



2528-9705

**Örgütsel Davranış Araştırmaları Dergisi**  
Journal Of Organizational Behavior Research  
Cilt / Vol.: 4, Sayı / Is.: S2, Yıl/Year: 2019, Kod/ID: 91S2482



## **STUDY OF SIGNIFICANT ISSUES AHEAD IN THE TRANSLATION OF TECHNICAL TEXTS WITH THE HELP OF TRANSLATION OF THE FIRST CHAPTER OF THE BOOK "MODELE BY EXAMPLE"**

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### **ABSTRACT**

*Based on the issues we faced during the translation of the first part of a technical book called *Modéliser par l'exemple*, we conducted this research to show the difficulties and solutions of a technical translation since a technical translation is really different from other sorts of translation; and it demands a lot of research on the translating subject. In the first two parts of this work, we have tried to study the issues and limitations related to translation of technical texts in particular. In the last part, we rely on concrete examples from the *Modéliser par l'exemple*, to analyze the constraints and difficulties encountered during this technical translation, and we also try to propose useful and effective solutions for translating other technical manuals.*

**Keywords:** *Technical Translation, Analyzed Translation, Technical Translation Issues, Technical Translation Solutions, Vinay And Darbelnet Method, French To Persian Translation.*

### **INTRODUCTION**

During the translation of the first part of the technical book<sup>1</sup>, *Modéliser par l'exemple*, written by Swiss writers Gabor Maksay and Yves Pigneur, from French to Persian, we faced some issues. So we will try to study the theoretical aspects of translation; therefore, in the first part of this article, we will present the definition and characteristics of a technical text, and then attempt to define the technical translation. At the same time, we will talk about the importance of this kind of translation and its target audience.

Then, we will focus on the issues of technical translation and we will try to propose solutions to solve these difficulties, relying on concrete examples of the applied translation strategy, which is proposed by Vinay and Darbelnet.

Throughout this work, we will try to show the characteristics of the technical text as well as the problems related to its translation. However, we must not forget that this work has its own limits,

<sup>1</sup> The translation of the 1<sup>st</sup> part of this book is presented in the third chapter of the Master's thesis written by the author of this article.

therefore, we will only work on the points that seem essential to us, but there are still other aspects of the issue that deserve to be studied from other angles and through other approaches.

### *Technical text and translation*

**Technical term**, (as an adjective) as stated in the online version of Larousse, “relates to the practical side of an activity, to its exercise or its required know-how. The word is relative to the operation of a material, a device, and an installation. It relates to the applications of scientific knowledge”.

“A technical term is rather the name of a raw material of an agent or an instrument; the variations would rather be based on the metonymies reflecting in languages the relations that exist between these different referents”<sup>2</sup>, admits Mortureux.

A **technical text** contains neutral data (at the level of opinion and taste), scientific and objective. Its main difference with other kinds of text is the terminology. Syntax and style have the same importance as the latter<sup>3</sup>. So, not only the text is technical, but also, the translation itself must be technical. In the opinion of Christine Durieux, the informative element of technical texts is essential and not the form of their expression as in literary texts. Durieux admits that texts with technical nature "deal with technical, technological and scientific subjects"<sup>4</sup> and they are written in a "language for specific purposes (LSP)". As stated by Christine Durieux, all technical fields have their own language and use specific concepts (Mortureux, 2009).

Efficiency, consistency, ease of use and unambiguousness are the main features of a technical text. The grammar used in technical texts contains passive voice and present verbs; also the infinitive and imperative constructions are commonly used. Technical works normally contain graphs, illustrations and tables with technical content.

**Technical translation** consists of translating texts of a technical, technological and scientific nature. According to Claude Bédard, technical translation "lies under the specialized branch of pragmatic translation" (Bedard, 1986). According to Ladmiral, “the translation of legal, and scientific texts is called technical translation. (Ladmiral, 1994)”.

**Technical translation stages** are reading, understanding, de-verbalization, re-expression and especially the transmission of the message.

Two characteristics of Daniel Gile's (GILE, 1986) technical translation are:

- It is based on specialized content that only specialists have.
- It essentially conveys informative messages rather than emotional or aesthetic messages.

