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PRACTICAL AND THEORETICAL ISSUES OF MODERN TERMINOLOGY

The questions of theory and practice of modern terminology are considered in the article. The author of the article investigates the main stages of origin of world terminology through formation of practical and theoretical terminological foundations, analyzes problems of systematization of new terms, the creation of international and national terminology databases, their usage and development for further consolidation of terminology resources.

Key words: theory and practice of modern terminology, classical terminology schools, systematization of terms, terminology databases, consolidation of terminology resources.

Introduction. Modern terminology today evolved with difficulties connected with the systematization and direct usage of international and national terminology databases due to linguistic and extralinguistic factors. The publications of many researchers reflect that nowadays there is no unique norms and rules among linguists and lexicographers to identify a massive amount of modern terminology vocabulary, systematize and place it on international databases because the appearance of new scientific and technological notions occurs faster than it can be defined. Analysis of scientific works concerning general principles of systematization of terminological phenomena and also term formation proves that it is closely linked with the history and development of practical and theoretical terminological foundations. Therefore, it is vital to consider classical terminology schools and their interference to each other, the correlation between "general terminology" and "specialized ones", the fundamental principles for creating international and national terminology databases and consolidating terminology resources.

1. The historical outlook on terminology

Terminology, the discipline deals with investigating and compiling various terms, is not a new field of linguistics, but only in the recent decades has been systematically developed, with fully considered principles and methodology. Linguists and scientists have already defined its social and political importance on both the national and international scales [1; 2].

The appearance of terminological vocabulary, so-called *terminological explosion*, was caused by the development of science, modern technology, agriculture, art and other fields of human activity. This process is identified with a brightly expressed social character and remains under the control of society. Terminology, as we understand it today, initially appeared in the 1930s after World War I. The development of terminological investigations were begun after the period of a massive term formation when the great amount of concepts and special words penetrated into languages. Due to the simultaneous expansion of knowledge and the growth of technology and communication in the 18th century, terminology has become a tool to overcome some difficulties caused by scientific and technological development. The researches in chemistry by A. Lavoisier and C. Berthollet or in botany and zoology by Carl von Linné exemplified the scientists' interest in the process of nomination of new scientific concepts.

The rapid progress and development of technology demanded not only the nomination of new concepts, but also the systematization of appeared terms. Then after the internationaliza-

tion of science in the 19th century, it was needed to introduce a set of rules for forming and defining terms used in different subject fields of human activity. The systematization of terminology and creation of its scientific status, standardization started before World War I finally have formed and intensified terminology development caused the appearance of patent literature full of new terms from modern spheres of science, medicine, engineering, and technology. Not by chance, the quick development of terminology researches were conducted simultaneously with the foundation of International Organization on Standardization (ISO) after 1946 [3].

The beginning of terminology is associated with Austrian scholar Eugen Wüster (1898–1977) and Russian scientist Dmitriy Lotte (1898–1950) whose works were published in 1930s. The Austrian linguist E. Wüster, who is considered as the founder of the General Theory of Terminology and the main representative of the Vienna School, has come from the field of engineering. The Russian terminologist D. Lotte is the founder of the Soviet Terminology School and official of the Committee for the Standardization of Terminologies in the Institute for Standardization of the Council of Ministers in the USSR and a member of the Soviet Academy of Sciences.

Foreign terminologist represented the International organization of standardization. Thus, in 1951 E. Wüster took over the Secretariat of Technical Committee ISO/TC 37 "Terminology (Principles and Coordination)" for the Austrian Standards Institute (ON). In 1961, the terminologist was elected as a Chairman of the Sub-Committee on Proposals for Multilingual Dictionaries (UNESCO). Later, in 1968 E. Wüster published "Machine Tool Dictionary", with 1401 concepts arranged according to the Universal Decimal Classification (UDC) system, showing terms in German and definitions in English and French. The publication of "Machine Tool Dictionary" became the preparation for creating the multilingual term bank of the European Commission the machine tool EURODICAUTOM (today Inter-Active Terminology for Europe – IATE). Moreover, in 1969 the Universal System for Information in Science and Technology (UNISIST) program was launched headed by E. Wüster. The result of these works was the establishing Infoterm (the International Information Centre for Terminology) in 1971 by contract with the United Nations Educational, Scientific and Cultural Organization (UNESCO), with the objective to support and co-ordinate international co-operation in the field of terminology in Vienna in 1971 [4].

