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TERMINOLOGY AS AN INTEGRAL COMPONENT OF THE ENGLISH LANGUAGE CURRICULUM

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INTRODUCTION

Terminology problems are among the most relevant modern issues of translation studies and linguistics. Terminological units belong to the vocabulary layer, which occupies a significant place in national vocabulary of any language and is developing at its own pace. On the one hand, it is in high demand among professionals in various fields of social life and therefore attracts the attention of many philologists. On the other hand, terminological units create certain difficulties for the translator not only within scientific and technological discourse, but also in the translation of science fiction, literary translation and media discourse.

Terminology is primarily the vocabulary of LSP (language for special purposes, also known as special language), but it is also the science of both the concepts and terms of specialized vocabularies (terminology science) and terminological working methods.

Terminologists collect and check the terminology of a particular subject field in one or, often, more languages (translation-oriented terminology work). They record specialized vocabularies, select terms where necessary (terminological selection) or coin new ones, and compile terminologies in terminological collections. The results of this work, particularly of systematic terminology work, are made available to the users in the form of lists of specialized terms, glossaries or technical dictionaries (terminological lexicography, terminography), or can be accessed in terminological databases.

Terminology work is in the immediate interest of translators. It captures the results of often lengthy research and makes them accessible to as wide a circle of colleagues and other interested parties as needed. It prevents duplication of work, which is time-consuming and stressful. Terminology work is also an excellent way of becoming acquainted with a specialist subject field. Translators, who become involved with this work and for this purpose seek out and foster dialogue with the

specialists concerned, are soon accepted as genuine partners. Many of the problems faced by translators such as lack of documentation, lack of competent partners to consult, no consideration given to the time required for translation in the planning, etc. can be overcome much easier if the idea of partnership gradually gains general acceptance. Moreover, the translator who can show his specialist skills in joint terminology work with specialists will also be invited to contribute to the thinking process by the author of the text. He is thus able to facilitate creation of important additions and improvements to the original text, thereby greatly increasing the quality of his professional life.

The translation of professional texts is not limited to the reproduction of terminological units in the target language. The origin, methods of formation, classification, functioning (within a certain terminological system and outside it), and features of terms' adequate translation are of primary importance. Therefore, the future translators' professional training at Ukrainian universities should involve studying Terminology. Students should have an opportunity to get acquainted with the history and theoretical foundations of terminology as a science, and with the structural and semantic features of terms as objects of translation.

1. Ukrainian Terminology: the origin and present state

Modern Ukrainian terminology originated from the process of formation and development of scientific style in the XVIII century, although many terms from such fields as agriculture, construction, philosophical sciences etc. appeared much earlier. Terminological planning in Ukraine began its history in the early XX century. The first dictionaries in Galicia appeared in the second half of the last century. Among the first Ukrainian lexicographers who can be considered the founders of Ukrainian terminology, are I. Gavryshkevych, I. Verkhratskyi, O. Rohovych and some others.

The second half of the nineteenth century and the beginning of the twentieth century witnessed the development of various literary styles, as well as scientific terminology and a journalistic language. However, such linguistic expansion took place unequally in different parts of the country, which was divided at that time betwee Russian and Austro-Hungarian empires. The official scientific and journalistic styles were developed in the Austro-Hungarian part of Ukraine, especially Lviv and Chernivtsi. At the same time that these styles emerged, Ukrainian common languages superimposed on a set of dialects or languages in a

given area appeared in the cities. These were the particular languages of the intelligentsia, entrepreneurs, artisans, and so on. Such linguistic changes came from urbanization, which led to the simultaneous appearance of many different Ukrainian speaking urban environments. While Austro-Hungarian Ukraine moved gradually to establish literary standards, and even a Ukrainian scientific vocabulary, successive Tsarist decrees prohibited Ukrainian in eastern Ukraine[1].

Ukrainian terminology has been attracting attention of many scientists, specialists and enthusiasts of the national revival for the past two centuries. Eventually, the Ukrainian language stands as an equal among other languages and is quite suitable to create a scientific style. However, due to some historical circumstances and political problems, it did not have the right to serve various areas of human life. The heyday of term creating work in Ukraine was observed in the 1920s, during the period of so-called Ukrainization[2], when after almost a 200-year break the Ukrainian language became the language of social and political life in Ukraine. Russian elements were replaced by the Ukrainian language elements or borrowings from Western European and sacred languages (Arabic, Persian, Tibetan, etc.). Foreign language elements were accepted only in separate cases, when it was impossible to express one or another opinion by means of the Ukrainian language. Local linguists and writers carried out terminological planning. Nevertheless, as it was mentioned above, the Soviet leadership significantly strengthened control over language construction in the second half of the 1920s. Total Russification began in the mid-1930s and lasted with varying degrees of intensity until the end of the eighties. Internationalization, in contrast to the process that took place in the early 20s, concerned the borrowing of non-foreign language elements and words from other languages of the peoples of the Soviet Union.

Russification of national languages took place in different ways – due to the widespread introduction of Russian token, through the transition to Cyrillic, through raising the status of the language in the republics and even through phonetic substitutions in some national languages. After the repressive “Terminological Bulletins” of 1933–35 the authentic Ukrainian scientific terminology became inaccessible to

[1] Shevchenko Natalya, "The History of Bilingualism in Ukraine and Its Role in the Present Day Political Crisis", Cahiers Sens public, 2015/1-2 (No 17-18), p. 203–225. URL: https://www.cairn-int.info/journal-cahiers-sens-public-2015-1-page-203.htm

[2] Ukrainization. URL: https://en.wikipedia.org/wiki/Ukrainization

users. Ukrainian scientific terminology was removed from official dictionaries and textbooks and banned dictionaries ended up in special library repositories. Only after the collapse of the Soviet Union in 1991 the existence of the Ukrainian school of terminology gradually came to light. Terminological planning in each former union republic and now independent state, acquired its own specific features and characteristics.

In October 1955, the Meeting in Belgrade decided to establish the Terminological Commission as anew direction of research and terminological studies under International Committee of Slavonic Scholars. In 1958-1963 the Terminological Commission comprised two subcommissions – on Linguistics and on Literature. In 1963 the first Commission was transformed into the Commission on Linguistic Terminology, and the second one into the Commission on Terminology of Literature. In 1978 the two Commissions merged into a new Commission. In 1998-2008 the Commission remained inactive. In September 2008 the Commission on Terminology was formed at the initiative of S. Gaida at the XIV International Convention of Slavonic Scholars. It was renamed into the Commission on the Terminology ("SlavTerm"). In 2013 the Commission received the official name of the Terminology Commission under International Committee of Slavonic Scholars (TC ICSS)[3].

The activity of the Terminology Commission under International Committee of Slavonic Scholars has been irregular over the 60 years of its existence. It was not active in 1998-2008, and it did not produce any teamwork after 1979. In 2008-2013 the Commission included 14 people from 6 countries (Ukraine, Russia, Belarus, Poland, Bulgaria, Finland). Since 2013 its membership has grown considerably and now includes 38 members from 10 countries (Ukraine, Belarus, Poland, Russia, Croatia, Czech Republic, Slovenia, Macedonia, Serbia, Slovakia). Since 2014 the Terminology Commission under International Committee of Slavonic Scholars has been working on an analytical collective monograph Slavic Terminology of the End XX – the Beginning XXI Centuries[4]. The successfully completed monograph in different Slavic languages presents a complete picture of the development of modern Slavic terminology, summarizing the experience of scientific

[3] Terminology Commission under International Committee of Slavonic Scholars. URL: http://term-in.net/en/

[4] Interview with Victoria Ivashchenko. URL: https://termcoord.eu/2017/06/interview-with-victoria-ivashchenko/

research in Poland, Ukraine, Serbia, Croatia, Belarus, Russia, Slovakia, Slovenia and Macedonia. The monograph focuses on theoretical achievements and problems of terminology schools, terminology papers, special dictionaries, computer terminography, terminological databases based o modern information andcommunication technologies in various Slavic countries. The main goal of this teamwork was to unite the creative potential of representatives from different Slavic cultures around the common idea of national terminology development against the backdrop of globalization. The monograph takes inventory and systematizes the fundamental theoretical works on terminology, general and specialized dictionaries, textbooks, manuals, periodicals, journals, collections devoted to terminological problems[5].

In 2015-2017 the Commission held three international conferences: Українська термінологія і сучасність [Ukrainian Terminology and Contemporaneity] (2015, Kyiv, Ukraine) in cooperation with the Commission of Linguistic Bibliography at ICSS; Словенска терминологија данас [Slavic Terminology Today] (2016, Belgrade, Serbia) and Terminologia słowiańska: dziś i jutro [Slavic Terminology: Today and Tomorrow] (2017, Warsaw, Poland).

Today the TC ICSS focuses on: 1) initiating comparable Slavonic studies of: a) socio-terminological problems; b) ethical problems in inter-Slavic cooperation; c) specialized terminologies of modern philosophy of science, "complexity sciences", humanity sciences (jurisprudence, social communicatio etc.), new technologies, high technologies, innovative technologies; 2) creating linguo-philosophical theory of term based on the cognitizatio of science, updating its methodology, explosive development of complexity sciences that determine: a) updating the methodology of modern terminology; b) creating socio-humanitarian conception of terminology because of the peculiarities of the term functioning in the field of humanities, its communicative functions in a professional environment; 3) creating linguo-technological conception of applied terminology development in view of special terminology functioning in modern information society and linguistic regulation of terminologies in various Slavic countries.

[5] Why is terminology your passion? The fourth collection of interviews with prominent terminologists. URL: https://www.termcoord.eu/wp-content/uploads/2021/02/L013457-BOOKET-ELECTRONIQUE-A4-Interview-Terminology-your-passion-TRAD-EN_WEB-with-ISBN.pdf

Modern terminology characterizes divergent features of term, which generally distinguish it from common words: consistency, accuracy and desire for uniqueness, relatively independence of context, the presence of definitions, formality, standardization, concise, rigorous regulatory, stylistic neutrality, lack of expressiveness, correctness. At the end of the previous century, an "information explosio" took place on a global scale. One of the "information explosion" manifestations is the "terminological explosion". "Terminological explosion" led to the emergence of a huge number of new terms and term combinations, as well as new tasks the terminologists face. One of these tasks is the harmonization of national terminology with the international one. Terminology is constantly created, developed and improved both at the national and international levels. At the national level, this is the competence of the national standardization bodies, and internationally, of the international standardization organizations, namely ISO[6], IEC[7], CEN/CENELEC[8], etc.

