

## Toward Technical Translation Competence

### نحو كفاءة الترجمة التقنية

## Les compétences requises pour maîtriser la traduction technique

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### ملخص

تهدف الدراسة إلى تحديد الكفاءات الضرورية للتمكن من إتقان الترجمة التقنية بالإضافة إلى العناصر النفسية الفسيولوجية المساهمة في أداء المترجم وتمكنه من حل المشاكل التي يواجهها أثناء ترجمته للنصوص التقنية. وبعد بعد تحديد المفاهيم الأساسية المتعلقة بالكفاءة وشرحها وشرح العناصر الفسيولوجية الضرورية بالنسبة للمترجم التقني، تقترح الدراسة حلولاً لتخطي مختلف صعوبات المتعلقة بترجمة المصطلحات التقنية، وكذا تنمية الكفاءات وتطويرها من أجل تسهيل عملية الترجمة وإتقانها. ولقد تم الاستناد على النتائج التي وصلت إليها الباحثة "هورتادو أمبارو ألبير Hurtado Amparo Albir" ونموذج مجمع The PACTE Group: اكتساب الكفاءة الترجمة وتقييمها لتنمية الكفاءات المذكورة آنفاً والعناصر النفسية الفسيولوجية وتنميتها من منظور معرفي وما وراء معرفي، بغية الخروج بمجموعة من الحلول والتوصيات التي يمكن أن تطبق على الصعيد الفردي؛ أي أن يستثمرها المترجم التقني خبيراً كان أو مبتدئاً، أو أن يستعان بها في تكوين المترجمين وخاصة في حصص ترجمة النصوص التقنية.

الكلمات الدالة: الكفاءة؛ الترجمة التقنية؛ المصطلحات التقنية؛ العناصر النفسية الفسيولوجية.

### Abstract

The present study aims at identifying the competences required to master technical translation in addition to the psycho physiological components reinforcing the translator's performance and enabling him to solve problems related to technical translation. The study identifies and clarifies the basic concepts related to translation competence and psychophysiological components that are necessary for any technical translator. The research suggests recommendations and solutions to the difficulties encountered when translating technical texts and to competence development. The problematic was investigated from a cognitive and metacognitive perspective departing from "Hurtado Albir Amparo" and the "PACTE Group" achievements in order to apply their results and recommendations at the individual level and in the training of translators in general and technical translators in particular.

**Keywords:** competence; technical translation; technical terms; psycho physiological components; metacognition.

## Résumé

Le présent article vise à identifier les compétences requises pour maîtriser la traduction technique et les composants psychophysiologiques renforçant la performance du traducteur et lui permettant de résoudre les problèmes liés à la traduction technique. L'étude identifie et explique les concepts fondamentaux liés à la compétence en traduction et aux composants psychophysiologiques nécessaires à tout traducteur technique. La recherche suggère des recommandations et des solutions aux difficultés rencontrées lors de la traduction de textes techniques et des méthodes pour développer la compétence. La problématique a été étudiée d'un point de vue cognitif et métacognitif. Le point de départ est les résultats de «Hurtado Albir Amparo» et du «Groupe PACTE» afin d'appliquer leurs recommandations au niveau individuel et dans la formation des traducteurs en général et des traducteurs techniques en particulier.

**Mots-clés:** compétence; traduction technique; termes techniques; composants psycho-physiologiques, métacognition.

## Introduction

The notion of competence is quite modern in the field of translation studies. «It had been employed in linguistics in the mid 1960s (communicative competence) and in the field of work psychology (professional competence) in the 1970s» (Albir, 2015, p.257) In the field of linguistics and applied linguistics, in particular, the term “competence” was used to refer to the human being instinctive knowledge enabling the speaker to use, understand and speak the mother tongue or the first language. Linguists meant: «The implicit system of rules that constitutes a person’s knowledge of a language» (Longman dictionary of language teaching and applied linguistics, 2010, p.103).

Then, specialists in psychology decided to adopt the notion of competence and project it on human resources management. The last decades witnessed a growing interest in translation competence research.

