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CHALLENGES IN ROMANIAN/ENGLISH TRANSLATION OF TECHNICAL TERMINOLOGY

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ABSTRACT:
THE UNDELYING RESEARCH FOCUSSES ON THE CURRENT USE OF ENGLISH (FOR SPECIFIC PURPOSES) BY (FUTURE) PROFESSIONALS IN VARIOUS DOMAINS. AS THE PREVALENT INTERNATIONAL COMMUNICATION MEDIUM, ENGLISH BECOMES A KEY FACTOR FOR PROFESSIONAL DEVELOPMENT IN THE CURRENT CONTEXT OF INFORMATION EXCHANGE. THEORETICAL AND APPLIED LINGUISTICS PROVIDE THE NOTIONAL FRAMEWOK NECESSARY FOR OPTIMAL RESULTS OF TRANSLATION IN SPECIFIC OCCUPATIONAL AREAS. CONVEYING DOMAIN-SPECIFIC KNOWLEDGE IN ACADEMIC AND PROFESSIONAL CONTEXTS/SITUATIONS IMPLIES TRANSFER OF MEANING BY MEANS OF ACCURATE TRANSLATION OF FIELD-RELATED TERMINOLOGY. FOR ATTAINING HIGHEST SEMANTIC EQUIVALENCE, THE TERM CORRESPONDENCE BETWEEN SOURCE AND TARGET LANGUAGE NEEDS TO BE FURTHER INVESTIGATED. BESIDES FORMAL AND NOTIONAL OVERLAPPING OR SIMILARITY OF NUMEROUS TERMS THAT ARE ETHYMOLOGICALLY LINKED, THERE ARE ALSO COUNTLESS SITUATIONS, WHERE DEFINING, DISAMBIGUATION AND TERMINOLOGICAL RESEARCH ARE NECESSARY IN ORDER TO PROVIDE ACCEPTABLE SOLUTIONS FOR TRANSLATION DIFFICULTIES, INCLUDING: SYNONYMY; POLYSEMY; PARTIAL OR CONTEXTUAL SYNONYMY; LACK OF SPECIFIC TERMS IN TARGET LANGUAGE; TRANSLATION BY DEFINITION; COMPLETE TERMINOLOGICAL DIVERGENCE OR MISLEADING FORMAL EQUIVALENCE/SIMILARITY BETWEEN SEMANTICALLY DIFFERENT TERMS. EXAMPLES OF SUCH SITUATIONS ARE TERMINOLOGICALLY INVESTIGATED IN ORDER TO HIGHLIGHT POSSIBLE CHALLENGES THAT ARE MOST LIKELY TO OCCUR IN TRANSLATIONS PRODUCED FOR ACQUISITION, COMPREHENSION OR DISSEMINATION DOMAIN-SPECIFIC INFORMATION.

KEY WORDS: TERMINOLOGY, TECHNICAL TERMS, SEMANTIC EQUIVALENCE, TRANSLATION CHALLENGES, SOLUTIONS

INTRODUCTION

The main areas of applied linguistics that converge in the underlying research directly emerge from activities specific to translation studies, foreign language teaching/acquisition at tertiary education level and terminological research focussing on projects related to professional and academic communication, translation of technical texts/terms and use of English for Specific

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Purposes.

1. TRANSLATING IN THE ERA OF INFORMATION TECHNOLOGY

A primary objective of this article implies the correct relevance assessment of each area so as to identify the best operating algorithm for reflecting the results of the activities listed above within the foreign language teaching/learning process. Hence, the purpose-oriented approach originates in the commitment to provide scientific research in the relevant areas for integrating research results in teaching activities, within a coherent, well-structured, efficient framework.

The goals set for foreign language acquisition for academic and professional development originate and simultaneously converge in the generic aim of most activities implied by a teaching English for Specific Purposes at university level, namely that of providing a high-quality educational offer, recommended by the consistency of its contents, the efficiency of teaching methods and the coherence of the theoretical and application framework. Presently, at tertiary education level, English for Specific Purposes courses provide training of current students in Bachelor's, Masters, and Ph.D. programmes, that are the future professionals in various fields of expertise.