The leading place among international organizations occupies ISO – International Organization for Standardization. The focus of ISO activities is to promote the development of standardization and related activities in the world in order to ensure the international exchange of goods and services, as well as to develop cooperation in the intellectual, scientific, technical and economic fields. Ukraine is a member of ISO, and the Technical Committee for Scientific and Technical Terminology Standardization (TC STTS, TC 19) is a member of the ISO TC 37 "Terminology and Other Language and Content Resources" (ISO / TC 37 "Terminology and other language and content resources"). Special attention is paid to the harmonization of national terminology with the international one and the implementation of international standards. This is due in to the fact that the Association Agreement between Ukraine and the European Union was signed in Brussels in 2014, which fully came into force on September 1, 2017[9].

[6] International Organization for Standardization. URL: https://www.iso.org/home.html

[7] International Electrotechnical Comission. URL: https://iec.ch/homepage

[8] The European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization (CENELEC). URL: https://www.cencenelec.eu/european-standardization/cen-and-cenelec/

[9] Zubkov M., Mykulchyk R., Mysak R. Development of DSTU ISO 860 "Terminology work. Harmonization of concepts and terms" new edition // Website of TC STTS: Herald of L'viv Polynechnic National University "Problems of Ukrainian Terminology". 2017. 869.

National Standard DSTU ISO 860: 2018 (ISO 860: 2007, IDT) "Terminology work. Harmonization of concepts and terms"[10] was developed in accordance with the rules established by the national standardization of Ukraine. This standard replaces DSTU ISO 860-99 and corresponds to International Standard ISO 860: 2007 Terminology work – Harmonization of Concepts and Terms with Conformity Identity (IDT). DSTU ISO 860: 2018 defines ISO 860:2007 specifies a methodological approach to the harmonization of concepts, concept systems, definitions and terms. It applies to the development of harmonized terminologies, at either the national or international level, in either a monolingual or a multilingual context[11]. The numerous examples illustrate the problems of coordinating terminology that arise during the development of normative and other documents from various fields of activity in both monolingual and multilingual environments, and the ways of solving these problems. Concepts and terms develop in different ways in separate languages and linguistic communities depending on professional, technical, scientific, social, economic, linguistic, cultural and other factors. Harmonization must begin atthe level of the concept and proceed further at the level of the term – this is an integral part of standardization[12].

On October 4, 2019, the All-Ukrainian terminology workshop "Terminology in the Educational Process" dedicated to solving topical problems of the use of scientific and technical terminology in the educational process and professional activity was held at the National Scientific and Technical Library of Ukraine. The need, specifics and approaches to terminology management, emphasizing the standardization aspect of the functioning of professional terminologies were highlighted. Participants discussed the use of virtual terminographic laboratories in the educational process, which are an example of modern linguistic technologies, spoke about the activities of the Slavic Terminology Committee and the international terminographic database TERM_IN, which contains Slavic terminology vocabulary texts, drew the attention

[10] DSTU ISO 860: 2018 (ISO 860: 2007, IDT) Terminology work. Harmonization of concepts and terms. URL: http://online.budstandart.com/ua/catalog/doc-page?id_doc=77953

[11] Terminology work. Harmonization of concepts and terms: ISO 860:2007(E). – ISO, 2007. Third edition. V, 17 p. (International Standard). URL: https://www.iso.org/standard/40130.html

[12] ISO 860:2007(en) Terminology work – Harmonization of concepts and terms. Scope. URL: https://www.iso.org/obp/ui/iso:std:iso:860:ed-3:v1:en

to the theory and practice of the use of scientific methods in terminology and focused on some typical examples of terminological errors. According to the participants, the workshop could launch an educational and discussion (possibly virtual) platform where scientists, scholars, and students could participate in a series of thematic events (workshops, conferences, round tables, etc.) to express their vision for the formation or translation of terms, finding apt Ukrainian translations to foreign words. This would generally contribute to the development of a comprehensive scientific position in the formation and further development of field terminologies[13].

2. European Terminology: a brief outline

Today European Union legislation is drafted in 24 official languages, with each language version considered authentic. Thus, translation is an integral part in the process of drafting and adopting legal acts. The European Institutions employ many hundreds of translators to cover the major part of these translation needs and the 552 language combinations. The translation system must be regularly brought into line with constantly evolving legislative procedures and technology. For this reason, the importance of terminology has become increasingly clear. Back when the European Parliament worked with less than ten official languages a Terminology Division was created with the aim of collecting glossaries and other terminology material. Later on, this division was combined with the IT service, resulting in the creation of the Euterpe database (European Terminology for the European Parliament)[14]. Alongside the development of interinstitutional translation memory systems (Euramis), previously separate resources such as the Commission's Eurodicautom and Parliament's Euterpe, were merged into the common interinstitutional terminology database IATE (InterActive Terminology for Europe)[15], which has been used by the EU's translation services since summer 2004. IATE was made available to the general public in June 2007. Today the database contains roughly

[13] All-Ukrainian terminology workshop "Terminology in the Educational Process". URL: https://dntb.gov.ua/en en/без-категорії-en/5121

[14] European Terminology for the European Parliament. URL: https:// www.europarl.europa.eu/ translation/en/terminology/what-we-do

[15] InterActive Terminology for Europe. URL: https://iate.europa.eu/

8.5 million terms and receives on average 3500 queries per hour from all over the world[16].

In March 2008, it was felt that the European Parliament needed a separate service to stimulate and to coordinate the terminology work that had to be done with the use of IATE. The new Terminology Coordination Service was created in October 2008. The whole strategy, the objectives and the methodology were set by a first very small team consisting of the Head of Service, one full-time administrator coming from the Administration and one part-time administrator seconded from ITS. The Service deployed its activities with a group of rotating trainees, specialized in computational linguistics and communications. The valorization of the knowledge and enthusiasm of these young people from all European countries still makes the strength and the dynamism of TermCoord. In the following years, the Terminology Coordination Service has developed its activities and the representation of the EP in the interinstitutional terminology bodies, completed its roster and was converted into the Unit as presented on this website.

Since 2010, TermCoord has launched an initiative for the creation of an Interinstitutional Terminology Portal. Once it was adopted by the IATE management group and the interinstitutional decision makers, TermCoord started the conception process and set up wikis in each language to enhance the terminology cooperation among translators and terminologists of all Institutions. Now, every language unit of the European Parliament is in charge of the input of new terms and completion of missing languages, updates and validation of the entries in IATE. TermCoord coordinates these activities and provides translators and trainees with topic-related projects, help and support. They are also constantly working on interinstitutional consolidation in IATE[17].

TermCoord undertakes proactive terminology, monitoring the legislative procedures to identify the terminology needs of the translation units. Therefore, the team prepares "TermFolders"[18] with reference material on important issues, searches for topic-specific glossaries and ensures the linguistic consistency of the EP databases.

Terminology coordination involves constant cooperation with a network of about 100 terminologists responsible for terminology matters

[16] Recommendations for Terminology Work. URL: https://termcoord.eu/wp-content/uploads/2013/08/COTSOES_EN.pdf

[17] Terminology Coordination Unit. History. URL: https://termcoord.eu/history/

[18] Terminology Coordination Unit. TermFolders. URL: https://termcoord.eu/iate/termfolders/

in their translatio units and carrying out terminology assignments set by TermCoord as well as own projects; volunteer groups working on dedicated projects; and rotating terminologists seconded to the unit for three months. The rotating terminologists' main responsibilities include participating in TermCoord's work on IATE, in particular doing updates in their native language, and liaising with the translation units to identify best practices.

The main objectives of TermCoord are to facilitate terminology research and management in the translation units, and to increase the European Parliament's interinstitutional contribution to the EU terminology database IATE. TermCoord responds with specific terminology projects to requests of EP committees, working groups or individual Members of the EP. This is the case when there is a need to preempt or clearly set and define terminology for EU purposes. In such cases TermCoord cooperates closely with the requesting client or service to establish a project list of terms which subsequently are processed like any other IATE project with the aim to have complete multilingual entries in IATE for the relevant topic. Some examples of such projects are gender terminology, terminology related to electronic mass surveillance and robotics terminology. TermCoord keeps in constant contacts with the quality coordination and other relevant services in the framework of better legislation and improvement of legislative texts (originals as well as translations)[19].

As of July 2010, participating in a terminology project has become an integral part of translation traineeships in order to give trainees the opportunity to develop their terminology skills. All trainees work either on one of the ongoing thematic projects prepared and coordinated by TermCoord staff and trainees, or on a language-specific project run by the translation units' terminologists. Trainees are helped by their unit's terminologists, who revise and validate their results, which are then inserted into IATE.

TermCoord also regularly organizes various kinds of workshops and training courses for translators and terminologists, including comprehensive terminology and IATE training sessions on a basic level for newly recruited translators and on an advanced level for terminologists, as well as more customized IATE and terminology workshops for terminologists about various practical questions related to

[19]Terminology Coordination Unit. Communication Strategy. URL: https://termcoord.eu/termcoord-communication-strategy/

terminology research and terminology management with internal or external trainers.

TermCoord cooperates with terminology or language departments of universities on terminology projects for feeding IATE. It involves universities that teach terminology in the framework of a master's course. The students work on terminology projects, following the requirements for IATE terminology work and the respective guidelines, researching and documenting terms in a target language of their choice (among the official languages of the EU) based on one of the main source languages, English or French. The advantage for the students is that they have the opportunity to gain hands-on terminology experience and to contribute to the EU terminology database. The findings are verified by European Parliament terminologists and those that are found to be of good quality are inserted into IATE[20].

