

THE TRANSLATION OF TECHNICAL-SCIENTIFIC TEXTS — A BRIEF ANALYSIS

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A written text is, by definition, a permanent linguistic expression and as such constitutes a permanent temptation to the unwary to invert the logical sentence of translation, that is, to translate first (in the hope of understanding later), rather than understanding before translating. When the translator is not as familiar with the original language, nor as fully cognizant of the subject matter as the native reader, there is an immediate risk that he will resort to linguistic equivalents and that his renderings will no longer stem from the ideas contained in the original text but from the meanings individual works have as such... Seleskovitch, D. (1976:95).

TRANSLATING HAS TRADITIONALLY BEEN based on equivalence. Therefore, this view is changing. What is important in the translation of a text, nowadays, is not only the equivalence between words, but the translation of the main ideas, concerning the cultural background of the target language. In translating technical-scientific texts, one must first be aware of the accuracy of the translated text, in terms of how it transmits the goal of the writer of the source text to the reader of the translated text. Thus, the translated text will be able of contributing instrumentally to the technical-scientific area as a whole.

The aim of this paper is to analyze critically the translation of chapter 5 of the book *Cost Management for Today's Advanced Manufacturing — The CAM-I Conceptual Design* (1988), by José

Luiz Basseto, 1992. I will begin by addressing the choices for the verb *focus* and the conjunction *because* in the introduction of the chapter. I will then focus on the additions, omissions and misunderstandings of the translator. These items will be analyzed semantically as well as technically, in the area of application of the book, which is familiar to my teaching expertise. I will focus on the issue of the improvement or non-improvement of the book's content in general, in terms of its scientific applications, though it is important to make clear that, for the present analysis, *omissions* in the translated text do not necessarily mean *loss*, as well as *addition* does not necessarily mean *gain*.

As a specific technical support, I consulted three specialists in the area*, from the Post-Graduation course in Engenharia de Produção at UFSC concerning the specific items which may be relevant to this analysis. I analyzed their opinion and took into account whenever it was relevant to this paper as a whole.

I will continue with some brief considerations of the differences between the translation of technical-scientific texts as compared to the translation of poems. As a conclusion, I will address the knowledge and awareness of the translator of technical-scientific literature, thus giving the reader an idea of the main problems that editors encounter in their search for accurate translators. I will then offer some plausible solutions for these problems.

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The translator's choices

According to Garcia (1992), the available technical-scientific literature normally has, as its audience, graduate and undergraduate students, in addition to teachers and researchers. As a result, this literature is often written in a high-level linguistic pattern, with the exception of the material prepared for secondary students. The book analyzed here, for instance, seems to belong to this high-level literature, written for graduate and undergraduate students, professors and researchers.

However, in analyzing the translation of the introduction to chapter five in the book *Cost-management for today's advanced manufacturing*, it is clear that the translator is concerned with what Azenha Jr. (1994) calls "good style notion according to which the same element should not be repeated". In his syntactical analysis of translations, Azenha Jr. (1994) considers this "good style notion" capable of causing great damage to the accuracy of the information and instructions presented.

For instance, when translating the verb *focus* (which appears twice in the ST) the translator renders it as 'é orientado', whereas the second time, the translator chooses 'concentra-se'. This variation of equivalents for the same word within such a brief text seems to confirm the supposition that the translator's intention was to avoid repetitions in order to have a high-level text style. In my view, with regard to text improvement, if the author had chosen one of these two words to translate the verb *focus* (preferably 'concentra-se'), it would have been more accurate and therefore more appropriate for a technical scientific text.

On the other hand, in the first two instances the word *because* appears, it is translated as "em função". Although this kind of translation does not show an attempt to avoid repetition, it may be possible that the translator intended to use something other than the direct translation from dictionaries, (*The Exitus Dictionary of*

the English and Portuguese languages, (1979) ; *Longman English Dictionary for Portuguese Speakers*, (1989)). I find this translation is not in accordance with the collocation for the expression “em função de”.

Thus, it seems that the most adequate way for collocating “em função” in this sentence would be

As curvas dos custos incorridos aumentam durante a produção. *Em função disso*, o registro contábil concentra-se neste estágio,

instead of

Em função de que os custos incorridos aumentam durante a produção, o registro contábil encontra-se neste estágio.

Therefore, if the translator chooses to use this word in the beginning of the sentence, it would be better to use ‘Devido ao fato de que’, or simply ‘Por que’, or even ‘como’. As a consequence, the reading would be more fluent and the reader would not have to stop to ponder the meaning of the expression ‘em função de’. It seems to me that, as the text presents the expression ‘em função de’ in the beginning of the sentence, the reader has in mind some kind of *mathematical relation*. The word ‘função’ imbues this idea and it seems that this is not the idea that is expressed in the ST. Consequently, it takes a long time for the reader of the TT to process cognitively the real semantic meaning of this expression.

