basis for the development of a new platform for English-Georgian bilingual online terminological dictionaries and MDMS.

2 Some Tendencies in the Evolution of Structural and Semantic Characteristics of Modern Terminology

2.1 Migration of Common Words into Terminology

The observation of modern terminology has revealed a significant increase in the migration of words from the common vocabulary into terminology, and thus the transformation of common vocabulary words into terms. Of course, there is nothing new in this, insofar as numerous terms have been created following this exact pattern, e.g.

- (1) ‘Plate’ has several terminological meanings in botany and zoology (*a thin, flat organic structure or formation*), in geology (*each of the several rigid pieces of the earth’s lithosphere which together make up the earth’s surface*), in electrical engineering (*a thin piece of metal that acts as an electrode in a capacitor, battery, or cell*), in biology (*a shallow glass dish on which a culture of cells or microorganisms may be grown*), etc.
- (2) ‘Eye’ has numerous terminological meanings ranging from agricultural (*the axillary bud; the leaf-bud of a potato*), to nautical (*the extreme forward part of a ship*), geological (*a lens-shaped inclusion in a rock*), etc.

However, the novelty is the considerable intensification of this tendency. The comparison of the terminology from relatively traditional fields with that from more recent ones clearly highlights the said tendency.

A brief overview of the terms from the fields such as immunology, biotechnologies, computer, telecommunications and information technologies, and the like will suffice to reveal that this tendency is now quite conspicuous, e.g.

- (3) 'Chaperone', as a common word has two meanings: 1. *A person who accompanies and looks after another person or group of people*; 2. *(dated) A person, esp. a married or elderly woman, who, for the sake of propriety, accompanies a young unmarried lady in public, as guide and protector*.¹ Later, this word acquired a terminological meaning in genetics: *'protein involved in facilitating the folding or assembly of newly synthesized proteins'*.
- (4) 'Checkpoint' as a common word has the following meaning *'a barrier or manned entrance, typically at a border, where security checks are carried out on travelers'*. In genetics this word developed the following meaning *'any point in the course of a development or intracellular process at which successful completion of the previous steps in the pathway is checked before the pathway is allowed to proceed. The term is used mostly to denote such points in the eukaryotic cell cycle'*.
- (5) 'Footprint' as a common word means *'the impression left by a foot or shoe on the ground or a surface'*, in molecular biology 'footprinting' has developed the following meaning: *'any of various techniques used to determine the sites at which proteins bind to DNA or RNA, employed especially in the study of gene expression and regulation'*.
- (6) 'Canalization, canalize' as a common word means *'convey (something) through a duct or channel'*, as a term of genetics the word acquires the following terminological meaning *'the existence of developmental pathways that lead to a standard phenotype in spite of genetic or environmental disturbances'*.
- (7) 'Surprise' as a common word means *'an unexpected or astonishing event, fact, etc'*. As a military term 'surprise' is one of the principles of war, and has the following meaning: *'any military action on the enemy force when they are not expecting it'*. All other terms representing principles of war are created on the basis of the same methodology: 'objective', 'simplicity', 'mass', 'security', 'offensive', etc.

Modern computer and telecom terminology is another good example of the metaphoric transfer of meanings of common words: 'desktop', 'mouse', 'motherboard', 'scroll', 'home', 'hosting', 'wall', 'wall paper', 'page', 'to bomb', 'to hang', 'to boot', 'memory', 'server', 'jacket', etc. Such examples can be cited *ad infinitum*.

The same tendencies can be observed in the formation of analytical terms: 'jumping gene' (genetics), 'gene gun', 'gene library' (biotechnology), 'Portuguese man-of-war', 'lion's mane jellyfish' (zoology), 'memory stick', 'touch screen' (computer terms), etc.

What is the source of such intensification of the process, or what causes the use of more and more words from the general vocabulary while creating new terms? As noted above, our era is characterized by the formation of the great number of new scientific concepts as a natural result of rapid development of science and technology, which is followed by the need to create more and more new scientific terms. Under these circumstances, the language is trying to apply the principle of linguistic economy and to make the maximum use of available linguistic resources. These available resources are found, of course, in the existing common vocabulary. Consequently, in order to convey new knowledge, the language is trying to use existing words rather than create new ones.