Translation studies researchers shed light on competence, its acquisition and assessment. Studies focused on competence building models, competence-based translator training and competence operationalization and optimization. The PACTE Group did not excogitate the competences required only, yet stressed the importance of particular psychophysiological components. So, what are the necessary technical translators’ competences, sub-competences and psycho physiological components?



## 1. Translation competence

### 1.1 Translation competence definition

Many theorists and translation didactics specialists worked on establishing a comprehensive definition for the concept of translation competence. This latter has been defined differently by different scholars and researchers: «The problem is not just to account for data, it is also to approach some kind of consensus among the translation community, it should orient research and it should ideally focus training. In all of this, a definition can look as scientific as you like but it can never really remain neutral.» (Pym, 2003, p.489)

There is not any unified definition of competence concept in translation studies. Translation is characterized by a complex nature and researchers dealt with it from different perspectives. The need to investigate it from different angles stems from its particularity and from the philosophy and approaches each theorist adheres to. The different domains and specialties of translation; technical, legal, medical, pharmaceutical and literary require the mastery of different skills and competencies varying according to the target text subject field, type and receptors.

### 1.2 Translation competence historical overview

Although translation competence started to be empirically studied by the end of the nineties and the beginning of the new millennium, it had been mentioned and even investigated by scholars and theorists centuries ago. One of the first scholars who took the initiative to analyze translation competence components is **Al Jahidh**.

### 1.3 Al Jahid hand translation competence

**Al Jahiz** achievement is embodied in the set of translator's conditions he established in his theory of translation, which was explained and grounded in his book **Al Hayawan**. **Al Jahidh** emphasized the importance of mainly seven conditions that a translator must fulfill. The conditions include the necessary and basic translation competencies for a translator. «According to Al Jahidh, a competent translator masters both of the source and target language. However, each of the two languages attracts the other, takes something from it and adds its characteristics' to it and impedes its function. » (Jackson, 84, p.103)

We notice that **Al Jahiz** had referred to linguistic interference centuries before linguists discovered this phenomenon and started to study it. Although he did not master any language besides Arabic, he could predict



the problems bilinguals and hence translators suffer from; the influence of each language linguistic system on the other language. Each language takes from the other language and becomes influenced at the level of morphology, syntax... **Al Jahiz** also insisted on the following: «The translator's subject field knowledge level must equal the author level, clarity of expression, a sound knowledge about the author's style, respect of the source and target language and culture.» (Carr, 1993,p.23-24)

So, the translator must be a specialist, a scholar or an expert in the field in which he translates. He also emphasized the importance of reformulating with a clear concise style as he is the writer of *The Book of Clarity and Clarification*. The translator bears the obligation to do justice to the author and this is the reason why he must have good knowledge about the writer's style and interpretations. Fidelity is never reached at the expense of the target language and culture respect. At this point exactly, we can confirm that **Al Jahiz** exceeded many linguists and translation theoreticians by centuries since he stressed the importance of knowing the target culture customs, norms and mode of life.

In short, **Al Jahiz** highlights the mastery of the source and target languages, culture, text subject field and clarity of style, as well as knowledge about the author's style. He was also strict when setting conditions to be fulfilled by translators. In his book **Al Hayawan**, it seems quite impossible to master all these competencies and skills.

#### 1.4 Reiss translation competence concept

Centuries later, **Katharina Reiss** started to reflect on translators' training and the importance of basing the training on competence acquisition alongside learning objectives. She designed a syllabus in which she targets translation competence and stresses communication importance. According to her syllabus, which was designed in the late seventies of the twentieth century: «The course also hinges on the four areas of competence essential for translators: SL competence, TL competence, subject-matter competence, and translational competence.» (Shaheen, 1991, p.120)

