DIFFICULTIES ENCOUNTERED IN TECHNICAL TRANSLATION IN ESP CLASSES

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Abstract: *The article puts forward the challenges of technical translation in ESP classes. Like all translations, technical translation needs to be grammatically correct, stylistically suitable and coherent in the TT. In ESP classes, aspects such as precision and clarity might be relevant to consider while rendering English texts on Electrical and Mechanical Engineering into Romanian. Technical vocabulary is fixed, therefore creativity, synonyms and ambiguities are not permitted. The teacher needs to raise students' awareness as regards using specialised language in order to prepare them for real life engineering communication.*

Keywords: *technical translation, engineering communication, correctness*

Introduction

Translating technical[1] texts is a challenging task although there are many helpful resources at hand.

A precise and accurate translation in a target language requires a good level of technical terminology awareness and the ability to find the unambiguous equivalent in the context. Moreover, translation of technical texts is part of everyday life, starting with the instruction manual of the refrigerator and finishing with instructions for taking headache relief pills. These ordinary texts represent one of the tools which make life easier being the major source of up-to-date information about cutting-edge technology. More importantly, for students studying engineering, the understanding of new developments, equipment, tools, concepts described in English by experts is of utmost importance. Also, it is necessary for them to acquire solid general knowledge of the English language. Students should have good knowledge in their field of specialism to be able to understand not only the gist, but the text in detail to render an accurate translation. Technical translation in ESP classes involves developing reading and writing comprehension and expression in order to accustom students to *engineering communication*. It is obvious that through translation students acquire detailed knowledge of technical vocabulary. Through reading and translating, they develop confidence and ability to extract information from all sorts of technical texts. The principal goal of all translation is to give clarity, precision and non-ambiguity to the translation in target language (henceforth TL). Therefore, most theories

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[1] Currently, LSP (Language for Specific Purposes) theorists agree that technical translation is actually specialised translation: "technical means precisely that, something to do with technology and technological texts. […] In discussing technical translation, it is useful to make the distinction between specialized and technical translation. […] Simply because a field or subject area has unique or specialized terminology, does not make it technical" (Byrne, J., 2006:3).

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identify similar features of a good specialised translation. To obtain clarity, for instance, the sentences in the TL need to be "completely recast". However, sometimes, the result is "still too literal for comprehensibility" (Herman,1993:13-14).Concision can be obtained by new wording corresponding to the regular word order in the TL. Moreover, correctness requires detailed knowledge about the subject to translate and the ability to identify and correct the errors in the original document, if any (*ibidem*:17-18).

Aim

The aim of the paper is to identify a few difficulties of specialised translation in Electric and Mechanical engineering field during ESP classes. These might be relevant whilst translating specialised texts in the classroom, the teaching aim being that of endowing students with specific skills necessary for engineering communication. Also, the article is not an exhaustive and comprehensive treatment of the area which is rather broad and complex, it only offers a general overview and illustrative examples discovered during teaching practice.

Aspects to consider

Using translation in foreign language learning and teaching is currently re-considered as a creative activity (House, 2018: 143).With technical texts, it is even more helpful because all the words are assigned the exact meaning in the TL whilst students develop their linguistic proficiency in the foreign language (*ibidem*: 147). Moreover, there are several aspects which should be taken into account. Firstly, it is the command of English second year undergraduates have; secondly, their knowledge of the specific specialism; and thirdly, it is teacher's wish to raise their awareness as regards using specialised language in *engineering communication* in international joint projects, contexts, workplaces. However, there are two other aspects to consider: the students are rather inexperienced translators, studying a regular engineering programme, and, the other one, that proficient command of SL and TL is necessary, though: "[...]technical translation requires more than writing down the dictionary equivalents of words. [...] facility with the source language is important, but facility with the target language is crucial" (Herman, *op.cit.*:19). Therefore, we should have in mind not only the level of competence in the field of specialism, but also the quality of the undergraduates' outcome in terms of clarity, conciseness and correctness. It is blatantly obvious that a poor command of general English might generate difficulty to understand texts designed in technical language. Furthermore, a poor command of TL involves unexpected difficulties such as undergraduates' need to be acquainted with the subject they are translating by means of texts on the topic.