Learners' needs often emerge from the ever-growing influence of English upon worldwide communication in the era of the digital revolution, so that it becomes essential for learners to be able to keep up with professional communication in the broader context of hyper-accelerated development rates in the fields technology, directly impacting the technical terminology used in each domain. Translation studies and terminology pertain both to the fundamental specialisation in the field of Philology, but the study of both areas are currently more and more necessary to provide key-competencies for professionals in most non-philological fields, who constantly need to research, publish, or otherwise communicate with their occupational communities using English language as the most frequently adopted communication medium. However "Translation is much more than a transfer of words and structures; it is not only a matter of correctness and appropriacy of linguistic and semantic content wrapped in a different language code: it is also an intercultural encounter, a transfer of knowledge."[2] The current research focusses on English language teaching (mainly considered as pertaining to the field of philology, or subdomains thereof, such as foreign language teaching, applied linguistics, translation studies, terminology, contrastive linguistics), also including an important interdisciplinary approach meant to bring about a new perspective – hopefully a more comprehensive and integrative one – upon topics that claim the attention of several disciplines.

Therefore, teaching English for tomorrow's professionals (specialising in various domains) implies setting specific goals to attain the skills necessary for each type of activity projected by theoretical forecast: comprehension abilities for reading and researching; adequate use of formal/informal registers both in oral and in written professional communication; correct use of language structures, appropriate translation skills in the transfer of meaning between native language and English; awareness of inter-lingual transfer and source language influence upon translation product; message conveyance by semantic equivalence and free translation by averting literal translation and merely formal equivalence; terminological analysis and disambiguation; bilingual terminological equivalence, etymological interpretation. All the aims above fall under the main broad objective of training (future) specialists, who are genuinely interested in further development in their field of expertise. Learners are also aware of the fact that experts in all areas need to keep up with the swiftly changing professional environment. They need to be able to select reliable

[2] Arhire, Mona; *Corpus-based Translation for Research, Practice and Training.* (Iași: Institutul European, 2014); 171.

information sources and efficiently use available resources, to be capable and willing to perform correct self-assessment for further development in relevant areas of interest. In short, schematically, the underlying research pursues the generic objective of providing linguistic instruments to future professionals to allow the development of their expertise. This implicitly involves developing abilities in Translation, Terminology Research or Contrastive Linguistics.

2. ENGLISH FOR SPECIFIC PURPOSES (ESP)

The academic/professional communication in any specific field, is nowadays closely linked to the use English as the dominant international language. The field of electrical engineering and computer science, focused on in the underlying study, prompts for the appropriate language training for future academic/professional contexts and situations that always imply the use of English. Future professionals face the challenges posed by communication in a foreign language in numerous academic and occupational situations. Theoretical forecast allows anticipation of difficulties and identification of potential solutions related to:

2.1 Scientific Research: bilingual terminological study of domain-specific terms; writing, reading, publishing scientific articles; disseminating professional information in international scientific conferences; cooperating with members of the international professional/occupational community.

2.2 Training Activities: preparing training materials, publishing tutorials, technical documentation, user's guides; planning/assessment of activities, devising reports in multinational companies; troubleshooting/service assistance, guidance or supervision for specific products.

2.3 Administrative activities: interviews, applications, job descriptions; tests, questions and evaluation of potential candidates; attending relevant international meetings; monitoring/solving problems, commissioning equipment abroad; translating/interpreting for international co-workers.

At tertiary level education, language learners need to be fully aware of particular contexts that are relevant for their academic and professional development and have at least basic knowledge of technical terminology and English language as prerequisites. Common examples include: interviews (when applying for a job, or for European mobility programmes); scientific communication (projects, conferences, presentations); data (documentation, manuals, tutorials, books, scientific articles).

Academic development is also frequently interconnected to foreign language communication abilities, facilitating future professionals to study abroad, to join Master's and Ph.D programmes held in English, including dissertation, thesis, research, dissemination of research results. The professional path in this domain often leads to multinational companies, training, teleconferencing, technical support, international teams, devising testing and troubleshooting protocols, product descriptions and instructions.

Thus, the target group of the underlying case study for the ESP training includes 1st and 2nd year students of the Faculty of Electrical Engineering and Computer Science, a science-oriented domain, where heterogeneous groups of language learners, ranging from beginners to upper intermediate and advanced, take up ESP for four semester modules of 28 hours each. The initial placement tests taken by 500 students each year indicate that upper intermediate and advanced students who score above 80 out of 100 multiple choice questions are less than 20 percent. The generic progress objective is shifting the English language level, especially in written domain specific communication, (from A1 to A2, A2 to B2, from B2 to C1 and from C1 to C2). That implies developing translating skills by theoretical translation studies and applied translation practice of texts containing domain specific technical terminology.

