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The Translation of Transparent Scientific Terms from English to French and Vice Versa

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ABSTRACT

Transparent terms are words that share the same spelling and the same meaning in different languages, such as: robot, hotel, zoo… All those words are the same both in French and English for example. Those words seem to be easy to translate both ways; However, some terms don't apply to this rule, which are scientific terminology. In mathematics, 'natural numbers' in English refers to all the positive numbers starting from 1 to infinity, but in French, the set of 'nombres naturels' also includes 0. This example shows two terms that are similar in spelling but different in meaning, which may lead to a wrong translation if the translator doesn't have a scientific background. Transparent terms are not reliable in scientific translation; translators should always know exactly the meaning of every term. Moreover, bilingual readers and scientists should be careful and never assume the meaning of these words based on their similarity, especially in exact sciences. This paper explores the different types of transparent words and the pitfalls of assuming their meaning based on their similarities, It also includes some difficulties and strategies of their translation.

1. Introduction

It is common knowledge that translation is a tool that helps one learn the information presented in a foreign language; it is an inevitable step towards having a complete understanding of the content of anything written in a different language. It's a procedure that starts with explaining the foreign text and then rewriting it in the target language. During this procedure, the translator can find some terms in the original text that have a meaning in the second language, which can make him assume they are the same. Those words are called 'transparent words'.

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Using the same term as an equivalent is always tempting and looks logical since it saves a lot of time and effort for the translator. Hence, dealing with this type of word can be very tricky and dangerous, especially in a scientific context if the translator doesn't have enough knowledge of the specialized content of the text being translated.

Sometimes, this transparency could be deceptive since similar spelling does not always imply similar meaning; even though some of those pairs have the same sense, the majority of these pairs are 'deceptive cognates' or 'false friends'.

This is the theory we will try to prove in this article using some concrete examples from two fields of knowledge: mathematics and medicine. Starting with exploring the different types of transparent words and how to deal with each one of them. In addition, we will try to present some serious challenges of translating transparent terms and the pitfalls of assuming their meaning based only on the similarities across languages.

In this article, we will narrow our focus to the translation between English and French in both directions, which makes it worth mentioning the historical relationship between the two languages, especially the borrowing in the scientific fields, which drives translators to make wrong assumptions.

It is worth noting that most of the examples given in this article to illustrate the discussed ideas are from either the medical field or the mathematical field. We based most of the results of this article on the terms found in 'the unified dictionary of mathematics and astronomy terms (English- French -Arabic)' or in 'the unified medical dictionary'.

2. Transparent Words and Cognates

Transparent words are sets of words belonging to different languages but exhibiting a certain degree of formal similarity, they are also referred to as friends or cognates, which can be true or false, depending on whether there is indeed a significant degree of semantic overlap, on the one hand, or only a deceptive partial overlap or no overlap at all, on the other (Brdar, 2024).

They are words that are similar in form across different languages. These words usually have the same or very similar spelling, pronunciation, and meaning. Some examples of transparent words can be found in Table 1:

Table 1. Examples of transparent words with their similarities

English	French	Similarities
Action	Action	Same spelling + same meaning + different pronunciation
Diabetes	Diabète	Similar spelling + same meaning + different pronunciation
Banana	Banane	Similar spelling + same meaning + different pronunciation
Journal	Journal	Same spelling + different meaning + different pronunciation
Air	Aire	Similar spelling + different meaning + same pronunciation

In linguistics, precisely in the field of lexical semantics, transparency refers to the ability to understand the meaning of a word based on its constituent parts. But in cross-linguistics, it describes the similarities between two words from different languages.

Talking about transparent words, it is imperative to introduce the notion of "cognates," which are "words that have similar meaning, spelling, and form, and have been inherited from the same ancestor language" (Whitely, 2002). Transparent words and cognates share almost the same definition; the only difference between them is that cognates are "words that have a common etymological origin. The very word cognate derives from the Latin cognatus-blood relative." (Otwinowska, 2016). On the other hand, transparent words don't necessarily share

the same origin, loanwords are also considered transparent words even when the two languages aren't related.