There is another possibility of cooperation with TermCoord: Masters on terminology using an IATE template and creating a glossary of minimum 50 entries, which could be added to IATE after validation by the EP terminologists of the respective language. The interested university, professor or student contacts TermCoord and informs about the wish of a student to do such a master thesis. TermCoord contacts the terminology team of the respective Translation Unit and puts them in direct contact with the student/university. The domain can be chosen by the student or suggested by the Translation Unit according to the needs in IATE. Such master theses usually consist of a theoretical introduction on terminology management and on EU terminology and IATE, and of a glossary (bilingual or multilingual) with at least 50 concepts.

Both to keep the terminologists and translators of Parliament up to date and to facilitate the cooperation within the EP and between various international institutions, TermCoord uses various means of communication. Besides e-mail exchanges and meetings (both in person and through videoconferences), the internal websites are used extensively as important channels of communicatio. The need for a public website arose from wide-ranging contacts with universities and terminology bodies worldwide, since the EU institutional websites are only accessible on internal networks. Here https://termcoord.eu/ posts on current issues related to terminology are published and a wide range of useful information, materials and resources related to terminology and

[20]Terminology Coordination Unit. Terminology Without Borders. URL: https://termcoord.eu/terminology-without-borders/

translation is provided in order to facilitate the translators' and terminologists' work. Furthermore, the website contains a number of other interesting items such as terminology and translation book reviews, information about international linguistics conferences, traineeships and study visits within the Parliament and theses o terminology.

3. Terminology Creation and Terminography

Terminological resources are created consciously and unconsciously in controlled processes, spontaneously at all language levels, and in all fields of social and cultural life. This takes place through very diverse processes; the results vary greatly i quality. Monolingual and multilingual terminological resources come into existence in connection with various activities and for various kinds of applications in the framework of complex processes. The diversity of these terminologies becomes especially clear in the context of translation.

The breakneck speed of development in science and technology also affects the terminology creation. We only have to think of the fields of telecommunications, genetic engineering, organ transplants, merger control and many others. Since in many areas state tasks can only be carried out with international cooperation, and the terminology is developing extensively in different states it makes fruitful dialogue so much easier. Early terminology work in some areas result in specialized vocabularies that are more or less uniform internationally in the different language areas, whilst i other areas they will provide the conceptual clarity that is vital for an efficient exchange of ideas[21].

In view of the enormous responsibilities terminology has to fulfil for the benefit of international cooperation and harmonization of legislation, the authorities involved in these processes are compelled to work together closely and systematically on terminology. However, this is only possible if terminology services are set up in each individual country and are made responsible for coordinating terminology work throughout the whole administration, for managing data stocks and for making them available to departments in a suitable form.

A simplified process chain for the creation of documentation in private industry was selected as a model to elucidate terminology creation phenomena and actions. This process chain is assumed to include the following stages: Research and development, Manufacturing,

[21] Recommendations for Terminology Work. URL: https://termcoord.eu/wp-content/uploads/2013/08/COTSOES_EN.pdf

Marketing, Technical writing, and Translation. A product comes into existence in the process chain; its documentation is created in parallel. The concept of the product, its design, all data and technical properties, etc., are devised and elaborated at the engineering stages (research, development and manufacturing). The information required for tailoring the product to market is produced at the marketing stage[22].

Text fragments, which contain all significant terminology, also include new terms and are created at these stages. At the engineering departments, new terms may result from inventions, new technical requirements and developments. The product documentation, such as user manuals, descriptions, etc., must be written for the customers and must use their language (or rather, that of the market). Information on this aspect is supplied/provided during the marketing stage of the product/service.

Text fragments, technical data, background information, etc., are the input for technical writing. That means new terms appear without any explanation of their meaning, their concept, etc. Terminological explanations are necessary, and generally are created by technical writers together with the specialists of each particular subject field. This work results in monolingual terminological records, which are integrated into an existing database of a terminology management system. Consequently a terminology database comes into existence or is expanded which serves as a basis for technical writing and also as the foundation for creating the multilingual terminologies required in translation work[23].

Where terminology already exists, it can consequently be assumed that the new terminologies must be processed and integrated into an existing terminology database. All unknown terms in the texts to be translated (not always the new terms) are clarified during the translation process and the foreign language equivalents are retrieved or determined. Ideally, the translators and terminologists collaborate with specialists in the engineering departments and/or with technical writers to process the terminology, clarify the meaning of the terms and possibly to formulate a foreign language definition. The further terminological processing of new terms involves a series of various procedures and steps.

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[22] General Terminology Resources. URL: http://www.computing.surrey.ac.uk/ai/pointer/report/section4.html

[23] Wright, Sue Ellen 2001 “Data Categories for Terminology Management.” Handbook of Terminology Management: Volume 2: Application-Oriented Terminology Management:552. 10.1075/z.htm2.18wri https://doi.org/10.1075/z.htm2.18wri [Google Scholar]

If equivalents for the unknow terms cannot be found by consulting the authors of the texts or specialists, terminology databases can be accessed. This is rarely successful. There are very few generally accessible terminology databases which provide terminology from rapidly-changing fields. The next step is to "scan" the literature. In general, translators and terminologists are not specialists for the subject field in question. They therefore search by means of words, but not on a conceptual basis. The latter is only possible in collaboration with specialists. This is also true for the search for foreig language equivalents i monolingual literature of the target language. This time consuming search is usually in vain, not only for truly new terms, the result being incomplete in terminology databases entries or the card index. The terminology database is expanded with the results of the current work. Provisional entries are verified from the point of view of content and language[24].

The pressure of deadlines means the results of time consuming searches cannot be included in current translation work. Instead, the term is paraphrased, or hasty, tentative "translations" of the unknown terms are employed. This characterizes the situation especially well in large corporations. In smaller companies, terminology management systems and similar technologies are seldom in use.

The model described for private industry can easily be transferred to other environments. The "production" processes i the public sector are analogous to those found in the private sector, i.e. "products" (e.g. regulations, laws and other documents) are developed in a conceptual process and tailored to external requirements and circumstances, and especially to particular target groups. Depending on the internal structure of the agencies, the authoring process is carried out by editorial staff, publication departments, etc. Translation needs are considerable in multinational agencies representing nations with different languages, as well as national governments with more than one official language, and international organizations. Terminology databases and terminology management systems are in use[25].

As it has already been stated new terms are intentionally coined or come into being accidentally in all domains in special as well as general

[24] General Terminology Resources. URL: http://www.computing.surrey.ac.uk/ai/pointer/report/section4.html

[25] Bowker, Lynne, and Des Fisher, 2010 "Computer-aided Translation." Handbook of Translation Studies1:60–65. 10.1075/hts.1.comp2 https://doi.org/10.1075/hts.1.comp2 [Google Scholar]

language. Whenever a concrete or abstract object is discovered, invented, created, or introduced into an existing environment, a new concept or a number of new concepts will come into existence and will consequently be named. They will be named more or less at random, but will be strongly affected by the subjective view of the "inventor". Of course, many other factors, and especially the influence of foreign languages, also play a role in this process. The new terms thus coined will not always be accompanied by an explanation, much less a definition, and the concept structure in which they are embedded may be apparent only to the creator of the terms. Moreover, some newly coined terms may already exist within the same or different subject fields or domains, and may have the same, a similar, or a completely different meaning. Highly ambiguous terms will thus be generated. This is the worst case description of reality, which explains in part why communicatio, for example among research and development units, is not always satisfactory, is sometimes even misleading and rarely maximizes efficiency. There are, however, quite a few examples of proper terminology work in research and development, e.g. in large and medium-size enterprises where special language communication is managed as a controlled process.

In addition, there are observatories of neology in several European countries, including France, Portugal, Spain (Spanish and Catalan) and Denmark. These observatories have databases of neologisms, which deserve to be better known by terminologists and translators. There are also new initiatives seeking to exploit the possibilities offered by electronic networks for exchanging information on neology. The terminological deficiencies outlined above are partly remedied only long after the new terms have been coined. This type of work is performed by glossary committees, terminology working groups within large companies, administrative and standardization bodies, etc.

In this context, it should be noted that the phenomena related to neologism or the coining of terms in science and technology are comparable with the terminology situation and processes in administrative and governmental institutions, and in politics. New ideas, new regulations or deregulations, new taxes, etc. bring about new concepts, which in turn require that new terms be coined. The deficiencies inherent in this process are similar to those outlined in connection with research and development activities. Over time, special language terms migrate into general language. Their concepts become

increasingly fuzzy, and very often new terms, sometimes derived from the original ones, are coined to cover the same concept.

In multilingual communication, problems of neologism occur at the language interfaces where concepts are to be transferred from a source language into a target language. This task is a difficult one, above all in cases where new terms – neologisms – are contained in highly specialized source-language texts.

The situation outlined above shows that there are a large number of many isolated, different sources generating considerable volumes of new terms almost continuously. Apart from a few exceptions, it is not possible to harmonize or co-ordinate processes and a lack of cohesion is often the result. A relatively small percentage of the "new" terminology is stored in databases or terminology management systems. Most of it is documented on paper, rendering efficient dissemination difficult. Some existing terminologies are also not made available, while others are not immediately accessible. Most of the individual "collections" are not compatible, making it difficult to share them. Copyright issues also limit interchange of results. The impact of these problems to be solved becomes clear when one considers the high rate of innovation in engineering and science, the rapid structural changes in the business sector, in the public sector as well as in national, European and international economies, and the tidal changes in the political realm.

Solutions should be sought in the context of the origins and effects of the problems outlined above by constantly monitoring changes in languages and their terminology components. In the processes connected with controlled terminology creation, consistent use of terminology management systems or comparable database technologies is desirable. The terminological (terminographic) records should be expanded to include additional data categories, allowing all kinds of neologism to be treated specifically. This could be used to reduce the number of redundant neologisms created. In general, an attempt should be made to coordinate individual activities at least in related fields, in the public sector, in private industry, universities, etc. Additionally, the harmonization of procedures for terminology work should be encouraged wherever sensible in order to facilitate evaluation and to improve the quality of the results, and to reduce overall expenditure on terminology work[26].