The foreign language teacher's view on using translation is the one common in language teaching. For that reason, the focus is more on avoiding the confusion of lexical items, learning the technical collocations and identifying the grammatical rule to use in a specific specialised context. Unlike the teacher, the specialised translator "focusses on the *communicative function* of the word, phrase or sentence in question", making assessments of "any lexical items that are best omitted or any essential information that needs to be added to the target version" (Hann, 2004: 176). Although the views seem rather different,

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the teacher needs to perform the translator's work too. Therefore, the differences between natural language and technical communication(precise, unambiguous) are obvious and students should be aware of becoming competent speakers and writers in their field of specialism; technical vocabulary is fixed, creativity, synonyms and ambiguities are not allowed (Trippel,2012:122). Learning a technical language, for instance the specialist language of Electric and Mechanical engineering[1], is similar in many ways to acquiring the linguistic competence for a foreign language. In an engineering text, not only the terminology is new, but also grammar rules may change and some verbs and prepositions are used with a rather new significance. Sometimes, it is essential to resort to native speakers, if possible, to resolve the linguistic issue:

> Technical translation involves native speakers in a considerable amount of problem-solving regarding terminology and semantics, but the difficulties of non-native speakers are even more acute as they lack the same general awareness of prepositions, adverbs, adjectives and their relationships with specific nouns and verbs. (Hann, *op.cit*.: 156).

This is most important in some other contexts too. For example, if we wish to translate in English the following sentence, the translation might be quite uncommon for native speakers because there are several ways of saying the same thing: *Trenul va opri în următoarele stații: Finsbury Park, Potters Bar și Cambridge*. The native speaker's usual way of saying it is: *This train will be calling at: Finsbury Park, Potters Bar and Cambridge*. Referring to having two surnames after getting married (more common for women), a British English native speaker describes the situation by *double-barrelled* (*family name*). Also, it is unusual for a non-native to use the phrase *white goods* for washing machine, oven, dishwasher; or to say *without a minor hitch* for *fără nici cea mai mică problemă* (everyday British English idiom).

Also, students need to be aware of words that are used across several specialisms such as *thrust*[2]and everyday words that may take on various meanings in technical contexts such as *eye*[3]. In some technical texts, the variation British English and American English needs to be considered too. For example, in British English unlike the American English "the term *motor* implies *electric motor*, and *engine is used to describe— diesel engine*, *steam engine*, *rocket engine*, etc" (*ibidem*: 147).

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[1]*Electrical engineers* deal with areas like "*household wiring, electrical machinery, automobile electrics*". (Hann, 1992: 95); "Mechanical engineers design and construct *machines, engines, turbines,drive systems, lifting gear,* and *mechanical equipment* for specific applications in other branches of technology or industry. [...]Since many machines and most machine tools are operated electrically, the terminology merges with that of Electrical Engineering" (*ibidem*:128).

[2]*Thrust*: (geol) încălecare, șariaj; (hidr) împingere (a terenului); (maș) distanțier; (mec) forță de forfecare; (petr) apăsare pe talpă/axială; (TH) lovire, șoc, presiune axială, tracțiune, contrapresiune, apăsare, compresie // a împinge, a înfige. (Cincu, Cișmaș et alii, 1997:1398).

[3]*eye*: (hidr) ajutaj de intrare (la compresoare, centrifuge etc.); (maș) ochi, ureche, șurub cu inel/cu ochi; (min) rampă superioară a puțului; (nav) ochi (parâmă); ochet; (poligr) floare; (TH) ochete de lanț(*ibidem*: 462).

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Method

The method used to obtain data for analysis was that of translating specialised texts during ESP classes for the Electric and Mechanical Engineering undergraduates, during a whole year of study. In the translation process, general and technical dictionaries and thesauruses, and parallel texts were used to investigate the meaning in technical context and to became aware of the significance of the multiple technical meanings typical of other specialised text. Although students have a propensity to refusing working with dictionaries (even online ones), for such an activity they seemed rather open to try new learning tools individually or in pairs and small groups.

Material

The source texts (henceforth ST) are extracted from the Student's book *Oxford English for Electrical and Mechanical Engineering*, published by Oxford University Press. The TT is primarily meant to serve as learning resource for *engineering communication*.