In other words, "cognates in two languages can be defined as historically related, formally similar words, whose meanings may be identical, similar, partly different, or, occasionally, even wholly different. Words with different meanings where the formal similarity is purely accidental, as in English pain –French pain, cannot be considered cognates." (Ringbom, 2007) The latter type is called transparent.

2.1 The Types of Transparent Words

As mentioned above, all transparent words have almost the same spelling and/or meaning across languages. Which means all their types share this property; however, some characteristics help distinguish the types.

It is crucial to mention in this paragraph that there is no standard classification of the transparent words; researchers have different points of view, especially regarding the types of cognates. But here we chose to present the classification that we see best based on many resources and taking into consideration the purpose of translation.

2.1.1 Loanwords

Loanwords are words borrowed from one language into another, often as a result of economic, cultural, or social interactions between language communities. They are usually integrated into the recipient language, retaining their original form, undergoing, however, some phonological or morphological modifications. For example, the word 'energy' from the Greek 'energeia' came to English from the French word 'énergie'; and also the word 'analyze' came to English from 'analyser'.

They differ from cognates in the fact that one word is the origin of the other, while cognates share a common root from an ancient origin language that was developed separately in each language.

The Table 2 contains some loanwords from the medical and mathematical fields borrowed from French to English or vice versa:

Table 2. Examples of loanwords English-French with their meaning

English	French	Meaning
Malaise	Malaise	Discomfort or unease.
Metric	Métrique	Relating to or based on the meter as a unit of length.
Blackout	Le black-out	Temporary loss of consciousness
Stress	Stress	The body's response to physical, mental, or emotional pressure
Scanner	Scanner	An instrument that takes pictures of the inside of the body

2.1.2 International Words or Internationalisms

International words are words used in many languages with slight variation in form and meaning that are often related to technology or culture, such as 'computer' or 'internet'. They are also loanwords, but the key difference here is the widespread adoption and relatively consistent meaning across languages; thus, there is no agreement about the number of languages that have to adopt these loanwords in order to make them internationalisms.

Ringbom affirmed that:

> Technical and scientific terminology across Western and many other languages provides a large number of international words with only one meaning, which is

> generally transparent across Western languages. The transparency of such low-frequency special items means that learning these cognates presents little difficulty, especially since the Latin or Greek origin makes the terms similar in form practically everywhere. (Ringbom, 2007)

Internationalisms are often based on Greek and Latin stems and come from a variety of sources, including the historic interrelatedness of Indo-European languages, mutual borrowing, borrowing from non-European languages, linguistic conventions in institutions such as the church, scientific and technological standardization, and international news exchange. (Otwinowska, 2015)

2.1.3 True Cognates

True cognates are words from different languages that share a similar form, meaning, and a common etymological origin. These words evolved from the same root in a shared ancestral language and are etymologically related, with semantic meanings and ranges of meaning that completely or almost completely overlap.

An analogy can be made here with true friends as true cognates could be compared to true friends across languages.

Table 3 contains some examples of French-English scientific true cognates with their meaning and shared origin:

Table 3. True cognates French-English with their meaning and origin

English	French	Meaning	Origin
Biology	Biologie	Study of living organisms	Greek (bios+logia)
Chemistry	Chimie	Science of substances and molecules	Arabic/Greek (al-kimiya)
Physics	Physique	Study of matter and energy	Greek (physis)
Mathematics	Mathématiques	Study of numbers and structures	Greek (mathematica)
Molecule	Molécule	Smallest unit of matter	Latin (molecula)

2.1.4 False Friends or Deceptive Cognates

Designated as false friends, the lexical units of different languages that are recognized by bilinguals as being “the same thing” (Caroll, 1992). False friends in comparative linguistics is a term describing words in different languages which resemble each other in form, but which express different meanings; also called false cognates [or deceptive cognates], and often known by the French equivalent expression faux amis /fopzacmip/. Examples include French ‘demander’, which translates into English as ‘to request’ not ‘to demand’, and Italian ‘caldo’, which translates as ‘warm’, not ‘cold’. (Crystal, 2008).