In his turn, D. Lotte, just like E. Wüster identified the necessity of establishing the system of standardization of terms and concepts in technical communication among specialists. Two major developments in the former Soviet Union gave rise to the Russian School of Terminology: scientific and technological progress and multilingualism. In 1931, D. Lotte published an article entitled "Pressing Problems in the Field of Scientific and Technical Terminology", the same year that E. Wüster published the doctoral dissertation "Linguistic Standardization in Technics" which gave rise to the General Theory of Terminology (GTT). H. Picht in his book "The Science of Terminology: History and Evolution", explains that "Wuster and Lotte had in common the basic approaches to terminology such as: the concept as a unit of knowledge, the term formation regulated by guidelines, and dynamic standardization of concepts and terms" [5, p. 6–26].

Thus, two separate events took place in the world of science and technology. H. Pitch claims that D. Lotte is the authentic father of Terminology, since he has been interested in the theoretical aspects of terminology before E. Wüster. However, E. Wüster had modelled terminology into a dictionary that was the basis of the GTT. While E. Wüster recognized the need for linguistic understanding terminology, and focused his activity on studying specialized terms, D. Lotte considered that language could not be "simplified" and it had to take into account social and cultural factors of the language.

As it was stated above, modern terminology was founded in the 1930s with the works of E. Wüster and D. Lotte. In the doctoral dissertation, E. Wüster introduced peculiar arguments for systematizing terminology and fundamental principles to work with terms, outlining the main points of the methodology for processing terminology data. As G. Rondeau notes, at that time "E. Wüster was particularly concerned with methodology and standards as opposed to theory, since he considered terminology as a tool used as effectively as possible to eliminate ambiguity in scientific and technical communication" [6, p. 58].

According to Auger (1988) there are four basic periods in the development of modern terminology:

1. the origins (1930–1960);

2. the creation of terminological subject fields (1960–1975);
3. the boom or explosion (1975-1985);
4. the expansion (1985 – present) [6, p. 72].

The initial period deals with the development of scientific terminology (1930-1960) characterized by the creation of systematic term formation. The first theoretical texts written by E. Wüster and D. Lotte appeared in those times. When D. Lotte published his "Fundamentals of the Structure of Scientific and Technical Terminology" in 1961, E. Wüster had the opportunity to check the rationale and suitability of the methods presented in the doctoral dissertation "Linguistic Standardization in Technics" in 1931. The dissertation was translated into Russian and became a mandatory reading for students who studied terminology in the Soviet Union in 1935 [7, p. 40].

During the first half of the 20th century neither linguists nor social scientists paid essential attention to terminology. The interest has been renewed since the 1950-s. Scientists have generally shown their little interest in terminological studies; instead, they have been concerned with the developing the theory of terminology and its principles.

On the second stage of terminology development (1960–1975), the most important innovations in the computers fields and documentation techniques were made. During this period, the first approach to standardize terminology within a language was conducted. Thus, the first database appeared that time and the international coordination of processing terminology principles was initiated. "There was a general shift in the 1960s away from producing international standards covering basic test methods and terminologies towards producing standards related to the performance, safety and health aspects of particular products" [6, p. 36]. It was the time when the most of terminology subject fields was created.

On the third stage there was the boom or explosion of terminology (between 1975 and 1985) which was marked by the proliferation of language planning and terminology projects; some countries like the former USSR and Israel had begun their language policies earlier. In the former USSR along with E. Drezen, D. Lotte teaching materials and manuals were prepared and used at different Russian universities. These two engineers determined the most essential notions linked with the term and its properties as well as the development towards standardization and internationalization of the terminological sphere focused their attention to the creation of terms and borrowings. V. Danilenko, the famous Russian terminologist, published his work "Russian terminology: the experience of linguistic description" (1977) in this period where the problem of functioning grammatical categories in terminology had been risen. Later S. Chaplygin, an aerodynamics specialist, established the Soviet Academy of Terminology.