This question is interesting in two respects. On the one hand, it is important for the development of any terminological policy by national language authorities. In order to produce equivalents for the terms created on the basis of common vocabulary, national languages have to take this circumstance into consideration, and decide how to introduce these terms into their languages – by means of mere transliteration, or by making use of the available resources of the native languages, applying the method of semantic borrowing and assigning respective terminological meanings to the same common-vocabulary words from their languages.

¹ Definitions of terms are quoted from respective specialized dictionaries, see References.

On the other hand, for the inclusion in the dictionary of terms created on the basis of common vocabulary, it is not enough to simply indicate an equivalent from the target language for the term from the source language. Even in bilingual dictionaries, in such cases it becomes necessary to supply the equivalent from the target language with a brief definition. It is difficult to imagine how the terms like ‘home’, ‘hosting’, ‘wall’, ‘wall paper’, ‘checkpoint’, ‘chaperone’, ‘surprise’, ‘objective’, ‘simplicity’, and so on. could be included in a dictionary without such explanations.

Brief definitions/explanations/glosses added to the Georgian equivalents of English terms have thus become an important feature of the specialized translation dictionaries composed by our team.

2.2 Migration of Terms into Different Domains

In the process of working on terminology, we also witnessed the growing tendency of the migration of terms from domain to domain. This phenomenon, in our opinion, is also explainable by what we have already said above. In order to cope with the influx of large amounts of terms, the language employs all available resources, including already existing terms. The migration of terms frequently occurs within a single domain, e.g. the same term may be attested in botany, zoology, anatomy or other related domains, as shown in the following example.

- (8) ‘Clone’ may mean: 1. (botany and zoology) *group of genetically identical individuals or cells derived from a single cell by repeated asexual divisions*; 2. (biotechnology) *DNA clone*; 3. *animal or plant derived from a single somatic cell or cell nucleus*, etc.

There are also many cases, when a term migrates from one domain to another, non-related domain, e.g.

- (9) ‘Tracer’ as a military term means *‘a bullet which is designed to ignite after firing and burn in flight, so that the fall of shot can be observed’*; in biology the term means *‘a substance introduced into a biological organism or other system so that its subsequent distribution may be readily followed from its color, radioactivity, or other distinctive property’*; as a technical term it’s meaning is: *‘a device which transmits a signal and so can be located when attached to a moving vehicle or other object’*.

‘Saltation’ is a term of biology, geology, software engineering, psychology.

There are countless other examples.

The migration of terms from domain to domain leads to the polysemy of terms, a phenomenon whose existence is viewed negatively by terminological standards and by the traditional approach to the semasiological characteristics of terms. In fact, our experience of working on terminological dictionaries and terms indicates that the number of cases of term polysemy is also increasing, which fact must be adequately reflected in dictionaries.

2.3 Analytical Terms and Acronyms

The observation of contemporary terminology has also shown the significant increase in the number of analytical, that is, multiword terms. This increase in the number of such terms has in turn led to the increase in the number of acronyms in almost every field of science and technology. There are more than half billion abbreviated terms in the IATE terminology database (Fontenelle 2014), and their number is increasing on a daily basis. A casual overview of these terms is enough to clearly see the trend:

- (10) CPU (central processing unit), SIM (subscriber identity module or subscriber identification module) / SIM card, UPS (uninterruptible power supply), USB (universal serial bus), PDF (portable

document format), GPS (global positioning system), GSM (global system for mobile [communications]), IMEI (international mobile equipment identity), CDMA (code division multiple access), HDMI (high-definition multimedia interface), HTML (Hypertext Markup Language), HSUPA (high speed uplink packet access) and HSDPA (high speed downlink packet access), UMTS (universal mobile telecommunications system), CMOS (complementary metal-oxide semiconductor), WiMAX (worldwide interoperability for microwave access), and so on.

In our opinion, this tendency is important from the point of view of the development of the terminological policy in national languages. What we mean is that the analytical terms, on the one hand, are not succinct and economic but, on the other hand, such terms are transparent and easily understandable. While introducing them into national languages, it is crucial to retain, as far as possible, this positive aspect of multiword terms. Unfortunately in the Georgian language (and possibly in other languages as well) the analytical terms are often transliterated. For instance, the psychology term ‘residual stress pattern’ is rendered in an online *Dictionary of Social and Political Terms* as ‘rezidualuri stresis paterni’ (რეზიდუალური სტრესის პატერნი). The formation of such Georgian terms has become a rule to the detriment of the effective application of the method of structural borrowing. The growing number of such terms in our languages cannot, in our opinion, promote the development of any field of science and, on the contrary, can become an obstacle thereto.