In technical translation, the most important factor is to transmit the contents of the original text as such in another language. This is why it is said that language skills and terminological knowledge are not sufficient and possessing a relevant technique, also, plays an important part in the translation of these kinds of texts.

- *Importance of technical translation*

<sup>2</sup> The translation of the 1st part of this book is presented in the third chapter of the Master's thesis written by the author of this article.

<sup>3</sup> Durieux, Article: *vers une théorie décisionnelle de la traduction*, p.23

<sup>4</sup> Ibid., p.25



Previously, power was interpreted differently. The number of inhabitants, the number of tanks, fighter planes, warriors, and measured it. But today there are other factors that are calculated to measure the power of a nation. Science is one.

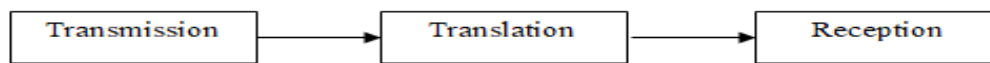
It must be considered that a nation could not produce all sciences and technologies. It therefore needs collaboration with other countries.

While all areas have adapted to technology, it seems that the translation has not been updated. So with these changes that the world has experienced, the need for the implementation of practical methods, designed specifically for technical translation, is felt.

### *Technical Translation Difficulties*

- *Understanding technical texts*

The diagram below illustrates the translation process:



The “translation” that is actually the "black box" of the process has three phases:

- Comprehension
- De-verbalization
- Re-expression

What happens in the "black box" is not clear. It is the result of the process of the transmission of the message.

Based on different theories of translation, the first phase is to read and understand the original text (in general, and not in detail at first) which, in our case, is a technical text, filled with many technical and difficult terms.

According to Gile (Gile, 2005), the factors causing problems in understanding a text are:

- Inadequate extra-linguistic knowledge,
- Insufficient mastery of the departure language,
- Poor quality of the original text,
- Fluctuations of attention in the translator,
- Poor working conditions and lack of professional conscience.

These difficulties can intervene in the translation of texts. Having a very good linguistic and extra-linguistic knowledge allows the translator to first fully understand the message and then to write a translation that would be well understood in the target language; so good that we won't be able to tell whether it is the a translation or a new edition.

We can summarize the comprehension phase with a quotation from Durieux: “The approach for translating a technical text goes far beyond looking for terms, it requires, mostly, the understanding of the text. While terminology plays an important role in the translation, it is only an auxiliary tool that cannot be the main objective. The real problems of technical translation are not the specific terminology, but the need to carry out a documentary research to enlighten the translator about the subject”.



- ***Documentary research***

To be able to master the subject, the translator must consult several sources. We can name this step the “documentary research”.

This research can be in target and the source language at the same time. This helps the translator to know the terms used in each language and also to know other vocabularies and sciences related to the subject. In fact, the documentation research will help the translator to enrich his knowledge, and the readers to have a deeper understanding of the topic.

Traditional tools for documentary research are different types of dictionaries such as thematic encyclopedias, journals, unilingual and bilingual dictionaries. There is also the possibility of consulting new online tools and to refer to the search engines and hundreds of thousands of Internet sites containing information about the translating subject. But before referring to an online source, one must first be sure of its authenticity.

Each translator must spend a few minutes reading each day to enrich his “cognitive baggage”. This would let him have in mind, a list of practical sources he can refer to, in case he needs help understanding a text.

In addition, he should conduct researches about the concerning subject, in the departure and arrival language. This research can be thematic in terms of terminology or phraseology.

In a technical text, there are many difficult terms that the translator may not know. He could simply use different dictionaries, consult experts, refer to reliable and suitable sources, and navigate the Internet for up-to-date information. The translator must prioritize his sources and consult whichever he can.

He should know the basics of the research methodology, and be aware of the pace of progress in technological field.

Having enough information, we then started the translation of the text. This is where terminology and neologism become important.