The fourth stage in the development of terminology is characterized by the modernization of languages and creating new terms. The spread of personal computers caused appearing and processing terminological data. Terminologists now have at their disposal various tools and resources that are better adapted to their needs, more useful and more effective (Inter Active Terminology for Europe – IATE and Euro Term Bank, Humanterm – Multilingual glossary for the humanitarian field, Statistical Data Base (SDB), INTENT, MULTITRAN, Lingvo glossaries and others. At the same time, the new market emerges the language development in which terminology occupies a privileged position. International cooperation is strengthened, spread and consolidated, as international networks are created to link agencies and countries that share special requirements and standards or are interested in cooperation. Examples of this process are the exchange of information and the international cooperation in training terminologists. Finally, the model of terminology is linked to planning, which is so necessary for developing countries, is being consolidated at this time.

2. Terminology schools

Systematic interest in terminology arose simultaneously in several European countries (Austria, the former Soviet Union, and the former Czechoslovakia). It is from these three centers that terminology practice first expanded to the West (France, Canada, Quebec) and the North (Belgium and Scandinavia) then to the South (Northern Africa, sub-Saharan Africa, Central and South America, Portugal, Spain) and, even more recently, to the East (China and Japan). Developments in each one of these regions are characterized by the context in which terminology is studied and by the stated purposes.

Auger defines the following tendencies in terminology caused by their main objectives: terminology adapted to the linguistic system (the linguistic approach), terminology for translation

(the translation approach), and terminology for planning (the terminologists approach) [6, p. 69]. These three tendencies are represented by the three schools in Vienna, Prague and Moscow. The best known, Vienna or Austrian school of terminology was based on the works of E. Wüster and adopts the principles formulated in his "General Theory of Terminology". The Vienna school has developed a systematic corpus of principles and methods that constitute the basis of theoretical terminology and practice from the needs of modern technicians and scientists to standardize the terminology fields for efficient communication among specialists. The principles of this school are reflected in standardized documents on terminology, on methodology and data exchange, and on final terminological products. Most European countries work within this framework, where specialists from different fields of science and technology work on systematizing terms.

The Czech school appeared because of the functional linguistic approach developed by the Prague linguistic school. Czech scientists and linguists focused on the theoretical and practical researches of Terminology. According to M.T. Cabré, the Czech school was led by Eduard Benes, Vilém Mathesius, Josef Vachek, and Nikolai Trubetzkoy, and mainly Lubomir Drodz and Ferdinand de Saussure. M.T. Cabré writes, "the Prague School is the most 'linguistics-centered' school" [6, p. 43].

The Czech school was almost exclusively concerned with the structural and functional description of special languages, in which terminology played an important role; it focused on the standardization of languages and terminologies; and its terminological works were connected with the Czech Language Institute (a part of the Academy of Sciences). This school postulates that terms are the units of functional professional language existing in other styles such as literary, journalistic, or conversational ones.

The Russian school of terminology was based on the works of D.Lotte, S.Chaplygin, A.Reformatskiy, V.Vinogradov, G.Vinokur, R.Budagov, S.Ozgegov, F.Skorohod'ko, V.Danilenko, O. Akhmanova and their coworkers. Consequently, the Russian school was mainly interested in the standardization of concepts and terms because of the multilingualism in the former Soviet Union. The works of Russian linguists became the base for creating different terminological schools in the former Soviet Union that investigated:

– the interaction of terms with general vocabulary (A. Aksyonov, 1954; B. Konovalova, 1964; L. Kapanadse, 1966; I. Alexsandrovskaya, 1973);

– the structural and grammatical peculiarities of terminology (L. Teslinova, 1969; G. Guseva, 1970; T. Kandelaki, 1970, 1977; A. Pumpyanskiy, 1971; L. Komissarova, 1973);

– the formation of terms (G. Vinokur, 1939; I. Arnold, 1954; M. Barak, 1955; A. Skorodko, 1960; M. Bonelis, 1962; V. Borisov, 1969, 1970; V. Danilenko, 1971, 1977; V. Tribunskaya, 1980);

– the formation and development of terms and different terminology systems (R. Budagov, 1940, 1971; B. Bogodskiy, 1964; Ya. Tkacheva, 1973; V. Sorokoletov, 1981);

– the synonymy and polysemy of terms (S. Korshunov, 1952; N. Salnikova, 1979);

– the lexicography and automatic analysis of scientific and technical texts (P. Alekseev, 1965; K. Lukyanenkov, 1969);

– the translation of terms (L. Chernyahovskaya, 1971; F. Tsytkina, 1978).