Linguistic competence is the first competence to be acquired and translation can never be achieved without it, yet the transfer competence and the ability to reformulate and convey the message are what differentiate translators from bilinguals. Unlike **Al Jahiz**, **Reiss** does not advocate the necessity of being a specialist or an expert in the field to



translate a specialized text. **Reiss** believes that translators can acquire basic knowledge about specialized fields and reinforce this knowledge by documentation skills and cultural background. «This competence can be acquired through the study of a specialized discipline. Reiss provides such a component in the first stage of her syllabus by including the study of specialized areas alongside cultural studies of the foreign language and documentation.» (Shaheen, 1991, p.101)

Researchers were inspired by Reiss and other scholars' endeavors to identify translation competence and set systematic solutions for its development, especially in specialized translation. Their studies were neither empirical-experimental nor holistic. Some studies highlighted the professional translator characteristics such as **Al Jahiz**, who had never been a practitioner but theorized based on deep reflection. Others focused on translators' training like **Reiss** believing that translation competence is acquired and not innate.

### 1.5 The pact group searching translation competence

From the late 70s, many proposals of competence models were suggested, yet the real empirical studies were carried out by the PACT Group starting from 2000. «The PACTE Group was established in 1997 to carry out research about translation competence acquisition and assessment.» (PACTE Research Group, 2019) PACTE researchers departed from the process-oriented research approach to achieve didactical objectives.

### 1.6 The pact group translation competence definition

Amparo Hurtado Albir is a Spanish professor, who published books and articles about translation theory and translators training. «**Albir** is the principal researcher in PACTE research group.» (PACTE Research Group, 2019) After searching translation competence and finding variant definitions focusing on different competence components without reference to an empirical study in most cases, **Albir** suggested the following definition in 1996: «The ability to know how to translate.» (Albir, 2017, p.18)

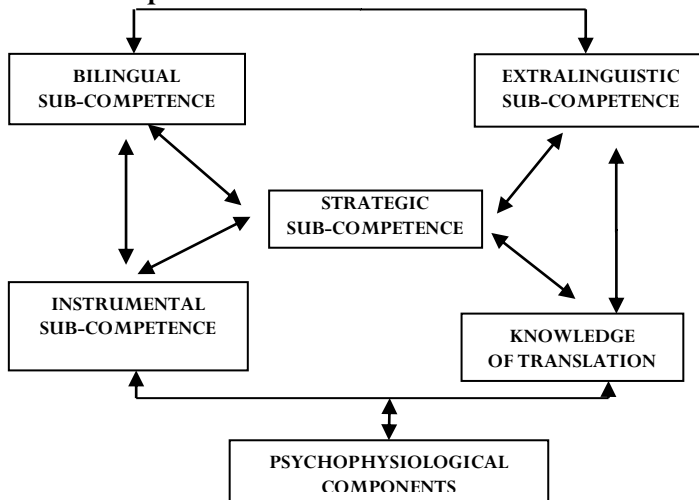
**PACTE** definition of translation competence has been developed through time and hence expressed as: «The underlying system of knowledge, abilities and attitudes required to be able to translate. It requires five sub competences» (Albir, 2017, p.36) The PACTE Group definition is based on cognitive science: «From a cognitive perspective, competence could be seen as declarative and procedural knowledge from a variety of cognitive



domains accumulated through training and experience and then stored and organized in a translator's long-term memory» (Shreve, 2006, p.28).

Translators consciously learn and acquire the fundamental knowledge required to obtain the ability to translate such as learning a foreign language grammar rules and culture and get trained to obtain the ability to know how to translate. This knowledge, which was gradually acquired is stocked in the translator's long-term memory in form of different organized cognitive schemata interacting with each other and with the source text information to provide the necessary data enabling the translator to comprehend and reformulate. In short, translation competence encompasses five sub competences in addition to psychophysiological components. Translation competence is the basic knowledge, capacities and attitudes to complete the task of translation.