Procedures and Practice

There are several guiding translation theories used by specialists in general and specialised translation. Catford (1965) and Nida (1964 and 1969) are the fathers of the translation theory and practice and their works lie at the basis of any translation concept. Also, it is important to mention that there are seven translation procedures, such as direct (borrowing, calque/loan, literary translation) and oblique (transposition, modulation, equivalence, adaptation) (Vinay, Darbelnet,1995: 30-40) and that the equivalence prevails in the translation of specialised texts. Moreover, the translation procedures generally operate at three levels: vocabulary, syntactic structure and message (Munday, 2016:93), each type of equivalence retaining and adding to the features of the preceding level (Fawcett, 2003: 61).Therefore, during the process of translating, whilst attempting to establish relationships between "specific manifestations of two linguistic systems, one which has already been expressed and is therefore given, and the other which is still potential and adaptable" (Vignay, Darbelnet, *op.cit.*:30), translators should take a few steps: identify the units of translation; examine and evaluate the SL text and its constituent unit of translation which might be descriptive, affective or intellectual; reconstruct in TL, the situation which produced the message in the SL; assess the stylistic effects.

A. Assessing difficulty while translating

Several aspects were identified as hindrance during translation:

1. There might be translation difficulties as regards the corresponding equivalents in TL, because it is claimed that they "lie more in L2 term selection than in fundamental conceptual complexities" (Hann, 2004:109).
2. The need to create equivalences arises from the situation because the words need to be fully understood in SL (Vinay, Darbelnet, *op.cit.*:258).

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3. Not all students have a proficient command of SL and TL, i.e. there might be linguistical issues which they cannot fully understand in their native language and, on the other side, they do not have a good command of the foreign language to help them to translate linguistic nuances.
4. English has a rich lexicon, words carrying narrow (detailed-centred lexical meaning). (Herman,*op.cit*.:15).

B. Practice exemplified

1. Using direct and oblique procedures

The case of the equivalence is rather common because in most contexts the technical dictionaries give the corresponding word in the TL. However, a particular feature of equivalence is that of its syntagmatic nature and, therefore, the message is fully affected (Vignay, Darbelnet, *op.cit.*:38). (It is more about a global recognition which focuses on the specific situation with no need of analysis (*ibidem*:256). For instance, for the following example: *That is the gravity force*.(Unit, henceforth U, 5),the translation into Romanian is easy to render by: *Aceasta este forța de gravitație*. However, in other examples, equivalence is combined with transposition and modulation as in the following: *To solve the ship problem, we must look at the forces on the ship (Fig.1*) (U5)is translated with the help of the picture attached to it representing a ship and the forces (as described in Physics) which act on it. All the words in the sentence are common in general language too and students might not seize the hindrance. Also, the meaning for the *ship problem* is to be understood in the context of the exercise above the translated text which requires to solve a few problems, i.e. to answer a few questions regarding the way forces act. The first translation sounded like: *Pentru a rezolva problema vaporului, trebuie să ne uităm la forțele de pe vapor*, being rather poor and ambiguous. After explaining the relationship between the words (ship problem) and the translation of the preposition *on* by *asupra*, the final translation was modulated to: *Pentru a rezolva problema cu/în care se vorbește despre/ vapor/întrebarea despre vapor, trebuie să ne uităm/ să observam forțele care acționează asupra vaporului (din imaginea alăturată).*

A rather similar situation is in the following example: *Another important force in engineering is the one caused by elasticity. A good example of this is a spring.*(U5)The translation being:*O altă forță importantă în inginerie este cea cauzată de elasticitate. Un exemplu bun al acesteia este arcul*. Again, the translation in TL is ambiguous because of word-for-word translation. For those unaware of everyday words which take on another meaning in technical texts, *spring* might have been translated by *primavara.*The final translation could be: *Un alt tip central de forță din domeniul ingineriei este cea generată de elasticitate. Un astfel de exemplu este arcul*.