- ***Terminology problem***

A "set of terms referring to concepts or objects that relate to a particular area of knowledge and human activity, such as medicine or computer science. (Galison, 1976)" is called terminology. The translator task is to pass a text from one language to another. And he needs perfect knowledge of both languages. He must also have a rich cognitive background. For technical translators the terminology poses serious problems. On one hand, ordinary dictionaries do not have all the technical words, and on the other, science and technology do not cease to progress. Dictionaries are often incomplete and are several years late. As a result, the translator must update himself and be aware of new terms. Thanks to the advancement of electronic world, there is an online version of published dictionaries updating as new terms come up. Glossaries have also been added to some dictionaries.

We can therefore conclude that each field of science and technology has its own terminology and the main problem of the translator is to have to know this lexicon and to use up-to-date encyclopedias and other available translating tools.

- ***Neologism***

According to the definition given by Wikipedia, neologism describes a relatively recent or isolated term, word, or phrase that may be in the process of entering common use, but that has not yet been fully accepted into mainstream language. In other words, it is creating new words



or new uses of already existing words. Of course there are different kinds of neology. Based on the same source, the neologism is divided into three categories:

- **The neologism of form:** creating a new word.
- **The neologism of loanword:** borrowing a foreign word without modification.
- **The neologism of meaning or Neosemy:** the process whereby a new meaning develops for an existing word

Some languages, act against these changes, therefore loanword (not the neologism) takes an important place in these languages because loanword have been well engaged in the speakers' everyday life.

As claimed by Claude Bedard, the translator must turn to unilingual documentation to find the appropriate equivalents. But this research often does not respond perfectly to the needs of the text; the translator should then find other equivalents to fill the gaps left by his research and to create the missing equivalents, and finally to harmonize the whole vocabulary conforming to the situation (Bedard, 1986).

By consulting experts, the creation of non-existing equivalents could lead to good results.

- ***Re-expression of the technical translation***

Once the original text is well understood, the next step would be the re-expression or the reformulation. To do a good translation, it is sometimes necessary to forget all the notions of the source language, and to make it understandable for the target audience. The translator can try giving more explanation. Reformulation requires a very good knowledge of the domain and the imposition on the target language. We see that reformulation is an inevitable and sensitive task for the translation of technical texts.

- ***Choice of style in technical translation***

In the opinion of Durieux, we can say that all the texts are a combination of a literary part and a technical part; and that is the terminology (Christine Durieux, 2000).

As stated in the online version of Larousse, style is defined as the set of characteristics of works of art of an era, or the way of expressing one's thought. Style is generally considered as a literal matter. If that's the case, the style does not have an important place in the technical translation; but if we define the style as the way of describing things, or the choice of words and sentences, it takes a rather important place in the technical translation.

- ***Target audience***

In *Modéliser par l'exemple*, two types of audience are targeted:

- Domestic users and business managers interested in methodical approaches to a problem
- Beginners and modeling students

For a book that goes beyond engineering, the reader is probably either an expert or a learner. An expert can simply understand the concepts, terms, calculations, etc. But for a learner, the translator needs to use a more general vocabulary in simple clear sentences.

As claimed by Bédard, the translator must first begin by putting himself in the reader's place, and adapting his point of view (Christine Durieux, 2000). He suggests to the translator to take the technical and linguistic acquis of the reader and the idiolect of the client into consideration (Christine Durieux, 2000).

***A look at the book and the difficulties of its translation***



- **Importance of computing**

The definition of computing is no longer the same as the one presented a few years ago, as Hal Abelson, the American mathematician and computer scientist, says, "Computer science is no longer the science of computers; as astronomy is no longer the science of telescopes."<sup>5</sup>

Based on Wikipedia, computing is "*The discipline of computing is the systematic study of algorithmic processes that describe and transform information: their theory, analysis, design, efficiency, implementation, and application. The fundamental question underlying all computing is "What can be (efficiently) automated?"*

In today's world, IT is no longer a topic only for computer scientists. With the penetration of social networks and the virtual world into everyday life, the importance of computing is increasingly felt for every individual.

This article is not about studying the influence of computers on our daily lives, but given the importance of this influence, the need to have a basic knowledge in this field is felt.