[26] Cabré Castellví, Maria Teresa 1997 "Standardization and Interference in Terminology." The Changing Scene in World Languages: Issues and Challenges9:49. 10.1075/ata.ix.08cab https://doi.org/10.1075/ata.ix.08cab [Google Scholar]

Spontaneous term creation cannot be influenced. Here, it is only possible to continuously monitor language change. This requires intensive text corpora analyses of marketing literature, conference proceedings, journals, etc. Above all, it is necessary to intensively analyze texts in subject fields of innovative disciplines, such as research and development reports, but also product documentation texts, such as operating manuals. Terms from specialized vocabularies are increasingly finding their way into everyday language. A new type of dictionary needs to be developed which would systematically take this aspect into consideration, i.e., by explaining the usage and concepts of terms in new technologies to a lay audience. This dictionary type should be made available via a variety of on-line and off-line media.

Procedures should be developed for coordinating, or at least partially harmonizing, isolated terminology activities. National terminology centers, associations and the like, and European terminology associations and institutions can play a major role here. A corresponding program should be financed by the European Union. Information centers for terminological activities should be established or promoted at the national level. They should provide detailed information o terminological activities in languages and fields of speciality, and should work closely with a corresponding European institution. The EU should provide financial support for the proposed centers.

Promotion and publication of methods by which users can easily compile/access/update corporate, including access to the relevant tools. Methods and tools should be developed to allow concept-oriented input into and retrieval of information from terminology databases. Promotion, dissemination and further development/harmonization of existing rules and guidelines for terminology creation and terminology work.

Terminography is compilation of the terminology used in a specific field[27]. In recent years, the dictionary market has been characterized by a large number of general monolingual and multilingual dictionaries and by an increasingly large demand for specialized dictionaries. With the increasing volume of information, publishers have especially begun to produce electronic dictionaries, i.e. machine-readable collections of terms. Available terminology repositories provide linguistic and conceptual information on terms, e.g. equivalents, homonyms, etc. This information may be insufficient to support effective human translation or

[27] Terminography. URL: https://www.collinsdictionary.com/submission/16359/terminography

in particular, accurate and efficient machine translation, a process demanding much more explicit data. With the development of large-scale NLP (Natural Language Processing) systems for real world applications, there is a need for large-scale terminological resources.

The structure of terminological entries in specialized dictionaries differs considerably from one specialized dictionary to another, e.g. as regards the ordering systems, the treatment of ambiguities, and the word groups, i.e. multi-word terms. The terminological entry should ideally contai: linguistic information: term or phrase, abbreviatio, variants, morphological, syntactical and phraseological information; conceptual information: subject field, definition, scope note, thesaurus-type links between concepts (entries); pragmatic information: context, collocations, usage notes; foreign language equivalent(s) and associated information (in bilingual and multilingual dictionaries).

The advantages of computer assistance in the production and maintenance of specialized dictionaries is well known. Today, terminological repositories are usually implemented by means of term banks based on the relational type. Since the majority of current term banks are term-oriented (as opposed to concept-oriented): the database record is typically accessed by means of the entry term and/or other index terms, they are not very flexible in terms of data representatio[28].

Users of specialized dictionaries can be divided into two main categories: translators, and subject specialists (researchers and practitioners). The authors of terminographic products constitute a heterogeneous group: translators; terminologists; terminology centers; standardization institutions; experts in specific fields; teachers of specialized languages or teachers in secondary or higher education, etc. There are various types of publishers who regularly or occasionally publish terminology repositories: publishers (individual author(s)) of general and/or specialized dictionaries; international companies; governments; research centers (universities etc.); standardization institutions; international organizations (European Patent Office, etc.)

The terminographic work process can be characterized as a complex activity consisting of sequential, iterative and interwoven steps, such as planning, editing, correction, revision and production. Not all steps are always equally relevant (revised editions vs. processing of complete

[28] Faber, Pamela 2015 “Frames as a Framework for Terminology.” Handbook of terminology1 (14): 14–33. 10.1075/hot.1.02fra1 https://doi.org/10.1075/hot.1.02fra1 [Google Scholar]

databases). The final products of these terminological activities are all kinds of specialized data collections, such as systematic specialized dictionaries, glossaries and thesauri. When a specialized dictionary is created, high goals are often unattainable because of financial and other constraints (size, restrictions on contents).

The users of specialized dictionaries are confronted with overwhelming amounts of terminological data of differing quality. Publishing companies which sell specialized dictionaries often do not have their own editors for special subject books. Thus, it is not surprising that some specialized dictionaries sold are of poor quality. The conventional production of dictionaries is a time consuming process. For this reason those dictionaries are not up-to-date. The process of creating and processing specialized dictionaries is usually not based on thorough evaluation of text corpora. In essence, the work is merely a reflection of the authorës own knowledge and subjective views.

The linguistic knowledge represented in specialized dictionaries should to a greater extent take the needs of the human (and machine) users into consideration. Semantical, morphological, syntactic, phraseological and practical information and equivalents are of particular importance to the user. Definitions, explanations, and phraseology are absent especially often but should be included. Morphological and syntactic features connected with terms – a hitherto neglected aspect of terminological work – should be seriously taken into account, as these determine the use that can be made of terminology in automatic translation and indexing. This supposes the collaboration of computational linguists, who have skills not usually associated with translation-based terminologists.

Ideally, a terminological repository should allow: flexible information retrieval; formal representation of data; coherent structuring of data; various access and ordering methods, e.g. access by taxonomic relations, by subject field codes, etc. The creation of terminological knowledge bases (TKB) (concept-to-term orientation) rather than term banks (term-to-concept orientation) which permit generalization and inferencing capabilities should be supported in order to allow more intelligent retrieval by end users[29].

[29] Broeder, Daan, Ineke Schuurman, and Menzo Windhouwer 2014 "Experiences with the ISOcat Data Category Registry." InProceedings of the Ninth International Conference on Language Resources and Evaluation (LREC'14), 4565–4568. Reykjavik, Iceland: European Language Resources Association (ELRA), May. www.lrec-conf.org/proceedings/lrec2014/pdf/153_Paper.pdf [Google Scholar]

Support for international, European, regional and national organizations who are relevant sources of terminographic information for various target groups, from the publishers of specialized dictionaries to freelance translators. Research and development projects should be supported which have the goal of providing on-line information on the sources of terminologies for special subject fields, language combinations, for different purposes and types of applications, quality criteria and access information for various terminology collections. To this end, hypermedia-based retrieval systems should be developed which guide the end users through many heterogeneous, differently-structured individual terminology databases.

Projects should be supported which strive to evaluate the varying demands placed on terminology repositories (methods for evaluating terminology databases, design of terminological record structures adapted to the various requirements). Up-to-date specialized dictionaries should be made available, especially in lesser used languages, for various applications (human translation, machine translation, technical writing, computer-based language teaching and training, etc.).

4. Terminology Standardization

Standardization of terms and concepts is the work of specialists who select, create and coin terminology. The concepts are in most cases defined in the form of textual definitions, graphics, mathematical and chemical formula, etc. The process of standardization goes through several drafts, progressing from a tentative to a definitive standard. This process is time consuming but guarantees good results. The national standardization institutions generally develop monolingual terminologies. There are, however, problems related to dissemination and awareness, as well as encouraging users to apply standards.

Terminology standardization reflects two different aspects involving the meaning of terms and the structure of terminological resources. The standardization of terminology is often crucial to many domains and levels of communication (particularly scientific, technical, medical, legal and expert-to-expert), but is not necessarily appropriate, or even feasible elsewhere (e.g. social sciences). The vertical layering of terminology according to the level of communication is also an integral part of the structure of Languages for Special Purposes (LSPs).

In general, there are descriptive approaches and prescriptive approaches in terminology work. In both cases, a more or less strict

methodology can be applied. Although the results may often look quite similar, the purpose and objectives for descriptive and prescriptive terminology work may differ considerably. There are several kinds of prescriptive terminology which have more or less legally effective (formal or informal) authority. Legally prescribed determinations have inherent de jure authority, although they often deviate considerably from the terminology usage of the experts in the respective subject field. Standardized terminologies can have different authoritative status, depending on the field of standardization in which they occur. If they are from a field of "basic standards" they only represent strong recommendations. If they are from "normal" technical standards they also represent the scientific-technical state-of-the-art which is considered as the authoritative level immediately below legal regulations. Some standards, however, are implemented into European or national law and then acquire the nature of statutory provisions. It has to be mentioned that there are terminological determinations at all levels of law and in technical regulations of all sorts and kinds[30].

Standardized terminologies (i.e. standardized systems of concepts to which standardized terms or graphical symbols are assigned) are created i many working groups (WGs) or sub-committees at the national, European and international levels. Standards on terminological principles and methods developed by ISO/TC 37 "Terminology (principles and coordination)"[31] constitute the theoretical and methodological basis of terminology standardization at international level.

The majority of standardized terminologies are contained in subject standards. Only a minority of standardized terminologies are contained in standards exclusively devoted to terminology. Standardized terminology is a rich source of terminological information and is still frequently underestimated as a useful tool for extracting individual statements in standards. An estimate of terminological entries in terminology standards shows that as a rule about 30–50% of all standardized terminology is contained in terminology standards, while the majority of the rest is contained in subject standards. In some countries substantial volumes of quasi-standardized terminology is

[30] Cardillo, Elena, Josepph Roumier, Marc Jamoulle, Robert Vander Stichele, 2013 "Using ISO and Semantic Web standards for Creating a Multilingual Medical Interface Terminology: a Use Case for Hearth Failure." Terminology and Artificial Intelligence TIA 2013. [Google Scholar]

[31] ISO/TC 37 "Terminology (principles and coordination)". URL: https://www.iso.org/ics/01.020/x/

contained in “technical rules” (or technical regulations) issued by authorities (other than the official standards bodies) whose authority can be equivalent to or even higher than that of standards institutes which are members of ISO.