In our dictionaries we include analytical terms as separate dictionary entries, always supplying them with acronyms, if they have any. Acronyms are also included as entry words in a dictionary and are cross-referenced to their respective full forms.

2.4 Definitions

As noted above, in our bilingual terminological dictionary entries we supply Georgian equivalents of English terms with brief explanatory definitions. The need to add definitions arises from a number of reasons. First of all, such addition is necessitated by the polysemy of terms, where an explanatory definition is needed for sense disambiguation purposes. Another reason for the inclusion of definitions is great number of new terms. Such definitions facilitate their correct use and their rapid establishment in this or that field of knowledge. The addition of definitions is also necessary when a term is transliterated into the target language. For instance, without providing definitions of terms, the informative value of the dictionary entries cited below would remain very low:

- (11) ‘chemoattractant’ – kemoatraktanti (ქემოატრაქტანტი);
 ‘chemoreceptor’ – kemoretseptori (ქემორეცეპტორი);
 ‘chemorepellent’ – kemorepelenti (ქემორეპელენტი);
 ‘chemosensory’ – kemosensoruli (ქემოსენსორული)

Since a bilingual dictionary is not an explanatory one, our definitions are not comprehensive. Our dictionaries are not intended for narrowly specialized experts of particular fields of knowledge. Instead, they are intended for the wide spectrum of the public, including specialists in various fields, students, individuals generally interested in these fields, and so on. So we do not try to give very detailed descriptions of terms. Our approach to the definitions of terms is adequately described in the following quote from Pius ten Hacken:

For many items that belong to specialized vocabulary there is no need to delimit the concept precisely. The best approach is to treat them in the same way as a lexicographer describes a word. Such lexicographic definitions are fully adequate as long as there is no legal or scientific controversy about the concept. (ten Hacken 2010 : 925).

Very precise definitions of terms are also necessary in the cases when a very specific dictionary is being composed for specific objectives and a specific project, as described in “Experts and Terminologists:

Exchanging Roles in the Elaboration of the Terminological Dictionary of the Brenner Base Tunnel (BBT)” (Chiocchetti & Ralli 2014).

2.5 Terminological Variation

As we know, the terms which are monosemous (one meaning per term), with one term corresponding to one specific concept, were traditionally regarded as ideal ones. Synonymy, according to the traditional view, was not regarded as a desirable characteristic for a term either. We already addressed the issue of polysemy above; as for synonymy it also constitutes an important feature of contemporary terminology.

Although specialized language initially aspired to having one linguistic designation for each concept for greater precision, it is true that the same concept can often have many different types of linguistic designations. In the same way as in general language, there is terminological variation based on user-based parameters of geographic, temporal or social variation or usage-based parameters. (León-Araúz & Reimerink 2014 : 658).

The synonymy of terms, as one of their characteristic features, is already reflected in terminological standards.

There might be more than one designation for the same concept, i.e. there might be synonyms. (ISO 2009:704 : 7.2.4). Also term variants, e.g. abbreviated forms like clippings and acronyms, are common in specialised domains. (ISO 2009 :704 : B.2.4).

Our experience has also demonstrated that terms often have synonyms. These may belong to different stylistic registers, may represent an acronym of a term, or a term expressed by means of a symbol. The acceptance of synonymy as one of the characteristic features of terms is also important for the development of terminological policy by national language authorities. In particular, for the terms introduced in a language through transliteration, there may be created synonyms based on the resources from the native tongue / target language in order to ensure the coexistence of both terms in the language vocabulary as synonyms. We made active use of this methodology while working on our dictionaries, creating, in close collaboration with domain experts, Georgian synonyms for the international terms already established in our language. An interesting paper on this subject was presented by our colleague Enn Veldi at the XVI EURALEX International Congress in Bolzano/Bozen, Italy. The title of the paper was “Concerning the Treatment of Co-existent Synonyms in Estonian Monolingual and Bilingual Dictionaries” (Veldi, 2014).

2.6 Labels

In their writings, some terminologists note that while describing terms it is necessary to indicate the register of the application of the words in question.

