Technical Translation as Double Translation

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Résumé: La traduction est un phénomène extrêmement complexe et dynamique qui permet la communication entre les cultures et les époques, le fil conducteur qui circule entre les différentes personnes et permet de diffuser les connaissances et la compréhension réciproque. Traducteurs vont souvent au-delà du statut des médiateurs entre la langue source et la langue cible, en termes de compétences spécifiques et les compétences requises et malgré les limites imposées par la condition humaine. Le traducteur omniscient reste une description très utopique du traducteur parfait qui devrait posséder une certaine forme de la connaissance universelle et, ainsi, être capable de transmettre tout type de message dans la meilleure forme possible.

Il est communément admis que la qualité d'une traduction dépend de la professionnalité du traducteur. Cela semble insuffisant dans le cas de traductions techniques ou spécialisées où les compétences spécifiques dans un domaine spécifique sont nécessaires. Dans ce papier, nous nous attaquons à la question de la traduction technique, comme l’un des plus ambitieux et difficile, en ce qui concerne les difficultés posées par la lexis (certains en disent impossible). Nous avons choisi l'anglais et le roumain comme la paire de langues pour être analysées et comparées, et nous avons appuyé nos revendications avec des preuves solides. Le document examine aussi la pertinence de la notion de lexique mental par rapport au discours scientifique qui comporte les conclusions que nous avons atteint: la traduction technique consiste, en fait, dans un double processus de traduction afin d’être couronnée de succès.

Mots-clés: Traduction technique, lexème, langue source, langue cible, lexique mental, nominal composé, terminologie

1. Introduction

The globalization trends and the advent of new technologies point to English as, probably, the most used communication tool worldwide, as it was often argued by linguists1. Furthermore, it is the language used at international events, political meetings and in all oral or written scientific communications, in the job and trade market, economic transactions, transfer of technologies, etc. Romania has entered the international markets which entailed an increased need for translators and their highly qualified work.

New technical and economic branches have developed from the traditional fields of activity and aggressively evolved on the market, among which: Mobile, Wireless and Communication Technologies, Nanotechnologies and Smart Materials, E-Technologies, Financial Theory and Engineering Renewable Energy, etc. The amount of novelty required massive training of the old staff and increased the demand for young specialists able to keep up the pace with the latest innovations and theories in the field. The trend towards globalization imposed English as the main international language, issue largely addressed by in their work.

Romanian dictionaries have started to list English elements since 1950’s and their number has increased considerably in the last 20 years, thus reflecting the huge transformations society has gone through lately. The advent of scientific breakthroughs, the emergence of internet technologies, as well as the dynamics of sciences pose serious challenges to linguists and, respectively, translators who have to render information available accurately and fast.

Any piece of oral or written discourse, no matter of the nature of its signs, can be translated, its quality depending on the translator’s competences. Translation rules vary according to the type of source text, its particular features and to the communicative goals to be achieved. The more specialized the text is, the more difficult the translator’s task becomes.

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In this paper, we shall focus on the difficulties raised by the lexical dimension of a technical or scientific source text and some other related problems such as: syntactic pattern matching, linguistic interference, context related lexical appropriateness, etc. Our aim is to prove the double-folded nature of the technical translation process seen as double translation.

2. Circumstances of specialized translation

In this paper, we focus only on the difficulties entailed by the lexical level of technical translation in terms of lexical item specificity and opaqueness, different and complex syntactic structure, target language equivalence and lack of mental representation on the part of the translator.

We shall begin our endeavor with the definition of the verb to translate: "1 tr. a express the sense of (a word, sentence, speech, book, etc.) in another language; produce a translation of. b do this as a profession etc. 2 intr. (of a literary work etc.) be translatable, bear translation. 3 tr. express (an idea, book etc.) in another, esp. simpler form. 4 tr. interpret the significance of; infer as²." Translation of technical and scientific source texts require more than a simple rendition of a piece of discourse from one language into another language, although the intervention of the translator has to be minimal. The scientific style is characterized by "the neutral register since it doesn’t allow subjectivity³ (author’s translation) and by "the tendency towards conciseness of expression⁴". Thus, the translator should strive to obtain the highest level of equivalence possible and minimize personal intervention in the target text. Such limitations do not apply to all types of translation, since their use depends on the communicative goals of the source texts.