Cognates classed as deceptive need not have totally different meanings: the meanings often overlap in that some senses of the translated word correspond to the cognate original word, while others do not. (Ringbom, 2007)

Deceptive cognates may be divided into two types that Batchelor & Offord called: 1. *Deceptive cognates proper*, in which the meanings are completely unconnected; and 2. *Partial deceptive cognates*, in which only part of the meanings of the words coincide. (Batchelor & Offord, 2000).

Roey, on the other hand, named them: 1. Totally deceptive cognates, and 2. Partially deceptive cognates. (Roey, 1990); and this is the name that we chose to employ since it is somehow self-describing.

Totally Deceptive Cognates

When their conceptual meanings totally diverge and they are completely different on the semantic level and have no common meaning, pairs are called totally deceptive cognates.

The next three tables illustrate this type of cognates using the examples of: 'Officious' Vs 'Officieux', 'Physician' Vs 'Physicien' and 'Organic' Vs 'Organique':

Table 4. The difference in meaning between English and French of the words 'Officious' and 'Officieux'

Word	**Officious (ENGLISH)**	**Officieux (FRENCH)**
Meaning	An adjective used to describe the quality of being "too ready to tell people what to do or to use the power one has to give orders.	Unofficial.

Table 5. The difference in meaning between English and French of the words 'Physician' and 'Physicien'

Word	**Physician (ENGLISH)**	**Physicien (FRENCH)**
Meaning	Doctor	Physicist

Source: byjus.com

Table 6. The difference in meaning between English and French of the words 'Organic' and 'Organique'

Word	**Organic (English)**	**Organique (French)**
meaning	related to living organisms	carbon-based chemistry

Source: byjus.com

Partially Deceptive Cognates

Transparent words are partially deceptive cognates when they share one or more conceptual meanings. In this case, there are two possibilities, there may be:

- *Inclusion:* when the semantic space of one cognate is included in that of the other, which means that the same word has more meanings in one language than in the other one while a common meaning exists in both languages, as in the example in Figure 1, where the word 'assurance' has more meanings in French than in English.

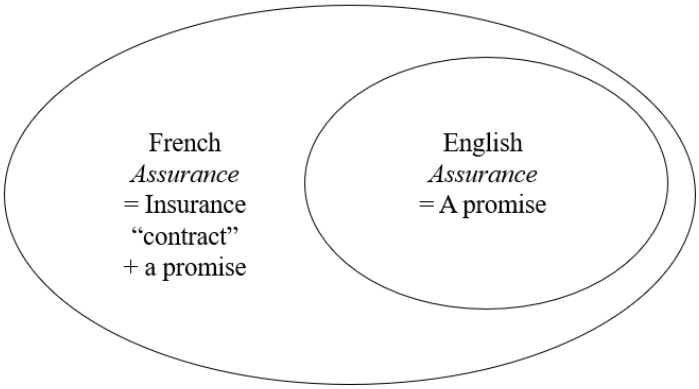

Figure 1. The meanings of the word 'assurance' in French and English

Table 7 presents another example from the mathematical field: the word 'caractère'. In general language, it retains the English equivalent 'character'; however, in statistics, it translates to 'attribute', highlighting the difference between the two terms.

Table 7. The English equivalents of the French word 'caractère'

English	Meaning	French
Attribute	Characteristic on which a statistical study is based.	**Caractère**
Character	The aggregate of features and traits that form the individual nature of some person or thing	**Caractère**

Source: lexique.netmath.ca & byjus.com

Conversely, Table 8 represents an example of an English word from the medical field, which has two equivalents in French which is the word 'condition', it has the same meaning as 'condition' in French, but it means 'état' in the medical context.

Table 8. The French equivalents of the word 'condition'

English	Meaning	French
Condition	The physical situation that someone or something is in and affected by.	État
Condition	An arrangement that must exist before something else can happen	Condition

Source: dictionary.cambridge.org

- O*verlapping:* when there is a common semantic space, but specific extensions of meaning for both cognates, which means that the word has a common meaning in two languages in addition to different meanings in each language, as in Figure 2.