Very much like a traditional dictionary which makes use of usage notes and a variety of labels aimed at capturing levels of formality (formal, informal, slang, taboo...), a terminological database such as IATE makes extensive use of metalinguistic labels. (Fontenelle 2014 : 35).

Our experience has also shown us that it is necessary to introduce stylistic labels. Terminological vocabulary also often shows some very high degree of creativity in the process of the production of colloquial or slang, even jocular varieties of terms. This can be seen with computer slang words such as: barebone, bare metal, bloatware, blue screen of death, crippleware, and the like; and military slang words such as: basket case, beetle-crusher, broolly hop, bull, battle bowler, and so on.

In specialized dictionaries it is also necessary to supply terms with subject-field labels in order to identify the exact field or fields of application of the term in question. Terms can be not only nouns,

but also adjectives or verbs; consequently, the dictionary entry must also be supplied with part-of-speech labels.

2.7 Related Words

In addition to providing definitions, in order to better highlight the meanings of terms it is important to describe them in an interrelated way. In our dictionaries we do not aim to describe the whole network of terms, but usually cross-reference them to other closely related terms. In our experience, the inclusion of related words in a dictionary entry is an important component of the description of term, e.g.

- (12) ‘Air defence’ (a military term) is cross-referenced to ‘active air defence’ and ‘passive air defence’; ‘A 1 Echelon’ (a military term) is sent for additional information to ‘A Echelon’ and ‘A 2 Echelon’; ‘Abrasive blasting’ (a technical term) is sent to ‘bead blasting’ and ‘sand blasting’; ‘Analog-to-digital converter’ (a computer and telecom term) is cross-referenced to ‘analog signal’, ‘digital signal’ and ‘digital-to-analog converter’; ‘Bitmap graphics’ (a computer term) to ‘bitmap’, ‘raster graphics’ and ‘vector graphics’; ‘Call tracing’ (a telecom term) is cross-referenced to ‘on-demand call tracing’ and ‘permanent call tracing’, etc.

As can be seen from the examples above, related words to which the main headword is cross referenced may reflect hyper-hyponymic relations between terms, or they may be co-hyponyms providing additional information about the concept, or a term may be cross referenced to antonymous or otherwise related terms which help to understand the term in question.

3 MDMS and a New Platform for Georgian Online Bilingual Terminological Dictionaries

3.1 Structure and Fields of MDMS

MDMS was specially developed for the *English-Russian-Georgian Technical Online Dictionary*, the first ‘digitally born’ online multilingual specialized dictionary of Georgian, created in MDMS. The development of this system was possible thanks to the grant provided by the Shota Rustaveli National Science Foundation of Georgia. Other dictionaries, the *English-Georgian Military Online Dictionary* and *English-Georgian Biology Online Dictionary* will be ported to this system in the near future. Planning of the MDMS was based on our views on the type and amount of information that should be present in a bilingual specialized dictionary entry, as discussed above. In MDMS, the items of dictionary information are divided into separate fields, which enables their efficient use, management and display. The basic fields of the MDMS are:

1. *Field of Headwords* which in its turn is subdivided into 1) *English Headwords*, 2) *Georgian Headwords* and 3) *Russian Headwords*. The Georgian headwords section contains a subfield of *Definitions in Georgian*;
2. *Field of Labels*, subdivided into the following components: 1) *POS Labels*, 2) *Subject Field Labels*, 3) *Stylistic Labels*;
3. *Field of Other Forms*, including the following subfields: *Plural*, *Abbreviation*, *Symbol*, *Full Form*;
4. *Field of Examples* comprises *Collocations* and example *Phrases* and *Sentences*;
5. *Field of Synonyms*;
6. *Field of Similar Words*;
7. *Field of Related Words* (see Figure 1).

In cases of polysemy, separate sections are added for each meaning of a polysemous term with the same fields, as follows: Georgian headwords, Russian headwords, Georgian definitions, POS, subject field and stylistic labels, synonyms, related words, and so on.