Additions, omissions and misunderstandings in the translation

With regard to the translation of the word *accounting* and its cognates, the TT seems to be even more confusing. During the course of the chapter, *accounting* and its cognates are not only translated as words of different meanings but there are also some omissions

or some additions throughout the TT. For instance, the first time the word *accounting* appears, (sentence 1 below), it is translated as 'registros'; the second time it appears, though, the translator chooses 'registro contábil' (2); the third time, within the syntagma *cost accounting system*, it is translated as 'acumulação' (3). And in the next time, this word is amazingly translated as 'ciclo de vida' (4).

1.ST: *Accounting emphasis* should be expanded to include not only the production phase... (p.139)

TT: A ênfase no registro deve ser expandida para incluir não apenas a fase de produção... (p.151)

2.ST: ... *traditional accounting* is focused on this stage. (p.139)

TT: ... o registro contábil tradicional concentra-se neste estágio. (p.151)

3.ST: Simply changing the *cost accounting system*, however, is not enough. (P.139)

TT: Entretanto, simplesmente mudar o sistema de acumulação de custos não é suficiente. (p.151)

4.ST: At present, rewards are given for good performance in *single accounting periods* in organisational units. (p. 139)

TT: Os profissionais devem ser compensados pelas práticas que minimizem os custos do *ciclo de vida*... (p.151)

Sentences 3 and 4 may seem strange for the reader, when comparing both texts, even when reading only the translated text. The translator's additions do not seem to make sense where the expressions 'acumulação' and 'ciclo de vida' are inserted. The choice for the expression 'ciclo de vida' at this point of the TT, was considered "nonsensical" by the specialists consulted.

The specialists claimed that it would have been better if the translator had been consistent in choosing only one word when translating the expression, thereby facilitating the accuracy and

comprehensability of the text. The most adequate translation for *accounting* and its cognates, according to them, would be 'registros contábeis', and its modified forms. Still, according to the specialists, there is no technical justification for the additions made by the translator in this part of the TT.

Regarding the omissions found in the TT, some of them can be disastrous for the reader of the TT. As an example of this, the following part of the ST and of the TT must be reviewed:

5. ST: *Accounting-period expenses* (such as product development, marketing, and distribution costs) must be assigned ... (p. 141 - S.T);

TT: Os *períodos de contabilização* (custos de desenvolvimento, marketing e distribuição) devem ser atribuídos... (p. 154 - T.T).

In this example, there is a serious case of omission, according to the specialists interviewed, with whom I agree. Neither the word *expenses* is considered in the expression translated, nor it is considered by the translator that the nouns contained in the parenthesis — *production, developments, costs* — refer to *expenses*, not to *periods*, as it seems to be the case in the TT. Therefore, in the sentence quoted above (TT), the reading does not link what is being said *before* and exemplified *in* the parenthesis.

Nevertheless, with regard to the misunderstandings, the TT may be seriously misleading. For instance, concerning the sentence

6. ST: At every step of the product life-cycle review after the investment proposal, *management* should consider the advisability of continuing or abandoning an investment project, (p.155)

the translator misunderstands the correct word order in the text and mistranslates this sentence as

TT: Em cada estágio da revisão do ciclo de vida do produto,

depois da proposta de investimento, o *gerente do projeto* deve considerar se continua ou abandona o projeto de investimento. (P.167)

This *misunderstanding* could have terrible consequences for the reader of the TT. Besides thinking that the decision must be taken by the *design manager* specifically, the reader may infer through the TT that this decision has to be taken individually, not at a *general* management level, as it seems to be the main message of the whole book (ST). Moreover, the idea of management in modern firms is transmitted as being performed as a whole, not as the responsibility of only one individual, according to the specialists consulted. However, the translator does not seem to care about the importance of this idea to the reader of the TT, or maybe the translator *lacks* this kind of knowledge or awareness.

By the same token, the expression *management accountant* or only *accountant*, that is, *the professional who is responsible for the accounting of a firm*, which appears so many times in the ST, is translated as many different words. These words are more likely to the result of confusions on behalf of the translator than text improvement or gain for the context. For instance, translating the expression *management accountant's role*, contrary to the example previously cited, he translates this expression as *atribuições do gerente-responsável*. The generalization of the accountant's professional role (according to the accountant consulted), does not fit the purpose of specifying the attributions of the accountant within the environment of a firm.

For the other two specialists, this specification of the role of the accountant runs counter to the idea of modern firms management, previously discussed. According to them, management in modern firms is performed by a whole group, not only one individual, even if this individual is a professional accountant.

As a result, the translation of this book, at least in relation to this specific chapter, does not seem very reliable. The role of the translator is not to perform a literal translation, but to choose the

most adequate words from the ST to the TT and to be consistent with these choices. S/he has to be aware of how much the choice of those words will influence the reader's inference process. Consequently, the general comprehension and application of a technical-scientific text may be positively or negatively affected.