When referring to the issue of equivalence, Roger T. Bell claims that „Traducătorul are, în acest caz, fie posibilitatea de a se concentra asupra găsirii de echivalențe formale care să „păstreze” sensul semantic al textului independent de context, în dauna valorii comunicative furnizate de acesta, fie de a gasi echivalențe funcționale care să „păstreze” valoarea comunicativă pe care o dă contextual, în dauna sensului semantic independent de context.“⁵

Translators of technical texts have to make use of the former strategy in order to provide an accurate rendition of the source text in accordance with the neutral register and conciseness mentioned previously. The analysis of the choices made with respect to the syntactic, lexical or semantic characteristics of any language will provide the translators with the most adequate means to obtain a successful translation. As we have already pointed out in this paper, our intention is to examine mainly the lexical level, which we consider the most consistent of all, and to find evidence that accounts for the difficulties raised by technical and scientific discourse.

Translators do not possess the necessary qualification or knowledge of any of the existing specialized domains, which accounts for their difficulties when dealing with terminologies. Translator training provides the tools but not the means. Collaborative work together with a field specialist is highly recommended but it does not happen in real life contexts.

3. Considerations on the nature and type of terminology constituents

Terminologies represent large sets of lexemes or just lexical entries that have acquired special meanings and which can be grouped according to particular fields of activity. They are to be found in specialized dictionaries, also created on the basis of field criteria. The bilingual technical dictionaries, Romanian and English⁶, list under the same entry all the equivalents accompanied by abbreviations corresponding to 51 scientific and industry domains. However, their authors point out in the Preface of the English-Romanian Dictionary that certain terms are explained and not translated because the exact official Romanian equivalent does not exist yet:

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⁵ Roger T. Bell, Teoria și practica traducerii, traducere de Cătălina Gazi, Editura Polirom, Iași, 2000, p. 25.
domestic wool = lână indigenă (din țară); lână din S.U.A. din regiunile Mississippi și Munții Stâncosi;
coping stone = piatră de acoperire; coronament de zid în formă de acoperiș pentru scurgerea apei;
D-front car = automobil cu parbriz bombat.

Certain specialized vocabularies are extremely dynamic, thus reflecting and development rate and the amount of lexical novelty which cannot be captured and rendered by any dictionary in due time as to become fully operational. Thus, there will always remain a certain number of specialized lexical items that cannot be translated or named in the target language temporarily, but only understood and used as such by professionals. In such cases, translators have to render the meaning by using adequate explanation or a roundabout phrase or periphrasis:

depth-duration curve = curbă a variației înălțimii stratului de precipitații cu durata acestora;
Chicago acid = acid-l-amino-8-naftol-2,4-disulfonic;
Flettner rudder = flettner, aripioară suplimentară pentru reducerea reacției la comenzi pilotului.

We shall analyze terminologies according to two types of criteria: morphological, with respect to the number and nature of the constituents, and semantic, in terms of opaqueness or transparency of the meaning they convey. The issue of linguistic communication by means of various types of translation was extensively approached by Ioan Oprea in one of his works7.

Special attention should be paid to the English morphological class of compound nominal phrases or complex nominal groups, as Elena Croitoru rightly argues in one of her works8, due to their complexity and extreme conciseness which often entails confusion and ambiguity on the part of the non-native English user, including professional translators. They range from “simple” to “highly complex” “according to length and difficulty of paraphrasing.”9

Technical translation from Romanian into English involves a compounding-type process, while the reversed translation would involve a de-compounding process. Each of the two strategies require experience and good training since it is commonly assumed that non-native users will constantly manifest the tendency to use native language similar structures into a foreign language:

algoritmi numerici pentru procesare de date = numerical algorithms for processing of data;
conținutul de armonici ale curentului absorbit de redresoare din rețeaua electrică = the harmonic content of the current drawn from the power line by rectifiers10.

The above mentioned examples follow closely the Romanian pattern, but they would sound more English if the translator created more concise structures in the form of compound nominal phrases:

algoritmi numerici pentru procesare de date = data processing numerical algorithms;
conținutul de armonici ale curentului absorbit de redresoare din rețeaua electrică = the harmonic content of the power line rectifier drawn current.