Today a computer scientist who designates and implements complicated computer applications or programs; and a grandmother who creates an Excel file to insert and calculate his monthly expenses, are both doing computer science. It is, therefore, up to us, the translators, to choose good books to translate to meet the totally different needs of each group of users.

- **Why this book?**

In the Iranian market, there are several books about computers, but are they all useful? Can they meet the practical needs of users? Have foreign books been translated well? Have we chosen good books to translate? *Modéliser par l'exemple* helps a large number of users who have different expectations in computing. With simple expression and by examples commonly used in everyday life (for example, the calculation of the tax) the authors of this book try to present the basic notions of modeling and provide a good foundation for more complicated topics.

What sets this book apart from other textbooks with a similar subject is its independence from computer tools. This means that its approach focuses on the design and implementation aspects, and helps maintaining certain neutrality with respect to existing programs on the market. In other words, the tools change over time, but the concepts persist.

The translator, who studied this book during his Master's studies in engineering, is familiar with the field, and with the authors of the book, that makes him the best possible translator for the chosen book.

- **Analysis of *Modéliser par l'exemple* and difficulties of its translation**

The first difficulty of *Modéliser par l'exemple* concerns its content including various technical subjects such as mathematics, accounting, human resources and computer science.

In examples given in the book, (that are, for the most part, problems related to accounting), we can see that the logical relations between different elements of the problem in question are supported. In the first chapters, the realization of these relations is rather simple and is done almost automatically, but as one goes forward, the calculations, the construction of the logical relations, the insertion of the formulas and functions, become complicated and require ingenious knowledge of the subject.

We can, therefore, conclude that the translation of this book is very difficult if not impossible for translators who do not have ingenious knowledge of the subject.

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<sup>5</sup> This quote is wrongly attributed to Edsger W. Dijkstra



As with any type of translation, a difficulty starts with the title, which is normally supposed to be easy to translate. But we studied the book several times before choosing the best translation for the title since, the title is the shortest summary of a book and should be translated when the whole book is perfectly understood.

The next difficulty concerns the third language, namely English. In Iran, the language of the majority of technical words is English, so we were obliged to enrich our English terminology. Also most of the technical books and reference are in English. The book was full of illustrations that contain scientific content (formulas and data). So we had to translate these illustrations sometimes in Persian and sometimes in English. The book was based on concrete examples about the tax and salary system in Switzerland. In addition to technical knowledge, it was necessary to obtain some information about the tax culture and wages in Switzerland. It also seemed necessary to know the basics of commercial law (including rights and duties of the employees and the employers). Since the translator spent several years in Switzerland, he enjoys a thorough knowledge of the mentioned topics.

### METHOD BY EXAMPLES

A suitable method for our work is J.-P. Vinay and J. Darbelnet<sup>6</sup> introduced in their book called *Stylistique comparée du français et de l'anglais*. In this book, they tried to introduce seven techniques for translation and compare French and English translation. Subsequently, we try to present these seven techniques very briefly with concrete examples of the application of Vinay and Darbelnet strategies for translating the first part of *Modéliser par l'exemple*.

The translated book contains 100 pages, and there are obviously several examples for each technique, but we give only a few examples for each case, just to show the application of each technique.

**Loanword:** This technique involves entering the terms of the source language or other languages in the target language.

Exemple 1: Dans un deuxième temps [...] le feuille de calcul, **la cellule** [...] (ST<sup>7</sup>, p.5).

Exemple 2: La saisie d'une **formule** [...] (ST, p.18).

Exemple 3: Un **tableau** est constitué d'un [...] (ST, p.18).

The words "cellule" (cell), "formule" (formula) and "tableau" (table) are French words that have entered Persian language as is. These two have some other equivalents in Persian that won't mean exactly what the author meant. So we had to use the exact same words since they are more obvious than their Persian equivalents.

**The calque:** Is the borrowing of a foreign phrase with literal translation of its elements.

Exemple 1: **La règle de dérivation** permet de calculer [...] (ST, p.6).