Foreign linguistic terminological investigations were conducted by R. Brown (1954), V. Fleisher (1974), E. Wüster (1966, 1974, I977), G. Rondeau (1965), P.B. Gove (1961), J.C. Sager (1988, 1990), M.T. Cabre (1999) and others [7, p. 28].

At the opening session of the Infoterm symposium in 1975, E. Wüster himself named four scholars as the intellectual fathers of the Theory of Terminology:

1) the German scholar A. Schloman, who discovered the systematic nature of special terms;

2) the Swiss linguist Ferdinand de Saussure, who was the first had drawn the attention to the systematic nature of a language;

3) the Russian linguist D. Lotte, who was a pioneer in postulating the importance of standardization;

4) the English scholar J.E. Holmstrom, who was systematizing terminologies on an international scale from UNESCO.

O. Akhmanova who had founded a single terminology methodology and offered the methods for distinguishing scientific terminology from different scientific issues wrote the great

amount of terminology works. O. Akhmanova had conducted the deep research for 20 years that had a number of concrete conclusions for the theory and practice of teaching foreign terminology. One of such conclusions is the statement about the semantic nature and linguistic peculiarities of term as a linguistic unit.

Thus, all these three terminology schools were based on linguistics, theoretical structure and methodology. Analyzing the development of these three terminology schools, we can identify three different approaches to terminology:

– The first approach considers terminology to be an interdisciplinary but autonomous discipline of science and technology.

– The second approach focuses on philosophy investigating the logical classification of concepts and organization of knowledge.

– The third approach focuses on linguistics, studying the component of special language or terminological system.

Nevertheless, the Ukrainian terminology was formed much earlier the stated period, it was proposed that Ukrainian terminology was systematized at that time when scientific literature was developed in the first period of the 19th century. Although many terms from agriculture, architecture, and philosophy had appeared in the 12th–13th centuries, linguists suppose that the terminology flourishing was started in Ukraine in the beginning of 20th century as in other European countries [8, p. 11]. I. Gavrishkevich, I. Verhratskiy, O. Rogovich and many other scientists and lexicographers are considered the founders of the Ukrainian terminology when appearing terminology lexis was caused by the activity of cultural and educational centres, schools, academies [9, p. 21–26]. Other linguists consider that "the development of the Ukrainian terminology, the period of so-called ukrainization, when the Ukrainian language became the language of Ukrainians and Ukrainian Soviet Republic was ten years earlier in 1920s" [9, p. 22].

The development of Ukrainian terminology was under the strict control in the former USSR in a close contact with the Russian school since 1933. The State Committee of Standardization regulated all terminological problems with the publication of special bulletin named GOST in Russian. These bulletins contained the lists of standardized terms and their definitions, the requirements for their usage and their foreign equivalents. Ukrainian terms were often replaced with Russian ones because of the non-state status of the Ukrainian language, its prohibition as a means of communication and state separation of Ukrainian linguistic territory and the process of russification reflected even in the formation of Ukrainian terms. It signified that foreign elements were borrowed very rarely only when it could not be done with the Ukrainian language means. Moreover, Russian elements in terms were replaced with the linguistic elements of that language from which the term was borrowed.

However, during the process of industrialization, internationalization of science and technology with the Russian language and total russification of the former Soviet Union in 1930s, many Russian terms were borrowed in the Ukrainian terminology. Furthermore, the authentic Ukrainian terminology became inaccessible to users and was deleted from the official dictionaries and manuals that times [8, p. 13]. Finally, the Ukrainian terminology dictionaries were eliminated, sometimes left only in one copy.