### Translation sub competence



**Figure 1: Translation Competence Model.**

*Reference: Hurtado Amparo Albir, 2017.*

*Searching Translation Competence by Pacte Group, p.41.*

The diagram clarifies the basic five components or sub competences and how they interact and relate with each other besides the psycho physiological components. We have on the top bilingual competence, which refers to the translator's mastery of both of the source and target language, and extra-linguistic competence or the translator knowledge and general culture. It also includes an encyclopedic background about the subject field. Third, knowledge of translation sub competence; the



translator must have knowledge about translation as a field of study, science or art and profession. Fourth, instrumental sub competence: «use of documentation resources and information and communication technologies applied to translation.»(Albir, 2017, p. 40) Translators need to update their knowledge about the different new translation tools and technologies such as databases, terminological banks, translation software's... as well as learning how to use them and carry out the appropriate documentary research to facilitate the translation task. Fifth, strategic sub competence; there are arrows referring to its relation to the previous sub competences and psycho physiological components. Hence, the strategic sub competence is the most important one as it gathers all the sub competences together and creates their interaction in order to overcome translation difficulties. It is a problem solving skill.

### 1.7 Psycho physiological components

Psycho translation contributed a myriad of studies to the development of translation studies. It created a new turn in the field by stressing the translator psychology. The study of this latter requires a specific field contribution which is physiological psychology.

Translation studies focus on this discipline to identify and study the translator's psycho physiological components. We need first to define this discipline: «The branch of psychology that studies biological processes and their interaction with mental states and behavior with special emphasis on the central nervous system, neurochemical, and hormonal processes. It includes the fields of cognitive neuroscience, behavioral neuroscience, psycho- neuroimmunology, and behavioral endocrinology.» (Matsumoto, 2009, p.102)So, this is the field that provides a purely scientific study and an explanation of human behavior in general and technical translator's behavior in particular.

Translators' physiology is crucial to their performance of this cognitive and mental activity. Hence, the **PACTE Group** research borrowed this field achievement in order to establish a real empirical study of translator competence with reliable and credible results. Consequently, the study could identify the exact psycho physiological components that must accompany the translation sub competences.



## 2. Technical translators competence

Before acquiring all the above-mentioned skills and competences, a translator needs to know his flaws, shortcomings strengths points, technical translation requirements and find the right way to learn and develop them.

### 2.1 Technical translator metacognitive awareness

The translator's awareness of his own process of learning, abilities and deficiency is called in the field of psychology: metacognition. The term was introduced to the domain of translation studies and applied and developed in translation didactics to analyze translation trainees' ability to take part in their process of learning. Metacognition is defined by Schraw and Dennison as: «an individual's knowledge and control over one's own cognitions» (Hashempour & Ghonsooly, 2015, p.61). It requires strategies obtained and applied consciously or unconsciously in any cognitive process such as learning or translating. It covers the translator's ability and knowledge about his cognitive processes, their monitoring and evaluation.

Metacognition components were categorized by Schraw as follows (1994): «declarative knowledge or the knowledge about self and strategies; procedural knowledge which is the knowledge about how to use strategies and conditional knowledge which relates to knowledge of when and why to use strategies». (Hashempour; Ghonsooly, 2015, p.61) Besides, **Brown** (1978) states that: «metacognition has two main components: knowledge of cognition and regulation of cognition.» (Yanqun, 2015, p.71) Translator metacognition knowledge is the translator's awareness of translation as a mental process and its requirements. It involves the translator's ability to define his own capacities, competences, skills, strategies, problem solving as well as the reason, conditions, cases and methods of using certain strategies. Translator's metacognition development is crucial as translators face difficulties translating technical texts, they have to work on developing their metacognition knowledge to establish the right methodology and set the appropriate goals to cover their deficiencies, strengthen their capacities and enrich cognitive background (basic knowledge about technology) on a continuing basis; especially that the rapid development and advancement of technology makes technical translators face new types of problems and difficulties. Hence, technical translators have to be aware of how to adapt to new changes, discoveries and inventions related to the field of





technology (mechanical, electronic, electrical, industrial engineering...). Translators need to be lifelong learners.