The process of harmonization takes place after parallel standardization work has already been done, either on the national level in several countries, or within several disciplines of science and branches of industry and commerce. Thus, harmonization is usually carried out by international organizations or by special harmonizing committees that are set up by several institutions established precisely for this purpose. In order to harmonize such terminologies, their conceptual structures must first be made explicit and compared to each other. After identifying the differences, they can be levelled out in a coordinated and consensus based way, by adapting each concept system to the other.

Terminology standardization can be viewed from a number of perspectives, which not only demonstrate dependencies with each other, but also with standardization in general: standardization of basic principles and theory of terminology; standardization of the methodology of terminology work, covering both conventional methods and computer assisted methods; standardization of terminologies, which is very much dependent on the kind of theories in the respective subject fields, representatio conventions concerning the written communication of the respective subject field; impact of terminology standardization on other standardizing activities (e.g. quality management, documentation), subject field or language related activities; impact of other standards on terminology standardization, such as standardizationof symbols and codes, quality management, documentation, information processing.

In many cases, official standards such as those issued by ISO, the United Nations, the European Community and the national standardization bodies are most frequently and systematically used. Particularly in those sectors requiring an extremely high degree of conformity and reproducibility for reasons of safety, functionality and product liability, for example mechanical, electrical and nuclear engineering, the use of nationally or internationally prescribed terminology is generally required in all enterprise processes. Although such terminology may differ to a certain extent from preferred nomenclatures, it also facilitates supplier communication and allows the preparation of bids, tenders and bills of material which are readily understood outside the organization. This is particularly evident, for

instance, at European level, where legislation requires most public sector tenders above a certain value to be published (in the "Tenders Electronic Daily" system – TED) on a open market. If tendering agencies and bidders were unable to speak a "common language" referring to the terminologies standardized in national and international standards, the market mechanisms would be ineffective.

In addition, more recent developments are changing the way in which users work together to create standards – and associated standardized terminology – with widespread acceptance. One example of this is "STEP", the STandard for Exchange of Product model data, now published as "ISO 10303, Industrial automation systems – Product data representation and exchange"[32]. STEP is essentially a common language for computer interchange of product related information, and it appears that the results of the standardization work are being used to influence terminology creation itself.

One of the principal problems cited most frequently with regard to national and international standards is their high cost and relative inaccessibility. Although many standards are available for inspection at public and university libraries, such a process may be time consuming and incompatible with organizational requirements. Since the whole purpose of standards is to encourage usage, there is a need to eliminate such barriers to dissemination.

Standardized terminologies as a rule must be "generic" and "neutral" with respect to particular industrial or other interests and, therefore, inevitably deviate to some degree from real use in the industrial world. Prescriptive standardized terminology is not always adapted to the actual conditions of an enterprise, which explains why unless there are clear reasons for behaving otherwise (statute law, safety, product liability, etc.) in-house terminology may be preferred for product control. User contact with standardization organizations is not spontaneous, and the mechanisms for disseminating knowledge about the existence of standards (and the terminology they contain) are cumbersome and frequently ineffective.

State-of-the-art methodology for terminology work, terminology project management and terminological tools introduced into prescriptive terminology work would considerably improve the quality level as well as (re)usability of existing standardized and other authoritative

[32] ISO 10303, Industrial automation systems – Product data representation and exchange. URL: https://www.iso.org/standard/50029.html

terminologies in the short to medium term. Cooperation and coordination between standardizing terminology organizations and standards bodies at international, European and national levels would not only save human resources, but also result in improvements to the quality of existing and future terminologies in the medium to long term.

In a large number of sectors, de facto standards, many of them well-known as "industry standards", enjoy much broader application and usage tha de jure standards. In many cases, this is because de jure standards do not cover the area involved, or because suppliers and users consider the prescriptive standards to be inadequate or deficient. Many de factor standards start life as in-house standards at a particular enterprise, and then spread rapidly throughout the relevant industry. A topical example of this is "Java", the cross-platform programming language developed by Su Microsystems for the World Wide Web and which at the time of writing (1995/96) is rapidly establishing itself as the standard programming language for Internet and intranet applications.

Data on a comprehensive range of international financial transactions and services, including customer and financial institution transfers, foreign exchange and securities transactions, documentary credits and guarantees is transmitted between financial institutions world-wide using the harmonized message types (MTs) adopted by SWIFT, the Society for World-wide Interbank Financial Telecommunication. The terminology defined for these messaging standards has been standardized (in English) throughout the global financial services industry, facilitating telecommunications and largely eliminating scope for errors and misinterpretation, a particularly important factor given the crucial importance of such transactions to the global economy.

The distribution and dissemination of terminology had been identified as one of the major bottlenecks to efficient terminological activities. However, although the problem is so obvious, it still needs differentiated analysis if concrete, viable suggestions for improvement are to be made.

Active terminology distribution covers situations in which terminology resources are consciously and specifically exported to one or more target users or groups in response to perceived or actual market demand. This process may take a number of forms, including: sourcing of dictionaries or glossaries published in electronic and/or paper form; direct off-line sourcing from a terminology supplier; direct on-line sourcing – typically via the Internet; terminology workshops organized around a particular theme; a contract placed with a terminology service

supplier to build a specific terminology collection; phone calls or interviews with experts, colleagues, etc. (especially for individual terms). The objective of active terminology distribution is to ensure the provision of the right terminology, at the right time, at the right place and at an acceptable price.

Passive distribution can be defined as the continuous flow of terminology embedded, for example, in articles, advertisements, correspondence, etc. in specialist publications and periodicals, in newsgroups and fileservers on the Internet, at conferences and workshops, in instruction manuals and in-house documents, and a whole host of other dissemination media. Passive terminology distribution is characterized by the fact that terminology acquisition is rarely the prime concern of the "user" – the recipient, readership, etc. – but rather that the terminology is an adjunct to another perceived benefit: knowledge acquisition.

One of the most important problems is the fragmentatio of resources and comparative difficulty in locating them. It is clear that very often, the "right" terminology is not being provided "at the right time, at the right place and at the right cost". Since the underlying problem is essentially one of organization, it is possibly best tackled at a structural level. Thus, there is a distinct need – expressed by a wide range of resource owners, service providers and users – for the establishment of a infrastructure to catalogue and distribute terminological resources available either to the general market or to specific user groups. Equally, the European Commission has identified an urgent need for a mechanism to validate and distribute what it terms "generic" resources, resulting from publicly (co-)funded projects, to facilitate and improve information transfer and resource re-usability.

There are also problems involved with the passive distribution methods described above. The lack of terminology-related skills of many authors and users means that they are frequently unable to make the best possible use of the terminology incorporated in the various texts and other dissemination media they are exposed to, a situation which hampers communication and prevents reusability. In addition, as far as innovative forms of distribution – both active and passive – are concerned, there is a lack of awareness in the terminology community of the opportunities now available through global communication networks, combined with a lack of skills and know-how needed to exploit these networks.

In addition, solutions are already under development for the identification, creation, cataloguing and evaluation of resources. These include innovative national initiatives, such as the DIT in Germany, CRAIE in France and the DTG in Denmark, which in many cases aim to provide terminology information and brokerage services, among other things. However, in all cases these institutions are underfunded and understaffed, being able to perform only a fraction of their necessary role. National and regional authorities are therefore urged to provide a variety of support measures for the establishment of such centers, which will accelerate terminology distribution and provide tangible economic benefits i the various regions.

However, these extremely valuable initiatives will only be successful if they succeed in attracting as active members as many terminology creators, service providers, resource holders and users as possible, and it is to be hoped that the outstanding opportunity offered by these infrastructures will be given due recognition by all sectors of the terminology community. The lack of terminology-related skills amongst authors and users, the need to enhance awareness of the Internet and similar networks in the terminology community, as well as the transfer of the skills and know-how to make the most effective use of these opportunities, can best be solved through selective training measures, including seminars and workshops, and demonstrator projects.

One of the most effective tools for overcoming bottlenecks and breaking down barriers in both active and passive terminology flows is the dissemination of terminology using electronic media. A variety of options is already available, and new developments are a frequent occurrence. For on-line resources, the Internet, together with the World Wide Web and service provider networks such as CompuServe, offers a wide variety of options for the rapid transport of small to medium-sized terminology collections. There is evidence that individuals and institutions seeking terminology are increasingly turning to on-line services. One of the best known is CompuServe[33], where mono- and multilingual specialist terminology questions are fielded in near-real time in the Foreign Language and Education Forum (FLEFO)[34]. Questions on specialist terminology are also welcome on many other professional forums. Terminology collections, including substantial data from leading IT vendors, are also available for downloading.

[33] CompuServe. URL: https://www.compuserve.com/

[34] Foreign Language and Education Forum. URL: https://web.cortland.edu/flteach/

As far as "classic" character-oriented Internet services are concerned, mailing lists such as "lantra-l"[35] and "NETGLOS"[36] (acontinuously updated, multilingual glossary of the Internet), and discussio groups such as "sci.lang.translation"[37] on Usenet, are established sources of terminology, in particular in response to specific queries. Easy access to the Internet has also encouraged interest groups to communicate with each other across the globe. Taken overall, they represent a vast repository of terminology knowledge, which is, however, often unstructured and difficult to locate. They are supplemented by organized terminology collections, varying from large-scale termbases such as the European Union's EURODICAUTOM, to expert-produced glossary lists, for example NASA's aeronautics and aerospace glossary. These collections have often been produced for or by large organizations that employ terminologists and documentation experts, although smaller specialist groups have also published (or rather broadcast) their terminology collections on the Internet, for instance the "Free Dictionary of Computing"[38] from the Imperial College of Science and Technology in the UK.

The number of sites now offering terminological information appears to be growing on an almost daily basis. There is an increasing number of sites dedicated to translation, terminology and language engineering – examples of the latter include the "NLP/CL Universe"[39] operated by the US Association for Computational Linguistics and the RELATOR Linguistic Resources Server[40]. These resources represent a significant step towards the objective of a free, unimpeded and bi-directional flow of terminology. It is vital, however, that both providers and users acquire the skills to be able to use these technologies, a process of continuous learning that should also be encouraged and supported at European, national and regional level.