Compound nominal phrases may contain from two to ten or even more constituents and their determinants which interrelate and determine each other, apparently in mysterious ways, since the means of expression (prepositions and adverbs or adverbial particles) are usually omitted in English. However, exceptions are possible and this compounding rule does not apply in all situations:

speed of fall = viteză de cădere;
average speed between stops = viteză medie între opriri;
mandrel for shaping machine = dorn portfreză;
rotation of axes = rotație a axelor.

The omission of adverbial particles and prepositions that normally map the form of expression, accounts for the degree of semantic opaqueness that strikes the translator and which often raises controversy over the translation direction to be followed. The higher the number of constituents, the more difficult the translation will be. The compounding process requires position shift of the constituents. Thus, the head

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7 Ioan Oprea, Comunicare culturală și comunicare lingvistică în spațiul european, Editura Institutul European, Iași, 2008.
9 Cf. Elena Croitoru, op. cit., p. 149.
10 Examples taken from my work and experience as a teacher and technical translator.
of the compound nominal phrase usually goes to final position and determinants are placed on the left of the determined item:

- rotational quantum number = număr cuantic de rotație;
- image propagation factor = constantă / factor de propagare / de transfer al imaginii.

Disambiguation can be achieved mainly by means of paraphrasing. The Romanian translation of English compounds should go from right side to left side. Sometimes two or more variants of translation are possible and syntactically and semantically correct, although they convey different information. The field specialist or the author of the source text has to intervene and choose according to the original intention:

- child safety system = dispozitiv de siguranță al portierelor din spate (pentru a evita deschiderea din interior).

This is, in fact, a paraphrase, since the literal meaning would be “sistem de ocrotire a copilului”, and which does not necessarily send to its special use or to the idea of vehicles.

Compounding of Romanian source phrases seems a little bit easier thanks to a smaller degree of compactness and consists in two stages. First, we need a raw translation version that closely follows the Romanian surface structure. Second, we have to refine and reshape the structure according to the specificity of English target source.

There are cases when the meaning is obvious and can be easily inferred by translating the constituting elements of the compound structure, especially when they are cognates:

- electron spectroscopy = spectroscopie electronică;
- normal potential = potențial normal;
- illuminated direction indicator (arm) = (braț) indicator de direcție iluminat.

as compared to

- formation level = nivel de platformă de cale ferată;
- state transition matrix = matrice de transfer al stării staționare.

where the meaning is only partially evident. Confusion also arises when analysing the following two half identical structures:

- collisional absorption = absorbție prin coliziuni (absorption that results from /obtained by means of collision);
- collisional heating = încălzire la coliziune (heating that occur during collision).

The Romanian equivalent is semantically far from the English source in some other cases:

- spiral geared planer = rabotează cu acționare prin melc și cremalieră;
- high-frequency bridge = puente Wheatstone de înaltă frecvență;
- conveying picking table = bandă de alegere a sterilului.

The scientific breakthroughs and the new realities require new names and concepts to be coined from the already existing ones or invented by field specialists. Translators’ task is to make this information quickly deliverable and easily accessible, which proves to be quite difficult if we consider the surface structure and pattern differences corresponding to source and target language pair. A serious challenge is represented by the resistance to linguistic interference which represents a continuous pitfall for the little experienced translator.

4. Mental representation and context

The concept of mental lexicon belongs to the field of cognitive linguistics and refers to a language user’s knowledge of words, vocabulary and the representation of knowledge about words in mind. It was largely addressed by Jean Aitchinson and other linguists due to its importance and relevance in understanding mental lexical processing and the complex mechanisms that render human communication possible. Each user has a personal complex inner set of images, perceptions, representations, concepts, etc. that evolves continuously as a result of everyday perceptions and interactions with the outer world.

It often happens to discover the world and its realities by means of the words that name them establish the reference and associate a mental representation to it, which will help us to use it correctly whenever necessary. For instance, the easiest way to learn a foreign language is to use methods such as pointing out, exemplification or

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using realia\textsuperscript{12} which are meant to facilitate both teaching and especially learning processes. Later on, when the user has already gained sufficient linguistic competence, more difficult lexemes can be approached, such as abstract nouns, verbs denoting processes, states, multi-word units\textsuperscript{13}, compound nominal phrases, etc.