## 2.2 Technical translation particularity

Technical translation particularity awareness plays a crucial role in the process of translation as well as the identification of competences required to fulfill the task. «We can describe technical translation in very basic terms as a communicative process, or rather, a service provided on behalf of someone else for a particular purpose and within a particular situation and environment. In fact, the constraints and circumstances affecting technical translation are really quite similar to those affecting technical writing». (Byrne, 2006, p.23)

Technical translation is the translation of technical texts. It is based on providing information to a specific audience. It is the reproduction of a technical text regarded by the target culture readers as an original. The translator must be aware of his audience, target culture and technical writing rules and particularity to assure that the translation plays its communicative role effectively.

According to the **National Writer Union of the United States**, the term technical writing covers: «Technology education, which refers to technical documents written to non-technical audiences such as manuals, reports for lay readers and general interest articles. The second type is traditional technical writing involving writing for a technical audience (repair and maintenance manuals, programming guides and technical specifications). Third, technology marketing (marketing materials, brochures, newsletters...)» (Byrne, 2006, p.48) Only the second type entails the writer or translator's high level of specialization. Since translated technical texts are technical documents, the following must be taken into consideration by technical translators: «Technical writing is direct, informative, clear, and concise language written specifically for an identified audience. The content must be accurate and complete with no exaggerations. To deliver the intended message, the text must be objective and persuasive without being argumentative» (Technical Writing Guide, 2007, p.1)

Translators need to be cautious and careful concerning word choice, clarity and terminology, which has to be either explained and simplified when writing for lay readers or respected when communicating documents to specialists. Although some specialized terms became general terms used by



the general public. «The terminological density of texts varies according to their level of specialization: while more specialized the text, the more the terminology it will have. Thus, the second function of terms is the transfer of specialized knowledge» (Cabr ,2015, p.358)

Texts produced to communicate with experts and specialists such as engineers and technicians contain more specialized terms or subject-field-specific terminology than texts written to the large public. These texts are usually simplified and contain less technical terms. These latter are replaced by descriptive terms and simple explanations. Thus, according to Cabr : «Terminology can be divided into different levels of specialization depending on situation and user. The highest level would be that at which communication takes place between experts and the lowest level when information is aimed at a layman. » (Marklund, 2011, p.7)

One of the main objectives of technical communication and hence technical translation is to assure the user's ability to manipulate the product without damaging it, especially that great deals of technical documents are user's guides written for a non-specialized audience. Hence, technical translators need to examine readers' level, knowledge as well as the communicative function the document has to fulfill.

Clarity is one of the most important features of technical documents. Hence, sentences are usually short and concise; redundancy and repetition are never relied on in technical writing. In addition, tables, drawings, graphics, schemata and figures play an essential role in technical documents. «Graphics in a document make it possible to communicate large amounts of information quickly and clearly and their presence in technical documents is often regarded as essential».(Byrne, 2006, p.49)

Technical translator's knowledge of technical writing and technical documents is the gateway to technical translation alongside with subject field knowledge which can be obtained by documentary research which is the key to the mastery of terminology and content.

### 2.3.1 Technical translator psycho physiological components

Translators cannot accomplish without the interference of some cognitive components as well as a specific attitude and the appropriate mechanisms. The PACTE Group defines psychophysiological components as: «The different types of cognitive and attitudinal components and psychomotor mechanism»(Albir, 2017, p.71). Translators are not typical, yet



they must have particular mental capacities and a different attitude that can be embodied in the following: «They include: (1) cognitive components such as memory, perception, attention and emotion; (2) attitudinal aspects such as intellectual curiosity, perseverance, rigor, critical spirit, knowledge about and confidence in one's own abilities, the ability to measure one's own abilities, motivation, etc.; (3) abilities such as creativity, logical reasoning, analysis and synthesis, etc.»(Albir, 2017, p.348)

Speaking of cognitive components, memory is emphasized as it represents the stock where information, encyclopedic knowledge, vocabulary and terminological backgrounds are stored (long term memory). Perception can never occur without memory storage and its interaction with text information, data and vocabulary which results in the activation of the corresponding cognitive schema enhancing the activity of the working memory. Translators also need to be most attentive and focus when translating to be capable of highlighting the keywords and know how to deverbilize and connect them to previous knowledge with the purpose of comprehending and reformulating.