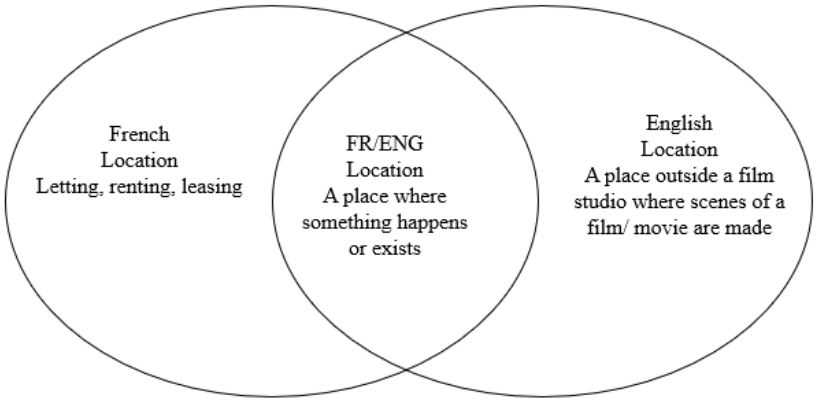

Figure 2. The meanings of the word 'Location' in French and English

2.1.5 Accidental Cognates

Accidental cognates are words that have no apparent etymological relationship between the pairs, but do have a striking similarity in form. It is difficult to determine how and why this combination of letters ended up existing in two different languages with two different meanings.

Hence, the type of these words is sometimes different, it can be a noun in English but a verb in French.

They could also be called 'purely incidental homonyms' across languages, since they are similar in form and even sometimes identical, like homonyms. What makes these homonyms 'purely incidental' is the lack of any shared origin. They simply arrived at the same sound and spelling through independent paths of linguistic history.

These pairs can be compared to pairs of people who look the same but are from completely different parts of the world and share no ancestry.

Table 9 illustrates this type of transparent word with some examples of pairs that have completely different meanings.

Table 9. The difference in meaning between English and French of some accidental cognates

English	Meaning	French	Meaning
Pain	A feeling of physical or emotional suffering	Pain	Bread
Figure	A number or a shape	Figure	Face
Journey	An act of travelling from one place to another	Journée	Day
Eventually	At a later time	Eventuellement	Possibly
Actually	In fact	Actuellement	Currently

2.2 Misunderstanding Transparent Words

The clear similarity between the transparent words makes it difficult to discern their meaning differences. It is not immediately obvious that the English word "cave" is not the same as the French "cave"; if you're not familiar with the word in both languages, you may not realize that this sequence of letters has different meanings in the two languages.

Although cognates are important in foreign language learning, they are not to be completely trusted, especially in a specialized field such as medicine. In 2008, a patient died because the interpreter was unaware that the English term 'intoxicated' is far from being equivalent to its false friends in romance languages 'intoxiqué', particularly in French. (Many, 2017)

Table 10. The difference in meaning between English and French of the words "intoxicated" and "intoxiqué" as adjectives.

English	Meaning	French
Intoxicated	Drunk, under the influence of alcohol or another drug.	Ivre
Poisoned	Under the effect of a poison	**Intoxiqué**

Source: dictionary.cambridge.org

Eponyms are another type of false friends that are problematic in the medical field. They usually involve honoring a prominent physician-scientist who played a major role in the identification of the disease (Ferguson, 2014). Which also helps in remembering the name of this disease. The name 'Hodgins disease', for example, is easier to retain than its types, which are: nodular sclerosing, mixed cellularity, lymphocyte-rich, and nodular lymphocyte-predominant (Ferguson, 2014).

However, translating this type of word can be tricky since some diseases change from one language to another. One example is "Lou Gehrig's disease"; in French, it is called "la maladie de Charcot," and both names are eponyms.