Communication is not possible unless human mind mirrors the outside world with more or less accuracy. The information stored into our mind and associated to various concepts or surrounding realities represents a sort of magnifying glass which allows analysis, interpretation and classification processes.

Translators lack the specialized knowledge of technical domains, which deprives them of the corresponding mental representations necessary to understand terminologies in terms of the relationships entailed. It is also well-known that technical and scientific texts rely almost exclusively on denotation and, to a very small extent, to connotations\textsuperscript{14}.

Technical and scientific texts do not allow subjectivity on either part, author of the source text nor translator. While the translation of some other type of texts allows various strategies, as Cay Dollerup suggests in one of his books\textsuperscript{15}, specialized texts impose limits on the translator’s choices. Data and information have to be transmitted with great accuracy whereas adaptation or approximation is to be avoided. Translation of technical and didactic variants of source texts might use explicitation:

“Following Leppinhalme, we consider footnotes, glossaries and translator’s prefaces or postscripts here. These are realizations which are found in the translation alone. In the context of the present discussion, these additions are text external, because they are not part of the main text.”\textsuperscript{16}

Context plays a crucial role in determining the most appropriate equivalent in the target language, specific to a certain technical field:

\begin{center}
\textbf{embed} a închide, a îngloba, a introduce, a înșiptă, a încorpora; (cstr) a înzidi; (drum) a cufundă, a încastra, a astupa; (poligt) a insera, a intercală\textsuperscript{17};
\end{center}

\textbf{domeniu} area, branch, domain, field of study, province, realm; (el, telé) span; (fiz, mat, mec) space; (geod, mat, TH) limit; (geod, mat) zone; (mat) field, range, region; (TH) coverage, extent, scope, way\textsuperscript{18}.

As it can be noticed in the examples listed above, the dictionary does not impose clear delimitations and offers several English equivalents within the same field: for example, there are six different lexical entries for “domeniu” in the field of Mathematics, which makes the choice difficult out of a given context. Previous experience or familiarity to the respective field may help the translator in taking the right decision. The exposure to specialized language, which is recommended to foreign language learners, could also bring some light and cast away confusion.

The same exposure to technical and scientific literature accounts for the overall comprehension of an English source text which is doubled, on the other side, by poor translation skills of a Romanian source text into English, by a Romanian technical writer or specialist. A Romanian translator of technical texts will perform these tasks inversely which means that, once again, mental representations and knowledge of the field are key factors in performing a good technical translation. The widely used process of inferring or guessing the meaning from the context loses functionality in technical translations. Instead, its role switches to specializing in a certain technical field (sometimes, the same term is used in more than one field) and gains pertinence when choosing the most appropriate lexical entry of the same lexeme.

5. Conclusions

We have tried so far to highlight some of the most difficult lexical aspects that technical translators often come across in their work and thus support the claim that specialized translation often requires translation of the source text inside the source language. The first stage of the double fold translation process is translator oriented and aims at the making the second stage possible, which is receiver oriented. Translators of Romanian source texts have to overcome the problems posed by wordiness and lengthy sentences and transpose everything into

\begin{itemize}
\item \textsuperscript{12} Objects that teachers use to exemplify new vocabulary items when teaching a foreign language.
\item \textsuperscript{13} Idioms and proverbs.
\item \textsuperscript{14} It is the case with scientific metaphors and didactic variants, textbooks, popularization scientific magazines, etc.
\item \textsuperscript{15} Cay Dollerup, \textit{Basics of Translation Studies}; Editura Institutul European, Iași, 2006, pp. 150-152.
\item \textsuperscript{16} Cf. Cay Dollerup, \textit{op. cit.}, p. 151.
\item \textsuperscript{18} G. Niculescu, România-Christina Dobre, C. Cincu, R. Costescu, , \textit{Dicționar tehnic Român-Englez}, Editura Tehnică, București, 2001, p. 499.
\end{itemize}
English with maximum conciseness and accuracy. On the other side, translations of English source texts into Romanian raise a completely different set of difficulties, as already shown in this paper, and represented by faulty or missing official equivalents, highly synthetic pieces of written discourse, etc.

A comprehensive analysis of all technical translation related aspects is to be completed by future research in this field.

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