Translators need also to be self-confident and determined during the process of translation. Curiosity is needed because arising more questions means getting one's knowledge enriched and hence facilitating the stage of comprehension. Besides, translators' creativity is crucial in many cases. Literary translation is not the only field concerned with creativity, even technical translation requires creativity. Sometimes we need to simplify the information, to use a lower or even a higher register or to convey the technical information by taking the target language stylistics and culture into account when the technical text is used in the field of marketing or publicity.

## **2.4 Documentary research competence**

Besides the sub competences and psychophysiological components discussed above, we have documentary research skills.

### **2.4.1 Documentary research definition**

A technical translator is supposed to have a basic knowledge of technical terminology and an understanding of technology basics and fundamentals. We have briefly referred to documentary research when explaining instrumental sub competence, because it requires the ability to use translator tools as well as methodological competence, which involves



the procedures, principles and methods for the good and appropriate research about the text subject filed. Documentary research tools are defined by **Gile** as: «The translator's use of the external tools to acquire the necessary knowledge allowing to reach the level of comprehension of the source text and adequately reformulate the source text content in the target language»(1994,p.76)

Since the translator is not -in most cases- an expert in the subject field, he needs to carry out research systematically and methodically to overcome the difficulties and deficiency related to the cognitive background, subject field knowledge and terminology. «The necessity of proceeding to a documentary research depends on the relationship existing between the translator and the text to be translated»(Durieux,1990,p.669) the translator needs to identify his level of understanding of the source text, the text axes, the text keywords, ambiguity points and the steps to be followed during the research.

#### 2.4.2 Documentary research methodology competence

The basic rule for documentary research is to move from general to specific and translation theorists and researchers established many different methodologies. Among them, we have the documentary research methodology proposed by **Daniel Gile** in 2005. According to this latter, the research is carried out depending on the knowledge acquisition sources. Sources can be documentary or human: «Documentary sources are texts (in paper or electronic format) they can be terminological such as glossaries, dictionaries, terminological databases... or non-terminological; fundamental texts, other diverse texts...»(Gile, 1994, p.76)

The focus should be on understanding the concepts, terms and sentences rather than finding equivalents. Transcoding maybe the right way to translate units of measure, but it never serves in understanding the text. The translator should be a good and skillful reader who knows how to choose the textsto read.Reading should start with the easiest documents (basic and fundamental books, general encyclopedias, general dictionaries) enhancing the translator's comprehension and then moving to the more specialized documents (specialized dictionaries, specialized books and magazines...) providing the exact technical terms in their contexts so that the translator learns how to make use of them. Reading should be also limited; translators must respect the deadlines and hence read what is



necessary and avoid diving in highly specialized texts that may complicate the task.

**Gile** borrowed **Plassard** definition of human sources: «document lists and terminologists working in the same organization as the translator, specialists in the text subject field that he may consult at a regular or a daily or ad hoc basis, translators...» (Gile, 2010, p.190) What controls the term accuracy is not only the concept it designates but the usage. Hence specialists can help the translator both comprehend the concepts and find the right equivalents that achieve the communicative function. At the stage of consulting human resources, the translator's communication skills and quick-wittedness are highly required; self-confidence, asking questions with clarity and concision, tact, friendliness and team camaraderie.

### Conclusion

Basically, despite the divergence of opinions about translation competence, we believe that the translation of technical documents particularity imposes the mastery of certain sub competences, and skills as well as a set of psychophysiological components:

- Linguistic and extra-linguistic knowledge; subject field knowledge;
- Documentation skills as well as the use of tools;
- Transfer skills; metacognition awareness, which is essential for the translator skills and competence learning and development as competence is acquired and not instinctive;
- Technical translator's awareness of technical documents writing rules, techniques, style, audience, and function;
- The translator's determination, self-confidence, strong memory and scientific curiosity.

The need and importance of each sub competence and psychophysiological component in technical translation differ according to the source and target language, the subject field, audience, the translator's level, competence, expertise, attitude and conditions of translation.

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