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Activities include reading-comprehension, writing, translating technical terms/texts, producing clear messages in English, using the formal/informal register adequately;

2. FUNDAMENTAL NOTIONS IN TRANSLATION STUDIES

Fundamental notions in translation studies allow learners to become aware of the language shift occurring unconsciously both in comprehension of foreign language source texts/messages and in formulating meaning using a foreign target language code. Theoretical forecast of anticipated difficulties in translating are usually not restricted to the most common ones, such as unknown words/terms, unfamiliar domain or challenges in decoding meaning. Quite often, translating from the native language into English (and occasionally even in reversed translation directionality) becomes challenging despite of high level language competencies in both languages of the translation pair. The examples provided hereafter are meant to provide contexts, where a certain type of translation difficulty occurs. The terminological analysis thereof and identifying translation/ terminological solution applies not only for that specific example but also for any similar context recognised as such by ESP language learners in the future. Each context serves as a pretext to assist language learners in solution finding (in many cases there might be several valid solutions applicable). Discovering (by analysis) what type of difficulty occurred and finding solutions by themselves provide language learners with the necessary translation practice and application of theoretical knowledge (acquired by context analysis) to be able to solve similar translation difficulties in the future, even with completely different contexts/terms. The contexts/terms are presented as samples of types of translation challenges that can occur in other forms, but can be solved according to the same principles used in the sample text/term.

3. APPLIED LINGUISTICS

The fundamental notions of translation further extend the focus on language as a code, meaning as a concept, and translation as a process having as final product the accurate transfer of meaning from one code to another, ultimately leading to efficient exchange of professional knowledge between international members of an occupational community.

3.1.LANGUAGE:

The correct use of language is mandatory in order to avoid distortion of intended messages. Communicating in a foreign language often implies translation (here referring to the translating process itself), both *from* and *into* that *language*. Challenges emerge due to structural divergence of source language and target language codes.

e.g. translating the Romaninan *"lucrez"* leads to multiple possibilities of correct options in English: *I work, I am working, I have been working*

e.g. translating the English *"beam"* also bring polysemy into the picture, providing several translation choices: *rază, fascicul, grindă, buiandrug*

The only correct answer to the above translation questions, firstly connects FORM to MEANING. The possibility of one form corresponding to several categories of potential meaning emerges. Meaning, and subsequently the correct translation variant (or the one considered to be the most accurate form of rendering that particular semantic unit) always depends on the CONTEXT.

3.2.MEANING of word/term/phrase is frequently context bound. Terms are to be considered in context, if there is one available.

Therefore, translating a word/term/text transfers the meaning in one particular context, from source language to target language semantic units. It conveys the same meaning using the code of a different language. Erroneous de-contextualisation leads to possibly altering the meaning completely and hence to severe translation failure by providing a different message in the translation product.

3.3.TRANSLATION, as the product of the *trans*lating process/process itself, aims at conveying messages accurately, by decoding (meaning) from Source Language and encoding in Target Language, aiming at semantic rather than formal equivalence.

4. SEMANTIC EQUIVALENCE

The decoding of MEANING of the source language term/text by understanding the code thereof is the first stage of the translation process.

Concept comprehension/clarification/disambiguation is the second stage and usually relies on in-depth knowledge of the domain, professional expertise, but occasionally also requires further terminological investigation for more explanatory contexts. At this stage, the CONCEPT is investigated by terminological research, usually starting with a minimal, or a more elaborate DEFINITION for the concept corresponding to the source language term.

DEFINING patterns become useful instruments at this stage of the translation process, since complete and correctly formulated definitions contribute to accurate meaning interpretation by concept identification, which makes proper transfer to target language possible. Generally, minimal definitions are structured according to the following pattern:

[TERM to be defined - *general class* + particular characteristics]

e.g. ELECTRICAL AND ELECTRONICS ENGINEERING is *the largest and most diverse field of engineering* that is concerned with the development and design, application, and manufacture of systems and devices that use electric power and signals.

Defining is relevant for disambiguation, as it provides essential information on the concept associated to a particular term, both in the source and in the target language. This is the case especially due to the fact that formal equivalence can be misleading:

e.g. Despite of the formal similarity of the Romanian term *comutator* to the English noun *commuter*, there is no semantic equivalence whatsoever:

- *commuter* is according to the definition: a person regularly travelling between home and work.
- *comutator* is according to the definition: dispozitiv care permite sau opreste fluxul unui curent electric.

Therefore *commuter* is not an acceptable translation option for the term *comutator* and should be translated (according to semantic equivalence, that is always prevalent over formal equivalence) *switch* defined as: electric device performing on/off function. Definitions help establishing semantic and conceptual equivalence between terms and is therefore the recommended tool for double-checking target language terms indicated by translation software or dictionaries (that list several possible translation options for one source language term).