[35] LANTRA-L. Translation and interpretation. URL: https://www.oocities.org/tolk.geo/lantra.htm

[36] NETGLOS. URL: http://www.netglos.com/

[37] NARKIVE. Newsgroup Archive. URL: https://sci.lang.translation.narkive.com/

[38] Free Dictionary of Computing. Imperial College of Science and Technology in the UK. URL: http://foldoc.org/

[39] NLP/CL Universe. US Association for Computational Linguistics. URL: https://www.aclweb.org/portal/

[40] RELATOR Linguistic Resources Server. URL: https://cordis.europa.eu/project/id/LRE62056/fr

5. Terminology Resources

Quality is emerging as one of the most important issues to be addressed by the new European terminology infrastructure. Firstly, the quality of resources which could be made available in a future terminological infrastructure is seen by potential users as a knock-out criterion for participation. Only if customers are able to access terminology which is not only accurate but which has been created, documented and stored according to state-of-the-art principles, will they be prepared to join and continue as "members". In addition, of course, the quality of the (particularly multilingual) resources made available influence the quality of the products and services to which they contribute. This takes on particular significance given the general and ongoing preoccupation with quality assurance and management, and with conformance to product liability legislation.

In practice, two types of quality are relevant to terminology, both of which need to be addressed if high-quality resources are to be made available: output quality (i.e. the quality of what is produced), and process quality (i.e. the quality of how it is produced). In classic quality management teaching, the former category is concerned with meeting the "stated or implied needs"[41] of the customer (as opposed to any concept of innate excellence). This is an important and ofte underestimated point i relation to terminology, which is normally produced for a specific purpose and sought for another (not always identical) one. The second category, on the other hand, is concerned with increasing the reproducibility and repeatability of the production process, i.e. getting the same results twice either sequentially or in parallel.

A particular problem is posed by multilingual and bilingual resources, which represent both a pressing need for the emerging European society and a particularly resource-intensive investment (adding another language to a bilingual collection trebles rather than doubles the effort involved, for example, since equivalents need to be researched and added for each language). Thus although there are a huge number of terminological dictionaries, databases and lists of equivalents available for major subject fields (e.g. economics and finance), it is extremely difficult to find first-rate or even high-quality collections as most of them

[41] Ingenerf, Josef, J¨org Reiner, and Bettina Seik 2001 "Standardized Terminological Services Enabling Semantic Interoperability between Distributed and Heterogeneous Systems." International Journal of Medical Informatics64 (2–3): 223–240. 10.1016/ S1386-5056(01)00211-8 https://doi.org/10.1016/S1386-5056(01)00211-8 [Google Scholar]

are incomplete or take a lexicographic approach. In addition, they are generally not reusable, since there are as many approaches to the selection and presentation of data as there are terminologists or authors[42].

The first step towards objectifying any judgement on the quality of terminological resources is to perform a sound analysis of the methodologies employed in creatio, the expertise of the authors and the completeness of the information. For this reason, an analysis of more than 200 existing collections in selected subject fields was made as part of the POINTER Project. The results show clearly that a lot of work still needs to be done in order to ensure that resources being produced comply with the minimum quality required in the field of terminology and, more precisely, terminography.

The study made no attempt to evaluate the (domain) expertise of the authors, but rather assumed that they had the competence necessary to perform their task (compiling collections or dictionaries from existing data). The only way to proceed, and one which proved extremely significant and effective in practice, was to analyze the indirect quality of their work.

In this context, we should point out that in Canada, the Office de la Langue Française (OLF) in Quebec and the Canadian federal government's Office of Translations are facing the same quality problems in a "merely" bilingual environment, despite the consistently large amounts of money and human resources they have dedicated to this work. Despite these problems, however, they can still be considered as the major producers of high-quality bilingual terminological resources.

Efforts in Europe are greatly complicated by the scale of multilingualism. Despite the huge amount of multilingual data available in EURODICAUTOM[43], there is room for improvement in quality in some areas. Another aspect that needs to be taken int account concerns the terminology produced by companies and translation offices across Europe. At first sight, one might consider that the terminology produced internally by a company will always be of good quality. Unfortunately, this is rarely the case, because of the lack of a clear methodology and the poor integration of domain experts. In many cases, translators and technical writers merely compile simple lists of equivalents. As a general

[42] Khayari, Majid, Stéphane Schneider, Isabelle Kramer, Laurent Romary, 2006 "Unification of Multi-lingual Scientific Terminological Resources Using the ISO 16642 Standard. The TermSciences Initiative." arXiv preprint cs/0604027. [Google Scholar]

[43] IATE (Interactive Terminology for Europe). URL: https://iate.europa.eu/home

rule, though, the source language can be taken to be sufficiently accurate. In the case of the majority of translation agencies, the terminology they produce (mostly for their clients) is generally not reliable. In addition, few agencies are willing to create terminology on a systematic basis, since this is seen as an additional cost factor to be avoided in a highly competitive environment.

To the extent that terminology management systems are used, they are too often considered as providing an automatic solution both as regards terminology management and as regards any data that might be populating them. In fact, the general lack of good terminologies sold together with such tools is an indication of vendors' unwillingness to provide unverified data. In addition, a number of these systems are not actually intended for use in terminology creation, while still others allow great freedom in the way they are used, thus relying heavily on users' (often no-existent) methodological expertise.

The generally low level of both output and process quality in terminology has important implications for the next point that needs to be addressed – validation. This is a formalized process (and sometimes) output control mechanism applied to existing resources[44]. In the case of terminology, validation would mean, for example, checking that resources have been created in accordance with a predefined standard for terminology work or state-of-the-art methodological principles, or preferably both. Alternatively, their fitness for a specific purpose could be evaluated according to a predefined set of criteria. In present general practice, though, no standard formats are used to create resources and there is frequently no technical or linguistic information with which to identify sources and authors. In many cases, it is even difficult to determine the source language of a collection. The different practices and approaches used make the validation of resources – and multilingual resources in particular – more complicated and, in practice, often impossible. Where it is performed it is very costly – indeed, in some cases, it is more expensive than the creation of the data itself.

Given the importance of multilingual terminology for Europe, standard practices and strict methodologies for the creation of terminological resources have to be established and widely publicized in order to lower costs and provide a basis for future reusability and

[44] "TBX: a Terminology Exchange Format for the Translation and Localization Industry". Handbook of Terminology. 2015. 393–424. 10.1075/hot.1.tbx1 https://doi.org/10.1075/hot.1.tbx1 [Google Scholar]

compatibility. The aim at this level should be to encourage quality awareness and adherence to standards by terminology creators. In addition, there is a need for the creation and implementation of uniform, EU-wide validation standards and procedures for terminological resources ("European label"), and for the design and implementation of procedures for establishing a European network of certification centers to validate terminology and award the European label.

Many inventories of existing terminological resources are already available, but these are not widely accessible and do not include any qualitative evaluation. It will be possible to identify clearly and to catalogue terminological resources which are potentially of a sufficiently high quality for redistribution, and hence to improve the awareness of all users and producers. This work should be user- and domain-oriented, in order to provide a rapid response to market needs.

After potentially high-quality terminological resources have been identified, it should be possible for terminology creators and owners to add value to them, e.g. by merging identical concepts extracted from different sources, by facilitating linguistic and textual evaluation (e.g. by domain and language experts, and by comparison with terms extracted from text corpora), and by enriching the data (e.g. by adding linguistic elements in order to ensure easy reusability).

This process must be supported by the development or adaptation of tools allowing the automatic, indirect evaluation of terminological resources, and their subsequent validation. Furthermore, since the validation of resources obtained from original texts is a key aspect, both for achieving quality and for demonstrating the utilization and the correctness of the concepts extracted, there is a demand for the development and/or further improvement of tools for text analysis and extraction in all European languages. Although some systems now offer at least limited compound recognition functions, more work is needed on this area. Another area that must be addressed is extending the range of languages covered by such systems to take advantage of the multilingual corpora (e.g. European legislation) already available. In future, such systems must be able to analyze texts in a particular domain in a number of languages at once.

The quality assurance and evaluation models and methodologies developed must be widely distributed to creators (including private companies, universities, standards organizations and international bodies), in order to ensure their application in practice. If these

conditions are fulfilled, it will be possible, over time, to: create high-quality monolingual and multilingual resources in all European languages; facilitate the integration of new languages (e.g. the Eastern European languages); facilitate reusability in related areas such as CAT (Computer-Aided Translation) and MT (Machine Translation).

Design and implementation of procedures for establishing a European network of certification centers to validate terminology and award the proposed European label. This should include a provision for the mutual recognition of resources validated in other areas. Further refinement of the information on publicly available terminology resources and secondary literature. Encourage quality by promoting the distribution of existing validated/high-quality resources. Encourage integration/ harmonization/crossfertilization of terminology quality and validation mechanisms with "mainstream quality movements such as TQM, ISO9000.

There is no need to start from scratch to harvest terminology: You can start with your translation memories. As a matter of fact, a translation memory (TM) is a trove of valuable terminology that can be mined either manually or semi-automatically. With small TMs, you can browse the segments and select the terms you need using the concordance function. With larger TMs, you may want to work in semi-automatic mode and take advantage of various open-source / free term mining programs. Sometimes, translation memories might also contain free-range definitions that can be helpful to fill term entries. You can quite easily spot free-range definitions (not official ones, mind you) withi a text, because authors/copywriters often use ready-made phrases like "also known as", "which means", "meaning" etc. to signal the introduction of an unfamiliar word or a technical term.

Once you have processed your TM, you can also beef up your termbases by collecting terms from other freely available online databases. The Interne is, of course, a wonderful trove where you can find everything and more. Terminological sources are just a click away. But, just like fake news, unreliable, shoddy sources are also out there. Here are some basic criteria to help you choose terminology sources.

10 best terminology sources available online have been selected.