Exemple 2: On peut représenter [...] appelé, **graphe de dépendance** [...] (ST, p.7).

Exemple 3: **Un modèle de calcul** constitue la spécification [...] (ST, p.7).

<sup>6</sup> Article en ligne: <https://fr.wikibooks.org/wiki>

<sup>7</sup> During this work, "ST" stands for Source Text



As illustrated in the examples, the components of the terms already exist in the target language, but the combination between them is based on a literal translation.

**The literal translation:** Designates a word-by-word translation, resulting in a text that is both correct and idiomatic.

Exemple 1: Jusqu'au présent, nous avons toujours associé une seule valeur à une grandeur (ST, p.57).

Exemple 2: Nous avons finalement rédigé un modèle abstrait correspondant (ST, p.67).

Exemple 3: Dans l'exemple fil rouge, nous devons constituer un budget période (ST, p.83).

In these three examples, it is worth noting that the grammatical nature of the components of the sentence does not change in the translation, and that it is a literal translation. Although this kind of translation is, in most cases, rarely possible, it could however be applied in short and simple sentences.

**Transposition:** It means to change the grammatical category of a word or a group of words without changing the meaning of the original text. The crossover is a double transposition involving both a grammatical category change and a syntactic permutation of the meaning elements. And stuffing or amplification is a type of transposition consisting of adding a nominal or verbal phrase to translate a preposition, a pronoun or an interrogative adverb. Thus, the French prepositions need to be expanded by the addition of a past participle or a noun, while the English prepositions are sufficient on their own.

Exemple 1: Dans un modèle de calcul **utilisant** p et q comme grandeurs de type logique [...] (ST, p.39).

Exemple 2: L'utilisation des formules matricielles **répond** à cette demande (ST, p.63)

Exemple 3: Il s'agit en fait d'un problème **de dimension : comment mettre en** évidence une valeur particulière d'une grandeur multivaluée? (ST, p.57).

In the first example, the present participle, “utilisant” (using), has been changed to infinitive “utiliser” (to use) in Persian translation. The sentence has been translated into a passive voice to make it easier to understand.

In the second example, the verb **répond** (answer) has a positive meaning hidden. One could rephrase the phrase with “responds positively”, which we added to the Persian translation, because with the verb “**répond**” alone in this particular sentence, we (the Iranians) are not able to understand the positive meaning of the sentence.

Finally, in the last example, we made several changes both grammatical and syntactical. First, we removed colon because in Persian we can simply connect two sentences and show that the second is complementary to the first. We then changed the grammatical category of the verb “mettre en évidence” to a noun in Persian.

**Modulation:** Consists of changing the point of view, either to circumvent a difficulty in translation, or to show a new way of seeing things, specific to the speakers of the target language.

Exemple 1: La deuxième **nouveauté** dans la partie conception [...] (ST, p.65).

Exemple 2: Avec les connaissances acquises **précédemment**, et plus particulièrement **celles concernant** les grandeurs à définitions multiples [...] (ST, p.39).

Exemple 3: Le même calcul **ne peut apparaître que** dans une seule équation (ST, p.51).

In the first example, the noun “nouveau” (novelty) which means “le caractère de ce qui est nouveau”, as stated in the online version of Larousse, has been changed to an adjective, (“sujet” in French). So we replaced “la deuxième nouveauté” (the second novelty) with “le deuxième nouveau sujet » (the second new subject), in Persian translation.

In the second example, the adverb “précédemment” (previously) has been replaced by “dans les chapitres précédents” (in previous chapters), in the translation. We also deleted the demonstrative pronoun “celles” (those). Both changes have been made because the structure used in this sentence is not used in Persian.

The third example has the “ne ... que”, which is used to mark the restriction in French. This structure does not exist in Persian and must be changed in translation. We have also removed the verb “apparaître” (to appear) because it doesn’t suit the translated sentence.

**Equivalence:** It is a technique by which one reports the same situation as in the original, by resorting it to an entirely different writing.

Exemple 1: Si l'on en croit l'adage selon lequel **un problème bien posé est déjà à moitié résolu** [...] (ST, p.4).