3. Formation of practical and theoretical terminological foundations

Modern terminology today is an independent branch of linguistics summarizing experience of terminology works and terminology phenomena, possessing its structure with the sets of terminology notions and concepts from technical and scientific writing and documentation. The modern linguist Kostas Valeontis, the president of the Hellenic Society for Terminology (ELETO) and the Chairman of the Permanent Group for Telecommunications Terminology at the Hellenic Telecommunications Organization considers terminology in two main meanings:

1. The first one as the discipline concerned with the principles and methods governing the study of concepts and their designations (terms, names, symbols) in any subject field, and the job of collecting, processing, and managing relevant data, and

2. The second one as the set of terms belonging to the special language of a definite subject field (the concepts and their representations in special languages) [10, p. 2].

In the second meaning terminology can be considered as multidisciplinary because it borrows its fundamental tools and concepts from a number of disciplines (e.g. science, linguistics,

information technology and other specific fields) and adapts them appropriately in order to cover particularities in its own area.

Considering modern terminology, the linguists as a rule define the following aspects:

1) a branch of linguistics that studies and systematizes terms;

2) a professional vocabulary as a part of national language (English terminology, Ukrainian terminology and etc.);

3) special words or professional terminology used for professional communication (linguistic terminology, medical terminology, judicial terminology, electrical engineering terminology and etc.).

A general theory of terminology is based on the conceptual relations between terms and notions, between sciences such as physics, chemistry, biology, etc. and the combination of other disciplines such as linguistics, logic, ontology, and computer science. All researchers investigating terminology phenomena prove that terminology is not a chaotic set of terms but it is a system of special words logically and linguistically organized. Ukrainian linguists emphasize that "terminology is a science which studies special professional vocabulary, its typology, origin, forms, content, functioning and its usage, creation and development" [8, p. 15]. Thus, terminology is considered as a branch of linguistics deals with special languages, professional communication and information conducting different goals and objectives.

Terminology in modern world connects with special languages or Languages for Special Purposes, related to scientific and technical information or professional communication. "Languages for specific purposes, or, in this case, English for Specific Purposes (hereinafter referred to as ESP) can be dealt with at least two perspectives: on the one hand, from a didactic perspective, as ESP is a sphere of language teaching. On the other hand, we must approach the issue of specialized language(s) from a linguistic viewpoint, as English for Specific Purposes is a peculiar segment of a language, with its major component – terminology, to which some authors add the science specific grammar, i.e. linguistic issues and particularities", – considers Dr. Nagy Imola Katalin [2, p. 262].

Not all experts agree that terminology comprises a separate discipline, nor do all consider it as a theoretical subject. Some scientists suppose that terminology is a practice dealing with social needs often related to political and/or commercial aims. According to other experts, terminology is a true scientific discipline with various subject fields and fundamental concepts.

There are many intermediate positions identifying terminology in a theoretical aspect, only within the framework of other, more consolidated disciplines. There is, consequently, a wide range of approaches to the theory and practice of terminology. Therefore, it is necessary to uncover the basic principles of these approaches. First, it is needed to determine four different points of view on terminology works and applications:

1. For linguists, terminology is a part of the lexis limited by the subject field and pragmatic usage.

2. For subject field specialists, terminology is a formal reflection of the conceptual organization of special notions and professional communication.

3. For end-users (either direct or intermediary), terminology is a set of useful, practical units for communication assessed according to the criteria of economy, brevity and suitability.

4. For language planners, terminology is an area of a language requiring intervention in order to reaffirm its usefulness and survival and to ensure its continuity as means of expression through modernization.

There are also two separate user groups of terminology: the users of terminology for direct communication or communication through intermediaries, and terminologists, who write glossaries, facilitate communication, or mediate in some other way besides these four points of view. According to the needs of these two groups, terminology can have two dimensions closely related: a communicative dimension and a linguistic dimension. The theory of terminology can be identified as having three different dimensions: the cognitive, the linguistic, and the communicative dimension [6, p. 26]. For the first group, terminology is a tool for communication, for the second one, it is the target of their work.