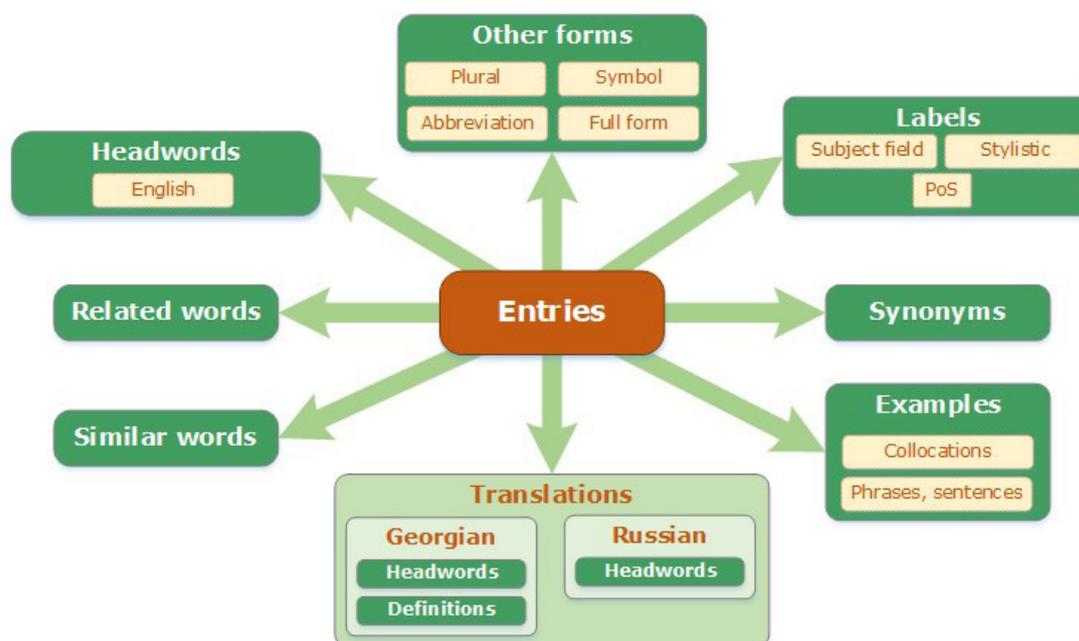


Figure 1: Fields of MDMS

3.2 New Platform for Georgian Online Bilingual Terminological Dictionaries

Dictionary entries are composed by placing information components in appropriate fields, thus establishing connections between them. Such an approach almost rules out the possibility of duplication, facilitates further editing and enables the generation of additional connections or backlinks.

For the online dictionary platform, raw working material from MDMS is converted into data in the appropriate format, adapted to the functionalities of the online dictionary (see Figures 2, 3). This also includes the automatic generation of additional language pairs, which are not actually present in the initial working data but are based on the existing connections. Thereby, the working data of the English-Russian-Georgian Technical Online Dictionary, which initially is English-Georgian and English-Russian, is transformed for the online dictionary into additional Georgian-English, Georgian-Russian, Russian-Georgian and Russian-English terminological sets, six altogether (see Figures 4, 5).

The *English-Russian-Georgian Technical Online Dictionary* contains: 21,232 English headwords, 24,036 Georgian headwords and 11,591 Russian headwords. As for terminological pairs, it consists of: 18,670 English-Georgian and 8,516 English-Russian term pairs. The dictionary also contains automatically generated 24,036 Georgian-English, 12,966 Georgian-Russian, 11,591 Russian-English and 11,513 Russian-Georgian term pairs, give a total of 87,292 term pairs.

On the opening of the hyperlink to a dictionary entry, on the left area of the computer screen there are displayed the contents of the fields of MDMS discussed above for each term, these are: similar and related words, synonyms, where necessary abbreviations, symbols, etc. Also shown are nearby entries, as well as the compound terms, which include the given word in their composition (see Figure 2). It should be noted that in case of Georgian-English or Georgian-Russian terminological pairs such information appears on the computer screen in Georgian (see Figure 4), while in the case of Russian-English or Russian-Georgian ones it appears in Russian.

TECH DICTIONARY
DB version: 2017-05-22 01:50:44

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- all fields - მონიშვნის გაფართოებადი ენა

აბვ # ა ბ ვ გ დ ე ე ჯ ზ ი ყ კ ლ მ ნ ო პ რ ს ტ უ ფ ხ ც ძ შ წ ტ ყ ყ ე ი ყ

Related words
No related words were found

Synonyms
კომპ. расширяемый язык разметки

Nearby entries

- მონელ-ლითონი
- მონიკულეზა
- მონიტორი
- მონიშვნა
- მონიშვნის გაუქმება
- მონიშვნის გაფართოებადი ენა
- მონიშვნის ენა
- მონიშნული
- მონობლოკი
- მონობლოკური
- მონობლოკური დისკო

Figure 4: Automatically generated Georgian-Russian term pair.