Defining is also a useful instrument for disambiguation when dealing with:

4.1.Synonymy: Several terms correspond to one concept. The adjective *atomic/nuclear* are interchangeable in certain contexts in both languages, thus pertaining to the category of contextual synonyms, even if defining the adjectives individually indicate different semantic

coverage. The context is highly relevant, turning adjectives with distinct meanings into synonymous ones in this context.

e.g. atomic weapon / nuclear weapon – *arma atomica / nucleara*

In this context they are interchangeable, thus becoming synonyms, since the entire terms including the context noun (*weapon*) refer to the same concept.

4.2.Polysemy: Several concepts correspond to one term.

e.g. beam – *rază/ fascicul/buiandrug*

e.g. recipient – *recipient/receptor*

e.g. speaker – *vorbitor/difuzor*

4.3.Partial/contextual semantic equivalence: A term and a concept are associated only partially/in certain contexts.

e.g. inductor [diode] - *diodă*

e.g. exchange – *centrală telefonică,*

4.5. No term**:** No term coined in the target language.

e.g. debugging - no term

e.g. flip-flop – no term

e.g. backbone link – no term

Such terms are usually included in their original English form, however in cases where further explanatory information is considered necessary, translation of a term by its definition is the ultimate solution.

e.g. trouble-shooting equipment – no term (*echipament de trouble-shooting* is possibly not explanatory enough in certain communicational contexts, making therefore translation by definition necessary – *echipament de testare și detectare a erorilor*)

Particularities such as synonymy (several terms correspond to one concept), polysemy (several concepts correspond to one term), partial/contextual semantic equivalence (term and concept are associated only partially/in certain contexts) are examples of the most common predictable translation difficulties implied by specialised terminology.

5. TERMINOLOGY

TERMS specific to a certain domain, commonly referred to as technical terms, might have obscure meaning both in native and in foreign languages. However, in some cases, seemingly difficult or complex terms can be translated easily, due to common etymological background. Technical terms in fundamental domains such as Mathematics, Physics, Chemistry, Biology etc. are derived from Latin forms and, due to the similar forms even in language pairs from different language families, pose no translation difficulties whatsoever, even in situations where the meaning/concept is not necessarily transparent. The translation can be inferred by adapting the Latin constitutive parts (that are easily recognizable) to the language structure of target language.

e.g. colloid non-stoichiometry (Chemistry) - *nestoichiometria coloizilor*

e.g. antiphospholipid antibodies (Medicine) - *anticorpi antifosfolipidici*

e.g. geostationary/geosynchronous orbit (Astronomy) – *orbită geosincronă/geostationară*

In most cases of technical terms derived from Latin forms, formal equivalence doubles semantic equivalence, whereas common words, pertaining to every-day language and part of the more commonly used vocabulary, might be actually more difficult to translate. Since there is no common origin, the terms differ radically in form, according to the codes of two unrelated languages.

e.g. pâslă – *felt*
e.g. scamă – *lint*

5.1.Terminological similarity

Technical terms might frequently have no notional correspondence even for native speakers, which does not exclude the possibility of translating easily, by merely adapting the form to the target language code:

e.g. electromagnetism (Physics) – *electromagnetism*
e.g. germanium (Chemistry) - *germanium*

Technical terms in fundamental domains such as Mathematics etc. and further subdomains thereof, have similar forms due to the fact that they are also derived from Latin terms. Consequently translating such terms involves applying language structure rules pertaining to word-formation, word order, choice of lexical items, register, class-changing and class-preserving suffixes or prefixes etc.

e.g. Fourier analysis - *analiza Fourier*
e.g. linear systems theory - *teoria sistemelor liniare*
e.g. linear algebra - *algebra liniară*
e.g. differential equations- *ecuații diferențiale*

5.2. Terminological overlapping

Technical terms in areas of recent development, such as IT, occur in transfer translation, from English to Romanian, having identical/similar form in both languages, merely preserving the form of the English original term, occasionally slightly altering spelling:

e.g. microchip - *microcip*
e.g. microprocessor - *microprocesor*
e.g. mouse - *mouse*
e.g. hardware - *hardware*
e.g. software - *software*
e.g. joystick - *joystick*