The direct users of terminology are the specialists in each subject field of science and technology. For them, terminology is a necessary tool for communication and an important element for conceptualizing their own subject matter. This two-sided function of terminology causes their

interest in standardization for determining conceptual definitions and fixing the proper terms. Specialists use terminology regardless of whether a term is appropriate within a particular linguistic system or not. Their communicative needs start from the knowledge of the concepts and from the needs to communicate using them; their interest in terminology focuses on the concepts and how these concepts can be named clearly and unambiguously. According to this approach terminology is primarily a business and subject matter of several groups of specialists with their working methods and knowledge united with one professional field. In this sense, terminology comprises merely technical aids in a multidisciplinary field.

Terminology intermediaries are language professionals like translators, technical writers, and interpreters who need terminology to carry out their professional duties and communication. They need glossaries and specialized dictionaries because they assist in technical and scientific writing or translating. "Terminologists, terminographers and neologists, language planners and information scientists must be both specialists in language, information and documentation and in an appropriate subject field" [6, p. 12]. Their works consist of compilation, description, processing and creation of terms.

The main aim of terminology is to provide creating and perfecting terminology systems or LSP (languages for special purposes) in the definite subject fields of knowledge. Terminology is devoted to the bases of a modern terminology vocabulary for understanding concrete scientific and technical texts and conversations on professional themes, or for teaching foreign languages in universities and institutes, for mastering modern languages.

As the number of works in this area is constantly increasing, the agenda of terminology science includes:

a) social terminology studies (appearing and systematizing neologisms) proposed by terminologists and language planners;

b) case studies on terminology development dealing with systematization and standardization of terms;

c) researches concerning the creation and usage of terminology international and national databases for various user groups and purposes (e.g. translation, technical writing, information management);

d) researches concerning lexis for documentation and information (thesaurus, classification systems, terminology dictionaries and databases).

Terminology is one of the most mobile, quickly filled parts of national language. There is a dual process in terminology: the number of terms accessible only to specialists increases rapidly in every highly developed language and is estimated in million, and at the same time, there is an intensive penetration of special terminology into general literary language. Otherwise, terminology is not isolated from literary language, and those processes happen in a literary language are reflected in it. However, unlike literary language terminology deals mainly with written form of the language, including signs, shortenings, abbreviations, which are rarely studied by linguists.

The progress of science and technology, means of communication today has caused the emergence of new requirements for the translation profession. There have been organized several European projects working on the new objectives, criteria and characteristics of translation competences. According to PACTE group (2000), the project of European Master's in Translation (EMT) started in 2009, and the European Commission, developed a list of professional translation competences, new criteria for the formation of future translators' knowledge and linguistic skills were offered [11, p. 99–106]. The main results of this work was creating a single international standard ISO 17100 2015 on translation activities and services and Modern Professional Translator's competences and Translation service requirements. The deep knowledge of modern terminology (general and specialized), ability to use terminological dictionaries, especially electronic ones, and different search systems for a fast and highly qualified translation were noticed among the most important professional translators' competences.

Modern professional terminology can vary depending on its use: mathematic, physic, judicial, biological, medical, electrical, economic and others with further subdivisions. In recent decades, the Internet space has given the opportunity to use electronic terminological dictionaries such as MultiLeks, Lingvo, ABBYY LINGVO, TERMIUM, TERMIUM Plus, INTENT, MULTITRAN, GIGATRAN, finally the EuroTermBank portal and many others. Moreover, students working on trans-

lating terminology texts with electronic dictionaries develop linguistic knowledge, skills and new professional translation competences; understand changes in special vocabulary or languages for special purposes; do some theoretical summaries and carry out various lexicography works automatically; create new articles in electronic dictionaries and translation databases and, thereby, improve translation quality. Taking into account the new European requirements for the modern translators' professional activity, as well as the quality of translation services, and new translators' competences, the role of teaching professional terminological vocabulary or Languages for Special Purposes (LSP) becomes of a great importance. Teaching terminology with its own methodology and research principles helps to form not only translators' linguistic competence, but also the ability to work effectively in computer-aided translation using electronic dictionaries, modern search engines and other technologies. The knowledge of modern terminology (general and specialized), abilities to use Glossaries, especially electronic ones, different search engines for the fast, highly qualified and skilled translation are recognized among the most important professional competences. All these skills, knowledge and competences are reflected in modern curriculum and programs for academic translators' training based on the competence approach including self-determination, self-analyzing, developing individuality and socializing. The emphasis is on the practical aims more than theoretical ones allowing future translators communicate without barriers and work more effectively.