IATE[45], i.e. the Interactive Terminology for Europe, is the most convenient starting point. It is the interinstitutional terminology database of the European Union and it is used i the EU institutions and agencies

[45] IATE (Interactive Terminology for Europe). URL: https://iate.europa.eu/home

since summer 2004. The IATE website is managed by the EU Translation Centre in Luxembourg o behalf of the project partners. The FAQ page contain intriguing information about the work going on behind the scenes (who enters terminology, how are terms selected etc.). The main benefit is that IATE is available for download: Users can extract terms for one or more languages, for one specific domain or for a domain cluster. The subsets are provided in TBX format and can be imported in your own termbase.

WIPO PEARL[46], the multilingual terminology database developed by the World Intellectual Property Organization, is a thing of beauty. Developed by WIPO language experts and terminologists, this database contains terms in Arabic, Chinese, English, French, German, Japanese, Korean, Portuguese, Russian and Spanish. Terms are validated and assigned a reliability score. Also, if your search returns you 0 results, the WIPO machine translation engines offers a translation suggestion. But most importantly, the WIPO termbase allows you to do a search by concepts or subject field (concept maps).

The Microsoft Language Portal[47] is a must for those who develop localized versions of applications to be integrated in Microsoft products. The database can also be used to integrate Microsoft terminology into other termbases or as a basic IT glossary for developing applications. It's available in approximately 100 languages. Just like the IATE, the Microsoft termbase for one language is provided in TBX format. Extra benefit: From the same website you can also download the Microsoft localization style guides in various languages.

Terminology in Switzerland is taken very seriously. The Swiss Federal Administration employs about 200 translators and specialized linguists. Their work is assisted by the Terminology Section, which places the terminology database TERMDAT[48], at their (and our) disposal. TERMDAT is a multilingual specialist dictionary and containsthe terminology of Swiss law, public administration and the public sector in Switzerland's four national languages, i.e. German, French, Italian and Romansh, as well as in English. The entries explain legal and administrative terminology and, in most cases, the equivalent term is also given in the other national languages. Besides terms and

[46] WIPO Pearl – WIPO's Multilingual Terminology Portal. URL: https:// www.wipo.int/reference/en/wipopearl/

[47] Microsoft Language Portal. URL: https://www.microsoft.com/en-us/language

[48] TERMDAT – The Federal Administration's terminology database. URL: https://www.bk.admin.ch/bk/en/home/dokumentation/languages/termdat.html

their definitions and explanatory notes, TERMDAT contains further useful information such as official designations and abbreviations of Swiss and international authorities, institutions and organizations, and the titles and abbreviations of all federal legislation. TERMDAT can be complemented with JURIVOC[49], the trilingual thesaurus of the Swiss Federal Supreme Court.

TERMITE[50] is the Telecommunication Terminology Database from the International Telecommunication Union, a specialized agency of the United Nations that is responsible for issues that concern information and communication technologies. And the oldest International Organization, by the way. TERMITE contains approximately 60,000 entries, i.e. all the terms appearing in formerly published lexicons. Although mainly devoted to telecommunication terms, the database – which is constantly updated – also covers other technical fields as well as administrative and financial terms. The entries are in English, French, Spanish and sometimes Russian (transcribed), with a small number of entries in Italian, German and Portuguese.

Just like TERMITE, Electropedia[51] is a specialized terminology database, curated by the International Electrotechnical Commission, which is the international standards organization that prepares and publishes international standards for all electrical, electronic and related technologies. Electropedia contains over 22 000 terminological entries in English and French organized by subject area. It also offers equivalent terms in various other languages Arabic, Chinese, Czech, Finnish, German, Italian, Japanese, Korean, Norwegian (both Bokmål and Nynorsk), Polish, Portuguese, Russian, Serbian, Slovenian, Spanish and Swedish.

ECHA is the European Chemicals Agency which manages the technical and administrative aspects of the implementation of the European Union regulation called Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) to protect human health and the environment. ECHA-term[52] is a dynamic database, constantly updated thanks to the work of subject-matter experts and

[49] JURIVOC. The trilingual thesaurus of the Swiss Federal Supreme Court. URL: https://www.bger.ch/fr/index/juridiction/jurisdiction-inherit-template/jurisdiction-jurivoc-home.htm

[50] Telecommunication Terminology Database. URL: https://www.itu.int/pub/S-TERM-DB

[51] Electropedia. URL: https://www.electropedia.org/

[52] Multilingual Chemical Terminology. URL: https://echa-term.echa.europa.eu/

linguists. The database contains over 1,200 entries in all official EU languages, with the main REACH terms also available in Croatian. There is a customizable download option: Excel or TBX format; thewhole database oreve a singleentry; monolingual, bilingual or multilingual.

GEMET[53] stands for General Multilingual Environmental Thesaurus. It is considered the reference vocabulary of the European Environmental Agency (EEA) and is available in 32 languages. Users can access terms in three main ways: hierarchical listings (terms are distributed within a conceptual structure formed by four main supergroups, that, in turn, are divided in some 32 groups); thematic listing (40 themes); and a more traditional alphabetic listing. Labels and definitions can be downloaded in RDF format.

The Food and Agriculture Organization (FAO) publishes AGROVOC[54], a terminology database containing over 36,000 concepts available in 36 languages. All areas of interest to FAO are covered in the database: food, nutrition, agriculture, forestry, fisheries, names of animals and plants, environment, biological notions, techniques of plant cultivation, etc. The thesaurus is hierarchically organized under 25 top concepts. Users can search by alphabetical or hierarchical listing.

6. Integrating Terminology in the English Language Curriculum

Laura Iovanna, a well-known translator, interpreter and terminologist, who for a long time has been responsible for a Terminology Research course that forms part of the study program of translators and interpreters, answering the questions how much weight she would give to Terminological research in translation/interpreting study programs and how a Terminology course could improve the work of future translators/interpreters emphasizes that she believes that aspects relating to terminology are an essential part of any translation and interpreting study program. Specific terminology and terminography courses are very useful in developing the necessary skills to manage terminology databases, for both translators and interpreters, even if the two professions take a different approach to terminology[55]. Terminology has

[53] General Multilingual Environmental Thesaurus. URL: https://www.eionet.europa.eu/gemet/en/about/

[54] AGROVOC Multilingual Thesaurus. URL: https://agrovoc.fao.org/browse/agrovoc/en/

[55] Why is terminology your passion? The fifth collection of interviews with prominent terminologists. URL: https://www.termcoord.eu/wp-content/uploads/2021/04/L021043-DG-TRAD-ebook-A4-Terminology-5th_PROOF15.pdf

now been consolidated as a discipline that deals with the study of terms, i.e. of the lexical units that allow for the transfer of specialized knowledge in one or more languages. The attention paid to the terminological methods and principles during translation courses helps students better understand the importance of the key translation issues related to specialized concepts and their classification. Students ca thus improve their capacity to solve these translation problems. Through terminology management, translators can not only save time but, more importantly, guarantee terminological coherence and consistency between documents.

A terminology database provides complete background information on the term, its meaning, context, etc., and this makes for an accurate, consistent, unambiguous, error-free translation, not only within a single translated document, but also between several. From the outset, this saves the professional both time and money, making for a more productive business and greater customer satisfaction.

Clearly, a good translator must be aware of the complexity of terminological aspects and the effective way in which terms "behave", which oftendiffers from the theoretical principles of the terminology itself. Aspects like synonymy and polysemy will need to be properly analyzed and the various levels of conceptual equivalence of terms in different languages, assessed and handled appropriately[56]. Laura Iovanna underlines that she has always sought to stress in her courses that dealing with terminology does not mean simply translating terms and entering them into a database. The pursuit of terminology means having a strategic tool that enables the translator to make the right decisions, thereby meeting the multiple demands connected with the task.

As related disciplines gain ground, such as assisted and automatic translation, terminology and, even more so, terminography, namely the systematic collection of terms that constitute specialized languages, are becoming an increasingly integral part of the workflow of a professional translator, who creates and manages terminology databases to integrate them into assisted or automatic translation tools. Therefore, to be a good terminologist, the translator must also be able to manage the terminology in the databases using the platforms available.

[56] Why is terminology your passion? The fifth collection of interviews with prominent terminologists. URL: https://www.termcoord.eu/wp-content/uploads/2021/04/L021043-DG-TRAD-ebook-A4-Terminology-5th_PROOF15.pdf

Although terminological activity is generally associated with the profession of translators, interpreters also deal with terminology and terminography, both in order to expand upon their collection of terminology resources that will assist them in their interpreting, but also to integrate them with other related activities they may carry out (such as translation, for example). There are now numerous terminology management tools available to interpreters from various platforms and I believe these will be further developed in the future, hand-in-hand with technological evolutions.

According to Laura Iovanna, future trends willsee a greater integration of terminology and terminography with translation and interpreting. Having carefully honed terminology management skills adds value to the CVs of professionals and allows them to better stand out on the market[57].

Victoria L. Ivashchenko, the Head of the Terminology Commission under International Committee of Slavonic Scholars, Professor at the Institute of Journalism at Borys Grinchenko Kyiv University and at Chernihiv National Pedagogical University named after Taras Shevchenko, underlines that Ukrainian universities provide disciplines "Terminology", "Modern Ukrainian Terminology", "Terminology Editing" (Publishing and Editing faculties), "Fundamentals of Terminology", "Ukrainian Terminology" (Humanitarian faculties), "Ukrainian Language for Special Purposes" (Technical faculties), "Juridical Linguistics" (Law faculties), "Terminology Culture of a Specialist" (Culture and Art faculties), "Biomedical ethics and field terminology", "Medical terminology and the Latin Language" (Specialty "Biomedical Engeneering"), "Carrier-guidance English Terminology" (Veterenary, Biotechnology, Marketing faculties), etc[58]. Over the period from 1990 to 2016, the authors published more than 50 textbooks, guidebooks, teaching aids, methodological instructions, terminology hands-on courses, training manuals on general terminology and special field terminology (scientific, technical, legal, medical, biological, historical, zoological, chemical, economic terminology and terminology

[57] Why is terminology your passion? The fifth collection of interviews with prominent terminologists. URL: https://www.termcoord.eu/wp-content/uploads/2021/04/L021043-DG-TRAD-ebook-A4-Terminology-5th_PROOF15.pdf

[58] Why is terminology your passion? The fourth collection of interviews with prominent terminologists. URL: https://www.termcoord.eu/wp-content/uploads/2021/02/L013457-BOOKET-ELECTRONIQUE-A4-Interview-Terminology-your-passion-TRAD-EN_WEB-with-ISBN.pdf.

of transport, physical culture and sports). In Ukraine higher school provides a course of the Ukrainian Language for Special Purposes and some other compulsory or selective courses on terminology studies.