Exemple 2: **Dans un premier temps** [...] **dans un deuxième temps** [...] (ST, p.5).

The first example is a proverb that is commonly used in French but has no equivalent in Persian. We are therefore obliged to translate it in a way that is understandable to the Persian-speaking reader, so that the translated text does not contain an inconsistent part.

In the second example, the expression “dans un premier/deuxième temps” (at first, secondly) is used a lot in French but in Persian it is used otherwise. For this kind of sequential actions in Persian, we use adverbs like “premièrement, deuxièmement, etc.” (first, second, etc.) Or expressions like “la première/deuxième étape...” (the first/ second step ...). So we chose the closest equivalent of the expression.

**Adaptation:** Consists of taking the difference between the cultural realities of each society into account to express the same effect. J.-P. Vinay and J. Darbelnet describe this technique as the “extreme limit of translation”<sup>8</sup>.

Exemple 1: En soustrayant [...] de **3e pilier**, etc. (ST, p.22).

Exemple 2: [...] **quotient familial** [...] (ST, p.21).

The title of the book, *Modéliser par l'exemple*, shows that it contains examples. The problems presented in the book are indeed concrete examples in the field of wages, insurance, tax and accounting.

It is quite normal that certain factors in the calculation of taxes vary from one country to another. But because of a completely different tax-at-source system in Iran, we must first find a good

<sup>8</sup> J.-P. Vinay et J. Darbelnet, op. cit., pp. 52-54



equivalence for the “troisième pilier” (third pillar insurance) and “quotient familial” (family quotient), and then explain their application in the formulas. This could be done either in a postscript or in the body of the text itself.

In summary, we have tried to give some examples about the chosen strategy of our translation, which is based on Vinay and Darbelnet techniques. In order to respect the limits of this research, we have not mentioned all of them.

We have tried to show the differences between two languages to present the difficulties that occurred during a technical translation, and to propose solutions for solving them.

These methods are not only applicable to this particular technical text, but also to any type of technical text. Transposition and modeling are the most used techniques that correspond to the structural change of the source.

In previous parts, we made it clear that one of the characteristics of the technical texts is the use of a terminology specific to each field. In this case, it is obvious that the use of the calque and the loanword has also been remarkable.

## CONCLUSION

We tried to translate a part of a technical text about computer science from French to Persian. To succeed in this task, perfect mastery of the languages of departure and arrival were critical. Next, the translator had to have knowledge about computer science in the general sense of the term, and a perfect apprehension of the field concerned. Good knowledge of terminology, of the target audience for translation, plus strategic competence of translating helped him solving translation problems.

The translation of scientific texts is not simply the word-by-word translation of a text; it's a question of aiming the comprehension of the subject by the people who could be interested in the text, and taking their level of prior knowledge into account. It, therefore, requires the clarity, coherence, and precision of the phraseology in order to establish the communication between the target audience and the text.

Indeed, the translation of a technical document seems difficult without having passed training on the subject, but here, we proposed solutions and strategies that can help those who have not been trained in the technical field, to fill this gap.

In addition to the technical and cognitive skills, the research methodology, the know-how of searching information on the Internet, could also facilitate the work of the translator.

The correct use of dictionaries is an important skill for translators; we consulted several general and technical dictionaries for the translation of the first part of *Modéliser par l'Exemple*. In addition, we referred to several books and articles in Persian, English and French to understand the concepts related to computing and accounting.

It should be noted that we based our research on the seven techniques of Vinay and Darbelnet, one of which was Loanword. In today's modern industrial life, where new technologies replace one another at a rapid pace, their terminology and tools also find their place in our language. The origin of these terminologies is often found in the country's inventory of technology, and sometimes in developed or even overdeveloped countries. This is why loanword is frequently used in the translation of technical texts.



The grammatical structures of French and Persian are vastly different and it created problems, to solve which we relied on transposition and modulation.

At the end, we can conclude that having a general knowledge, knowing the specific terminology, having the specialty in the concerned field of the translating text, consulting the experts, the documentary researching and choosing a good strategy for translation are the most important factors in the translation of the technical works.

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