4. Terminology in modern times

The Ukrainian terminology was renewed only in 1991 after the dissolution of the Soviet Union that is why the processes of improvement and development continue up today. Nowadays the Ukrainian terminology dictionaries are developed, a great number of various scientific researches on terminology are conducted, the articles and manuals devoted to the Ukrainian terminology are published. Linguists, professionals from different fields of human activity created several terminological centers in three Polytechnic institutes: in National Technical University "Kharkiv Polytechnic Institute", National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" and L'viv Politechnic National University. After the proclamation of independence, Technical Committee for Scientific and Technical Terminology Standardization (TC STTS) of State Committee of Ukraine for Standardization was set up in 1992 [12]. TC STTS and Ministry of Education and Science of Ukraine have become the state structures of Ukraine providing scientific and technical terminology researches; organizing and coordinating compilation, expertise, approval and publication of Ukrainian terminological standards and dictionaries; promoting international cooperation and experience exchange in the field of scientific and technical terminology standardization; participating in corresponding ISO and IEC committees [12].

TC STTS with Ministry of Education and Science of Ukraine, Ministry of Economic Development and Trade of Ukraine, L'viv Polytechnic National University and others Ukrainian institutions has organized International Scientific Conference devoted to the Problems of Ukrainian Terminology since 1993. After the Conference, the herald of L'viv Polytechnic National University has been published pointing out the process of terminological development in Ukraine. TC STTS staff has gained considerable experience in providing conceptual basis and practical recommendations for Ukrainian scientific and technical terminology normalization. The work allowed launching a wide-scale lexicographical project known as terminological series Slovo Svit (Word World) in 2000. During those years twelve works have been published, namely ten terminological dictionaries of different subject fields: biological engineering, installation and engineering technologies, heat engineering and cock chemistry, architecture and building, informatics and programming, medicine etc.

Nowadays specialized dictionaries are edited and published within the frames of the Department of Scientific Terminology of the Institute of the Ukrainian Language of the National Academy of Sciences of Ukraine (NASU) (Kyiv). NASU has edited more than 20 dictionaries since the 1990s and published:

– the Dictionary of Ukrainian Biological Terminology with the Committee of Scientific Terminology of NASU (D. Grodzynsky, M. Hodovana et al., 2012);

– Ukrainian Russian Dictionary of Scientific Terminology (M. Hodovana, V. Marchenko, O. Nechytailo et al., 2004);

– Dictionary of Titles of Professions according to the Type of Activity (M. Hodovana, 2009);

– electronic versions of Terminological Ukrainian-Russian-English Dictionary-Reference Book in Welding (in collaboration with specialists of the Electric Welding Institute named after E.O. Paton of NASU, 2013);

– Dictionary of Metallurgical Terms (Ukrainian Georgian-Russian-English-German-French) (in collaboration with specialists of the Electric Welding Institute named after E.O. Paton of NASU and with the support of the National Academy of Sciences of Georgia and the Russian Academy of Sciences, 2014) and many others [12].

Ukrainian terminologists investigate the problems of term formation and development of terminology systems. The questions of systematizing scientific and technical terminology, creating Ukrainian electronic terminological dictionaries for qualified translation, the problem of terminological heritage and culture of scientific language, the ways of term translation are considered in the works of the Ukrainian linguists T. Kyjak, A. Djakov, V. Karaban, A. Kovalenko, L. Chernovatyj, O. Vakulenko, I. Kvitko, M. Mostovyj, L. Bilozerska and many others.

There is a tendency towards multilingualism across the cultures proved by the necessity for direct and efficient professional communication in modern terminology, where national languages are used as communication tools for marketing products and sharing information. In this case, the concept-oriented approach has appeared in terminology management for investigating the ways to improve the quality of machine translation based on the conceptual integration to language engineering. For the last fifteen years, scientific knowledge has been constantly changing. Many efforts are made to rationalize the diversification of languages by means of state sponsored linguistic planning projects and to consolidate terminology resources. These projects respect cultural identity, encourage international relations and systematize world terminology allowing national terminology become a part of a huge linguistic group.