Victoria L. Ivashchenko admits that terminology as a general science and at the same time linguistic discipline does not have the status of compulsory, officially assigned to the curricula of universities in all countries today. Its introduction into the curricula of some universities largely depends on teachers' initiative. Therefore, the future of terminology as an interbranch discipline depends on providing it with the official status of a compulsory discipline at all universities in those countries where it doesn't have such status yet. Itis important because the level of terminological competence determines the level of specialist's competence in a particular sphere of knowledge and thereafter reflects the development of science in this sector in general.

Government agencies in various countries promote modern terminology development, create special committees on standardization of scientific and technical terminology oriented on the activities of the ISO. The question of introducing the discipline "Terminology standardization" into the curricula is only one of the aspects of the general problem of standardization to a greater extent. Unfortunately, today only one training module is taught at universities at the most. Therefore a promising linguodidactic direction in development of modern terminology as an independent discipline is to elaborate and practically implement special training programs into the training process.

On the other hand, today it is important to harmonize the terminology of socio-humanities, because their conceptual and lexical ambiguity and interdisciplinarity require regulation and unification. Currently we challenge development of socio-humanitarian conception of terminology elaboration. That calls for the creation of relevant terminology centers or committees in many countries. Introducing computer technologies into the learning process, creating electronic textbooks, electronic terminology dictionaries, terminology databases, portals, virtual terminology laboratories and other resources requires modern terminologists to develop and certify electronic training courses and electronic textbooks on discipline "Terminology", "Fundamentals of Terminology", to develop courses "Computer Terminography", "Term Databases Management". Today it is important to elaborate linguo-technological and linguo-didactic principles of future terminology, which will contribute to the further development of integrated traditional, electronic

and virtual terminology studies. The quality of terminology studies, the possibility of creating international terminological centers, the future of every modern Slavic terminology involves close interaction of traditional and innovative terminology, theoretical achievements and practical experience of terminologists from different countries, of course, with the support of the Terminology Coordination Unit of the Directorate-General for Translation of the European Parliament[59].

Commenting on the most widely used resources/methods in Terminology university courses Christiane Limbach stresses that the language resources made available by the European Union are extremely important for translation and interpreting students alike, insofar as they offer solid, reliable support and a source of reference throughwhich to solve linguistic doubts. The huge volume of translation that takes place in the EU truly is one-of-a-kind. There is no other international organization existing today that works in a parallel fashion, in so many languages.

The presentation of the EU's language resources on the internet and their related use has always been an integral part of my documentary and terminology research course (intended for both translators and interpreters), because knowledge of these gives students access to a wide range of reliable sources. Eur-Lex provides free access to documents in the 24 official EU languages, thus allowing the consultation of EU law (treaties, directives, regulations, decisions, consolidated legislation, etc.), preparatory documents (legislative proposals, reports, green and white papers, etc.), and EU case law (judgments, orders, etc.). It also allows you to follow the procedures leading to the adoption of legal acts; therefore, its corpus of texts is an invaluable source of terminology information[60].

The possibility of displaying documents in multiple languages, simultaneously or separately, makes for an extremely useful resource when launching a terminological research, without starting from a preprepared database. This, in turn, ensures that decisions are made autonomously, with a better awareness of the facts.

[59] Why is terminology your passion? The fourth collection of interviews with prominent terminologists. URL: https://www.termcoord.eu/wp-content/uploads/2021/02/L013457-BOOKET-ELECTRONIQUE-A4-Interview-Terminology-your-passion-TRAD-EN_WEB-with-ISBN.pdf

[60] Why is terminology your passion? The fifth collection of interviews with prominent terminologists. URL: https://www.termcoord.eu/wp-content/uploads/2021/04/L021043-DG-TRAD-ebook-A4-Terminology-5th_PROOF15.pdf

An analysis of EU terminology must include IATE (Interactive Terminology for Europe)[61]. The IATE database is an essential tool because it is the most complete terminological resource available today and is widely used, not only by translators but also by the general public, and constantly improved and updated. IATE plays a major role in ensuring the quality of the written communication of the EU institutions and bodies. Offering easy access to validated EU-related terminology, it ensures the consistency and reliability of terminology which is indispensable for producing the clear and unambiguous texts necessary for guaranteeing both the validity and transparency of the legislative process and effective communication with the citizens of the Union. It covers hundreds of different domains and sub-domains and it is the result of the close collaboration of the various institutions' terminological coordination units. It also allows teachers to work effectively with students who, through their terminological works and degree theses, supply material that is then checked and used by the EU terminologists for inclusion in IATE.

Another extremely useful resource is TermCoord, which offers a collection of links to highly specialized themed glossaries compiled by the various institutions, as well as pre-prepared terminology files created on the basis of cooperation pursued with the Parliament political bodies. Its blog has exceeded a million visits and its success is the proof of the great interest shown in terminology: for the work carried out by the European institutions, the practical examples supplied and the recommendations given on resources and tools. Its constant presence on social media, with the spread of information about terminology and related events, as well as the idea of publishing a "Term of the week" has helped raise awareness amongst professionals and others, as to the importance of the subject.

Mojca Pecma, an Associate Professor on translation studies at the Department of Intercultural Studies and Applied languages – Etudes Interculturelles de Langues Appliquées (EILA) – of Université de Paris, mentions that one of the examples of the problems these students encounter while studying Terminology is term variation[62]. Students' work is based on a translation using contemporary texts, which involves

[61] Interactive Terminology for Europe. URL: https://iate.europa.eu/home

[62] Why is terminology your passion? The fifth collection of interviews with prominent terminologists. URL: https://www.termcoord.eu/wp-content/uploads/2021/04/L021043-DG-TRAD-ebook-A4-Terminology-5th_PROOF15.pdf

many examples of emerging terminology, and emerging terminology is often unstable, prone to variation. The students find it difficult to manage the term variation in term records, to find appropriate equivalents in the target language and to decide whether the variation should be maintained in the target text or avoided. Students should be taught how to analyze the origin and role of variation, and how to identify the available equivalents in the target language, before making translational choices. Another difficulty they face working on emerging knowledge texts is the absence of equivalents in the target language, often related to the issue of domain loss. For this type of issue, students should be motivated to reflect upon which translational techniques allow them to propose an acceptable equivalent (borrowing, transpositio, modulation, reformulation…) and to engage in a collaboration with an expert who can help them make the appropriate choice.

Taking into consideration everything mentioned above, it should be noted that there will always be a wide bandwidth for research activities, study programs, and applications, in as much as terminology is a fundamental instrument for every segment in specialized communication. So, terminology work/science should be present in both directions, as a discipline on its own right, but also integrated as part of other disciplines.

CONCLUSIONS

The gradual creation of a common multilingual space for international cooperation in science and industry made consistent terminology an essential tool for the global strategies of big companies, or for any other international project in every institutional, academic, commercial or industrial field of cooperation. Every international organization created a multilingual database with the terminology used in and for its decisions and rules, every company compiled a multilingual digital glossary with the terms used in product information and company internal communication. Every university produced terminology databases, either as a linguistic research exercise, or to support multilingual international academic cooperation in all fields, be it scientific, legal, medical, financial, technical or any other domain.

This development created a new need – the need for terminology standardization and validation, which help to avoid the overlapping of terminology research, to prevent the use of discrepant terms for the same concepts, and to give access to the terminology offered by the specialists

in each field. Every year the evolution of technology offers new possibilities for common terminology repositories and platforms: from metasearch to communication and collaborative platforms, to the cloud and the interactive social media services.

In parallel, the vertiginous increase of translation needs created software such as computer-assisted translation incorporating the use of translation memories and terminology data, automatic term extraction based on both statistical and linguistic criteria, the extraction of terminology in formats allowing the creation of personalized, field-focused and text-related databases by each translator in today's market.

Good translators still need to be good terminologists, but at the same time they have to apply new methods to be sure of finding and using the most reliable terminology. Today we need less linguistic research, and much more electronic research. We have to use our linguistic knowledge more as a filter to choose the reliable term among the existing data rather than to coin ourselves the right term while translating. And this human linguistic knowledge will always serve to guarantee the quality of the translation, not only for the drafting style, but also for filtering and making the right choice of available terminology.

SUMMARY

A large majority of documents today are designed for specialist communication. They are thus written in specialist language, 30-80% of which (depending on the particular domain and type of text in question) is composed of terminology. In other words, terminology is the main vehicle by which facts, opinions and other units of knowledge are represented and conveyed. Sound terminology work reduces ambiguity and increases clarity – in other words, the quality of specialist communication depends to a large extent on the quality of the terminology employed, and terminology can thus be a safety factor, a quality factor and a productivity factor in its own right. The modern terminologist is a terminological expert who has professional training based not only on the chosen specialization but also on linguistics, systematology, philosophy (in particular philosophy of science), logics, semiotics, communication science, computer technologies, cognitive science, and science studies. It is a person who should have a good command of several languages and translational skills, know the general trends of development of both specialized fields and science on the whole, use contemporary methods, methodologies, techniques and

technologies of scientific research, be able to introduce theoretical achievements into practice of social request for a term, create electronic courses on terminology, electronic dictionaries and terminological databases and operate them, participate in terminological conferences, international terminological projects, constantly improve his or her proficiency level. The following points have been highlighted: Ukrainian Terminology: the origin and present state, European Terminology: a brief outline, Terminology Creation and Terminography, Terminology Standardization, Terminology Resources, Integrating Terminology in the English Language Curriculum.

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