5.3. Terminological divergence

In all other cases, where terms are not etymologically connected in any way, technical dictionaries/glossaries, translating skills and technical expertise are necessary for understanding the meaning and correctly translating terms/texts. Word for word translations provided at first as literal translations produced by the translator or listed by dictionaries or translation software are unreliable in such contexts. Corpus[3]-based translation turns out to be a more suitable option for identifying domain specific terminology in use.

e.g. transducer – *traductor*
e.g. coil – *bobină*
e.g. forward bias – *polarizare directă*
e.g. reverse-bias – *polarizare inversă*
e.g. ripple – *riplu*

[3] "a collection of pieces of language text in electronic form, selected according to external criteria, to represent, as far as possible, a language or a language variety as source of data for linguistic research" Sinclair. J. 2005 *"Corpus and Text – Basic Principles" in M. WYNNE (ed) Developing Linguistic Corpora: a Guide to Good Practice.* (Oxford: Oxbow Books); 16

Literal translations produce unacceptable results in such cases. Term inadequacy leads to message distortion, meaning misinterpretation and even to rendering no meaning at all in the target language.

e.g. bus – *magistrală* (*autobus* – not acceptable here)

e.g. switching capability – *capacitate de comutare (capacitate de schimb* – not acceptable here)

e.g. generation of radiowaves – *generarea undelor radio (generația undelor* – not accepable here)

e.g. flow of electrons – *flux de electroni* (*curgerea de electroni* – not acceptable here)

e.g. transmission media – *mediu de transmisie* (*media de transmisie* - not acceptable here)

e.g. telegraph key – tasta telegrafului (*cheie telegrafică* - not acceptable here)

e.g. electron gun – tun de electroni (*armă de electroni* - not acceptable here)

e.g. picture tube – tub catodic (*tub de imagini* – not acceptable here)

e.g. switching facility – *stație de comutare* (*facilitate de schimbare* – not acceptable here)

e.g. dish-shaped antenna – *antena parabolică* (*concavitate in formă de antenă*/ *antenna in formă de farfurie* – not acceptable here)

e.g. storage device – *dispozitiv de stocare* (*dispozitiv de depozitare* - not acceptable here)

e.g. mechanical movement – *lucru mechanic (mechanical thing* – not acceptable here)

In other cases, word for word translations broadly convey the meaning, but are not the most adequate term to use in that specific context.

e.g. excess of electrons – *surplus de electroni (exces* – not the most adequate choice)

e.g. lack of electrons – *deficit de electroni (lipsa* – not the most adequate choice)

e.g. medical imaging system – *sistem de imagistică medicală* (*imagini* – not the most adequate choice)

e.g. text delivery system – system transmitere text (*system livrare text – not the most adequate choice)*

e.g. facsimile machine – *aparat fax (mașină facsimilă* - not the most adequate choice)

CONCLUSION

The goals of specific ESP language teaching/acquisition activities are cumulatively reflected in the primary aim of obtaining optimal training results, namely professionals able to rely on a solid foundation of knowledge and abilities acquired during tertiary studies, able to continue their professional development, confidently and successfully using English language as the key communication medium in areas of academic and/or professional interest.

Translation theory and practice are equally important instruments for developing the skills necessary for efficient academic and professional communication in a foreign language, especially in English – the "native" language of Computer Science, and the "first" language in the digital era. The theoretical and practical aspects above are meant to serve as a notional framework for translation practice in the field of IT.

The terminology used in the field of electrical engineering and computer science is abundant in basic terms derived from Latin, therefore making translation of technical texts/protocols possible, even for language learners at beginner level in both directionalities. Most formal adaptation attempts result (in the case of fundamental disciplines with terms initially coined in Latin) in successful translating products, even between languages that belong to completely different language families, such as English and Romanian.

Other technical terms in areas of recent development, such as computer science, information technology or telecommunications, also frequently allow transfer translation, with formal overlapping resulting in identical/ similar forms in both language codes, due to recent terms coined in English and exported to most languages worldwide. Since the "native language" of information technology and computer science is English, in many cases, technical terms are preserved and used in their initial forms or slight adaptations thereof to target language codes. The Latin or English origin of terms and the transparent formal adaptations thereof make translating less challenging, since comprehension often occurs by meaning deduction and even meaning encoding in target language is frequently possible by slight formal adaptation of terms.

In all the other cases, when Latin or English common grounds do not apply, technical dictionaries and glossaries, translating skills and technical expertise are cumulatively required for understanding and conveying meaning by translating technical terms/texts accurately. The terminological analysis capabilities implied by accurate translation abilities become necessary instruments for academic and professional communication, information exchange and further development and progress in any field of expertise.

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