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- all fields - расширяемый язык разметки.

а б в # а б в г д е е ж з и й к л м н о п р с т у ф х ц ч ш щ ть ы ь э ю я

Related words
No related words were found

Synonyms
No synonyms were found
კომპ. მონიშვნის გაფართოებადი ენა, მარკირების გაფართოებადი ენა, XML-ენა

Nearby entries

- расширительная плата
- расширительное гнездо
- расширительный бак

Figure 5: Automatically generated Russian-Georgian term pair.

4 Conclusion

As noted at the beginning of the present paper, the rapid development of science and technology and the generation of numerous terms in all fields of knowledge has brought about some changes to the

structural and semantic characteristics of modern terms. Languages have begun to use all of their available resources in order to denominate new concepts, including the reuse of existing terms. There is thus an increase in the number of cases when the words from general vocabulary migrate into terminology, as well as an increase in the transfer of the terms from one field to another, both related and unrelated fields of knowledge. Examples of polysemy have increased, as well as the number of acronyms, triggered by the growth in the number of analytical, multiword terms. The emergence of colloquial, slang and jocular terms has resulted in a need to supply entries with relevant stylistic labels and so on. As such, the “translations, definitions, acronyms, subject field labels, usage notes and examples [in terminological dictionaries] are similar to what can be found in monolingual or bilingual dictionaries” (Fontenelle, 2014 : 43). It is because of these very changes, in our opinion, that Hennie van der Vliet opines: “... terminology management, although a very practical undertaking, may gain great profit from theoretical findings in lexical semantics” (van der Vliet, 2006).

These changes in the field of terminology have also caused the exchange of roles between domain experts and terminologists in the process of working on a terminological dictionary. In 2014, while presenting their dictionary in Bolzano, Elena Chiocchetti and Natascia Ralli described how their roles had changed while working on their joint project. While previously the leading roles in the process of working on such dictionaries were performed by terminologists with domain experts assisting them, their joint project saw the main work performed by domain experts assisted by terminologists. In an interesting article titled “In Quest of a Profile: Portrait of a Terminologist as a Young Sublanguage Expert”, Willy Martin argues that specialized lexicography needs “domain expertise, linguistic expertise and information management expertise in order to function properly” (Martin, 2006 : 83), and concludes that “The (ideal) terminologist as an individual does not exist. The (ideal) terminologist is a team” (Martin, 2006 : 92).

In fact, who was it who worked on bilingual terminological dictionaries two decades ago? Perhaps a terminologist who was looking for equivalents from his/her native language for source language terms and included them in the dictionary. In this activity the terminologist was assisted by and consulted domain experts. But today terminology has undergone such big changes, and the amount of information to be included in every entry of terminological dictionaries is so considerable, that terminologists have to make a huge number of decisions with respect to each particular term (see, for example, Adamska-Sałaciak, 2016), along with requiring extensive text corpora in order to identify and extract collocations of terms (e.g. see Taljard, 2016), and thus successfully performing such work is now unimaginable without the involvement of a team and, most important of all, domain experts.

These changes in modern terminology have determined the inclusion of more information in a bilingual terminological entry. The development of MDMS and the new platform for bilingual online specialized dictionaries for Georgian, as outlined in this paper, was based on these new demands with regard description of modern terminology.

References

- Adamska-Sałaciak, A. (2016). On bullying, mobbing (and harassment) in English and Polish: Foreign-language-based Lexical Innovation in a Bilingual Dictionary. In Margalitadze, Tinatin & Meladze, George (eds.). *Proceedings of the XVII EURALEX International Congress: Lexicography and Linguistic Diversity*. Tbilisi: Ivane Javakishvili Tbilisi State University, pp. 758-766.
- Chiocchetti, E., Ralli, N. (2014). Experts and Terminologists: Exchanging Roles in the Elaboration of the Terminological Dictionary of the Brenner Base Tunnel (BBT). In *Proceedings of the XVI EURALEX International Congress: The User in Focus*. Andrea Abel, Chiara Vettori & Natascia Ralli (eds.). Bolzano/Bozen: Institute for Specialised Communication and Multilingualism, pp.609 – 620.