The next example: *Brass (65% copper, 35% zinc)- Properties: very corrosion-resistant. Casts well, easily machined. Can be work hardened. Good conductor* (U3)was translated by *Alama (65% cupru, 35% zinc) - Proprietăți: foarte rezistentă la coroziune. Se topește bine, ușor de tăiat. Poate fi lucrată întărită. Bun conductor.*The choice of equivalents is easier in case there is a good knowledge of the speciality in TL. Equivalence, transposition and modulation, borrowing and calque are all combined for an accurate,

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precise translation: *Alama (65% cupru, 35% zinc) - Proprietăți: foarte rezistent la coroziune. Se topește uniform, cubune proprietăți de prelucrare. Formabilitate și la rece. Bun conductor electric.*

2. Identifying repetitions

The syntax of the technical text is rather different, being rich in repetitions, which sometimes seem redundant. Hence, technical language differs from general language, where statements containing repetitions are considered *non-grammatical*. (Hann, 2004: 119-120). Although repetition is prominent, its presence makes the sentences meaningful, unambiguous, hence they should be kept in the TT:*In an electric motor an electric current and magnetic field produce a turning movement* (U6). *Într-un motor electric, un curent electric și un câmp magnetic produc/generează o mișcare de rotație*. Another illustrating example is: *Many mechanisms involve changing one kind of motion into another type. For example, the reciprocating motion of a piston is changed into a rotary motion by the crankshaft*, *while a cam converts the rotary motion of the engine into the reciprocating motion required to operate the valves*(U4). *Multe mecanisme funcționează prin schimbarea tipului de mișcare. De exemplu, cursa motoare /activă a pistonului dintr-un motor este schimbată în mișcare circulară/de rotație de către arborele cotit, în timp ce o camă transformă mișcarea circulară/de rotație a motorului în cursă motoare/activă necesară pentru funcționarea valvelor*.

3. Dealing with multiple enumerations

It is certain that in specialised texts there might be multiple enumerations, sometimes developed in rather long sentences, depending on the object, process they describe in detail. Such an example is: *A typical system includes a boiler, a network of pipes, a feed, and expansion tank, radiators, and a hot water storage system* (U8). Sistemul *classic este alcătuit din centrală/cazan, rețea de conducte, alimentare/racord de conectare, vas de expansiune, calorifere și sistemul de stocare a apei calde*. There is no possibility to shorten the sentence or to reduce the enumeration without damaging the overall message. The following example is a combination between enumeration and repetition: *The flow of gas to the burner is controlled by a valve (or valves) which can be operated by a time switch or by a boiler thermostat, hot water cylinder thermostat, or by a thermostat located in one of the rooms*. (U8) *Curgerea gazului către arzător este controlată printr-una sau mai multe supape puse în funcțiune de un întrerupător temporizat sau de termostatul cazanului, de termostatul cilindrului cu apă caldă sau de un termostat amplasat într-una din camerele locuinței*. Translation procedures such as equivalence, modulation and transposition need to be applied for an accurate translation into Romanian and parallel texts should be used to validate the specialised language in the field of Electric and Mechanical Engineering.

Conclusion

Technical translation is a tedious and fiendish work for all expert or inexperienced translators because not only particular terms are sometimes a hindrance to translation, but also the re-modulation, re-structuring, and adaptation of the meaning in TL. For

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undergraduates studying English as a foreign language it is even more challenging since they need to master the knowledge in their field of specialism.

It is evident that the present study is not comprehensive enough to draw significant conclusions, but the examples presented and their translations indicate that it is not an easy task to use translation in ESP classes for Electrical and Mechanical Engineering fields and it is rather difficult for students to give precise and concise variants in their native language. However, it is rewarding for students, after all, since they obtain a new skill, i.e. a good command of English in their specialism and they become competent speakers in engineering communication contexts. Indeed, the overall goal of ESP classes is to respond to the receiver's needs, which is *engineering communication* in English. The aspects presented and the examples translated offered strong evidence of the difficulty to acquire technical language in English and to render a precise and natural translation into Romanian.

To conclude, translation in ESP classes for Electrical and Mechanical Engineering undergraduates is a useful tool as regards acquiring specialised terminology and discourse. More significantly, technical translation needs to be grammatically correct, coherent and natural in the TT. Moreover, aspects such as precision and clarity might be relevant to consider while rendering English texts on Electrical and Mechanical Engineering into Romanian. The teacher's principal teaching aim should be to raise students' awareness as regards using technical language in order to prepare them for engineering communication in real life contexts.

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