European research projects (Translator's Workbench, ESPRIT Programme, Euro Term Bank portal) or the similar project in Canada (Translation Workstation), European Research Infrastructures, including e-Infrastructures, Vox Tran, LIND-Web, Gala Crisp show a clear tendency towards the systematic integration and the vital role of terminology in the process. Terminology for Europe (IATE), operated since 2004, is the terminology database for all EU institutions created with the aim to provide an internet-based service for sharing terminology between institutions. It contains publications, traineeships, a neologism database, a glossary, DocHound document search tool, articles, theses and papers, and much, much more.

The European Association for Terminology is a "non-profit" professional organization for the terminology sector in Europe in particular designed to further multilingualism through terminology, to provide a European platform for promoting and improving terminological activities to cooperate actively with other relevant organizations, associations and institutions at all levels.

Terminologists have started recently the project Humanterm funded by the Universidad Europea de Madrid with the aim of creating a terminological multilingual glossary for translators working in the humanitarian field. More specifically, Humanterm concentrates on:

– compiling documents for term identification and extraction

– uploading these terms into a collaborative platform that allows for public access [13].

Thus, modern terminology is greatly affected by social changes such as the accelerated development of science and technology, creation of new means of communication, necessity of standardized goods, products and services, appearance of new markets for scientific, technical, cultural and commercial exchange. Examples of this exchange is the international linguistic projects and training terminologists and interpreters.

Computer technology is one of the most important forces behind changes in terminology. The massive information of data requires powerful and effective support. Terminologists now have at their disposal tools and resources that are better adapted to their needs and more effective. However, these latest databases require constant updating. Moreover, according to the world changes and new needs they must be accessible and multidimensional. This fact emerges new markets where terminology is in privilege.

Information Technology uses terminology to construct the concept field that subsequently provides access to the information about the documents. Different modern information technologies are used in terminology dictionaries and databases. Compiling thesauri is one of very productive terminology activities because it focuses on the characteristics and structures

of the content and terms. Thesauri consist of the terms and their definitions at the same time. Computer Technology is the key for terminology because of the enormous possibilities: it offers to store information and order conceptual systems. Information technology uses terminology to summarize professional fields and terminology systems. Specialists together with general and applied terminologists work on systematizing, standardizing terms and concepts in each special subject field.

Conclusion

Analyzing fundamental stages of origin of world terminology through formation of practical and theoretical terminological foundations, investigating terminology schools, we can conclude that modern terminology is based on the principles of systematization of new terms, creation of international and national terminology databases for further consolidation of terminology resources, societies and terminology centers. Nowadays scientists operate theoretical and practical foundations of modern multi-paradigm terminology as an interdisciplinary branch of linguistics. This process requires adaptation of systemic linguistics knowledge, general theory of methods of terminological research by means of elaborating respective technique based on theoretical and practical methodology towards its integration in the world terminology databases.

Modern linguists claim that in the 18th and 19th centuries, scientists were the leaders and developers of terminology; in the 20th century engineers and technologists were involved in the process of term formation; in the 21st century translators and terminologists were united for creating international and national terminology databases. Only in the 20th century, terminology has acquired a scientific base, practical and theoretical foundations recognized as a socially important activity.

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В статье рассматриваются вопросы теории и практики современной терминологии. Автор статьи исследует основные этапы возникновения мировой терминологии путем формирования практических и теоретических терминологических основ, анализируя проблемы систематизации новых терминов, создания баз данных международной и национальной терминологии, их использования и развития для дальнейшей консолидации терминологических ресурсов.

Ключевые слова: теория и практика современной терминологии, классические терминологические школы, систематизация терминов, терминологические базы, консолидация терминологических ресурсов.

У статті розглядаються питання теорії і практики сучасної термінології. Автор статті досліджує основні етапи виникнення світової термінології шляхом формування практичних і теоретичних термінологічних основ, аналізуючи проблеми систематизації нових термінів, створення баз даних міжнародної і національної термінології, їх використання та розвитку для подальшої консолідації термінологічних ресурсів.

Ключові слова: теорія і практика сучасної термінології, класичні термінологічні школи, систематизація термінів, термінологічні бази, консолідація термінологічних ресурсів.

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