- Fontenelle, Th. (2014). From Lexicography to Terminology: a Cline, not a Dichotomy. *Proceedings of the XVI EURALEX International Congress: The User in Focus*. Andrea Abel, Chiara Vettori & Natascia Ralli (eds.). Bolzano/Bozen: Institute for Specialised Communication and Multilingualism, pp.25 – 45.
- Ghambashidze, R. (1986). *Georgian Scientific Terminology*. Tbilisi : Metsniereba (in Georgian).
- ISO 704 : 2000. Terminology Work – Principles and Methods.
- ISO 704 : 2009. Terminology Work – Principles and Methods.
- León-Araúz, P., Reimerink, A. (2014). From Term Dynamics to Concept Dynamics: Term Variation and Multidimensionality in the Psychiatric Domain. In Andrea Abel, Chiara Vettori & Natascia Ralli (eds.). *Proceedings of the XVI EURALEX International Congress: The User in Focus*. 15-19 July 2014. Bolzano/Bozen: Institute for Specialised Communication and Multilingualism, pp. 657 – 667.
- Taljard, E. (2016). Collocational Information for Terminological Purposes. In Margalitadze, Tinatin & Meladze, George (eds.). *Proceedings of the XVII EURALEX International Congress: Lexicography and Linguistic Diversity*. Tbilisi: Ivane Javakhishvili Tbilisi State University, pp. 553 – 560.
- ten Hacken, P. (2010). The Tension between Definition and Reality in Terminology. In Anne Dykstra & Tanneke Schoonheim (eds.). *Proceedings of the XIV EURALEX International Congress*. 6-10 July 2010, Leeuwarden/Ljouwert: Fryske Akademy, pp. 915 – 927.
- van der Vliet, H. (2006). Combinatorics for special purposes. In Pius ten Hacken (ed.), *Terminology, Computing and Translation*. Narr Francke Attempto verlag GmbH + Co. KG, Tübingen.
- Veldi, E. (2014). Concerning the Treatment of Co-existent Synonyms in Estonian Monolingual and Bilingual Dictionaries. In Andrea Abel, Chiara Vettori & Natascia Ralli (eds.). *Proceedings of the XVI EURALEX International Congress: The User in Focus*. 15-19 July 2014. Bolzano/Bozen: Institute for Specialised Communication and Multilingualism, pp. 829 – 835.
- Martin, W. (2006). In Quest of a Profile: Portrait of a Terminologist as a Young Sublanguage Expert. In Pius ten Hacken (ed.), *Terminology, Computing and Translation*. Narr Francke Attempto verlag GmbH + Co. KG, Tübingen, pp. 73 – 94.

Dictionaries

- Bowyer, R. (2004). *Dictionary of Military Terms*. Macmillan, Bloomsbury 2004.
- Comprehensive English-Georgian Online Dictionary* (2010). T. Margalitadze, G. Meladze, G. Khundadze et al. Lexicographic Centre, Tbilisi State University. Accessed at: <http://dict.ge>
- Dictionary of Social and Political Terms*. Accessed at: <http://www.dictionary.css.ge/content/residual-stress-pattern> [28.03.2018]
- Dictionary of Zoology* (2009). Michael Allaby (ed). Oxford University Press.
- English-Georgian Biology Online Dictionary* (2014). T. Margalitadze, N. Porakishvili, G. Meladze, G. Khundadze et al. Lexicographic Centre, Tbilisi State University. Accessed at: <http://bio.dict.ge>
- English-Georgian Military Online Online Dictionary* (2009). T. Margalitadze, G. Meladze, G. Khundadze et al. Lexicographic Centre, Tbilisi State University. Accessed at: <http://mil.dict.ge>
- English-Russian-Georgian Technical Online Dictionary* (2016). T. Margalitadze, G. Meladze, G. Khundadze et al. Lexicographic Centre, Tbilisi State University. Accessed at: <http://techdict.ge>
- Henderson's Dictionary of Biology* (2008). Eleamor Lawrence (ed). Pearson, Edinburgh.
- King, R.C., Stansfield, W.D. & Mulligan, P.K. (2006). *Dictionary of Genetics*. Oxford University Press.