Final remarks

Camargo (1995) claims that what characterizes a literal translation is the frequency in the correlation of the lexical units. Concerning technical-scientific literature, it seems that what is demanded is not a literal translation but an accurate translation, in order to avoid what (Azenha Jr., 1994) calls "disasters":

Em se tratando de traduções técnicas, não é pequeno o anedotário sobre os "desastres" provocados por erros: os casos relatados vão desde acontecimentos mais corriqueiros como eletrodomésticos queimados e motores fundidos, passam por acidentes de maiores proporções como pontes que não se sustentam e chegam a óbitos decorrentes da ingestão em dosagem indevida de medicamentos e até a *catástrofes ecológicas* [italics added] provocadas pelo uso incorreto de agrotóxicos... Azenha Jr.(1994), p. (1)

From this point of view, it is important to consider technical-scientific translation as being of great difference from poetic literature. As Azenha Jr. (1994) points out, "...é condição *si ne qua non* o abandono da noção pré-concebida, amplamente difundida e, na maioria das vezes, equivocada, de que os textos técnicos são qualitativamente 'inferiores' aos textos de base cultural mais evidente, o que justificaria sua existência à margem de tais discussões (...). No domínio concreto do uso, porém, se é verdade que [um] manual dificilmente seria o livro de cabeceira de alguém, é também verdade que [um] poema de nada serviria ao operário que irá trabalhar com [uma] máquina..."(p.2). Garcia, (1992), in turn, claims that "A

literatura técnico-científica é de grande importância e requer uma revisão minuciosa de suas peculiaridades e um tratamento cuidadoso de seus problemas.” (p.85).

My understanding of these citations is that, of equal importance but in different fields and with different practical applications, technical-scientific and literary works translation need thorough review. The consequences for a badly translated or improved technical-scientific text, though, may be even stronger for people’s everyday life regarding “the responsibility for the translation *errors* [italics added]” Azenha Jr. (1994), (p.2).

As a conclusion, I would say that it is important for editors to choose the translator of a technical-scientific text in terms of his/her proficiency in the target language, as well as his/her general knowledge and awareness in terms of the specific technical-scientific words pertaining to the area to be translated. However, it is equally important that the editor makes sure of the knowledge of the translator in terms of language use of the translated text, within its specific applications in that specific field.

Additionally, it seems that another problem arises, concerning the editor’s task: besides having to select a good translator, who claims to have much of the knowledge demanded in terms of the original language, the target language and the specificity of the area, the editor also has to find a way of assessing this knowledge. This is the hardest task for the editor, and since not even teachers and researchers have yet found an *ideal language assessment test* for ordinary language students, it becomes even more difficult to assess how cognitive language processing occurs in the mind of a translator.

An orientation for this editor’s *quite impossible mission* — the choice of a good translator — may be to look for someone who has followed the “life path” proposed in Baker (1992), although this is not such a practical or common situation:

...parents of different nationalities, a good school education in which you learn to read, write, spell, construe and

love your own language. Then roam the world, make friends, see life. Go back to education, but to take a technical or commercial degree, not a language degree. Spend the rest of your twenties and your early thirties in the countries whose languages you speak, working in industry or commerce but not directly in languages. Never marry into your own nationality. Have your children. Then back to a postgraduate translation course. A staff job as a translator, and then go freelance. By which time you are forty and ready to begin.” (Lanna Castellano, 1988:133, cited in Baker, 1992:3).

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References

AZENHA JR., J. *Aspectos culturais na produção e na tradução de textos técnicos de instrução alemão-português: teoria e prática*. Tese de Doutorado. São Paulo, USP/FFLCH/DLM, 1994.

BAKER, M. *In Other Words — A coursebook on translation*. Routledge. London, 1992.

BERLINER, C. and BRIMSON, J.A. *Cost management for today's advanced manufacturing. The CAM-I conceptual design*. Harvard Business School Press. Boston Massachusetts, 1988. (Translated by José Luiz Basseto ; Edited by T.A. Queiroz. São Paulo, 1992.)

CAMARGO, D. C. "Os textos jurídico e técnico (tecnológico) e as modalidades tradutórias". In *Anais do IV Congresso Brasileiro de Linguística Aplicada*. Unicamp-IEL. São Paulo, 1995, pp. 620 a 624.

GARCIA, I.W. "A tradução do texto técnico-científico". In *Ilha do Desterro*, Nº.28, 1992, pp. 75-85.

Longman English Dictionary for Portuguese Speakers. Rosa W. Konder, editor. Ao livro técnico S/A indústria e comércio. São Paulo, 1989.

SELESKOVITCH, D. "Interpretation, a psychological approach to translating". In *Translation — applications and research*. Edited by Richard W. Brislin. Gardner Press, inc., 1976. pp. 92-116.

The Exitus Dictionary of the English and Portuguese Languages. Antônio Houaiss and Catherine B. Avery, Editors. Prentice-Hall, Inc. New Jersey, 1979.