What makes eponyms false friends is that proper nouns typically don't change in translation; they are kept as they are. However, in the medical field, this is not always true; the names of diseases aren't always the same.

Relying too much on transparent words can lead to misunderstandings. Sometimes, these words have slightly or completely different meanings or connotations in different languages, cultures, or countries. The word "therapy," for example, is transparent in many languages, however, the types of therapy can vary from one country to another. "Physical therapy" in the US, for instance, doesn't involve the same maneuvers as "thérapie physique" in France. So while the word "therapy" is understandable, the actual treatment referred to is quite different. (Tamimy, 2020)

Misunderstanding transparent words can have serious pitfalls not only for patients, whose lives are endangered, and doctors, but also for the translator who made the mistake, as this can damage their reputation or even result in a costly lawsuit (Terra Translations, 2025).

3. The Translation of Transparent Words in the Scientific Context

Translation is the bridge between societies, it enables the exchanges between them in all manners. Without translation, science wouldn't spread, and scientists wouldn't benefit from other societies' improvements. They would have to repeat the research already done by foreigners just because they can't understand it.

This is why it is of extreme importance to study all the problems and solutions related to scientific translation, and in our case, we are basically focused on the translation of transparent terms within the context of science.

3.1. The Difficulties of Translation

Translation in general has many difficulties that a translator encounters in their work. But in specialized texts, some special additional difficulties should be dealt with to stay faithful to the original text.

3.1.1. The Specificity of Specialized Translation

Exact sciences are very specialized and exact, as their name suggests. this is why every concept has a unique designation. This means that the rules of general translation don't always apply when dealing with a text in a scientific field.

Let's take, for example, the translation between English and French. Assuming the translation of a transparent term based on the similarity of the pair can lead to a serious mistranslation.

By way of illustration, in the "general English", it wouldn't be wrong to use "reciprocal" to translate the French word "réciproque"; however, in mathematics, "reciprocal function" is entirely different than "fonction réciproque" as shown in Table 10. In fact, "reciprocal function" is the equivalent of "inverse function", which is entirely different than "fonction inverse". The reason for this confusion is unknown, but the result of it is a complete mistranslation.

Table 11. The difference in meaning between English and French of the words "inverse" and "reciprocal"

English	Meaning	French
Inverse function	An inverse function or an anti-function is defined as a function, that can be reversed into another function. In simple words, if any function "f" takes x to y then, the inverse of "f" will take y to x.	**Fonction réciproque**
Reciprocal function	The reciprocal is simply defined as the inverse of a value or a number. If n is a real number, then its reciprocal will be 1/n. the reciprocal of a function f is 1/f.	Fonction inverse

Source: byjus.com

Another example of a term that could be mistranslated is the word "frequency" in statistics. Table 11 shows the difference between the English meaning and the French meaning of the word frequency and fréquence, as well as their correct equivalents in the context of statistics.

Table 12. The difference in meaning between English and French of the words "Frequency" and "Effective"

English	Meaning	French
Frequency	The number of times a particular value for a variable (data item) has been observed to occur.	**Effectif**
Effective	Producing the intended results, or (of a person) skilled or able to do something well.	Efficace
Relative frequency	Describes the number of times a particular value for a variable (data item) has been observed to occur in relation to the total number of values for that variable.	**Fréquence**

Source: abs.gov.au & dictionary.cambridge.org

This problem is even more serious in the medical field, where mistranslation can endanger the lives of patients, leading, in some extreme cases, to permanent damage or even death.

3.1.2. Grammar Confusion

Grammar confusion is also frequent, some English words are grammatically different than their similar French ones, especially in three aspects:

- The type of the word (noun, verb, adjective …): The English noun "challenger" is a verb in French.
- Singular/ plural nouns: For instance, the word data in English is plural, whereas in French it is singular, which may lead a French translator to say "the data was conclusive" instead of the correct form: "the data were conclusive".
- Countable/ uncountable nouns: To illustrate, the word 'information' in English is always uncountable; we can't say 'an information' instead, we should say 'a piece of information'; whereas in French, it can be both countable and uncountable.

3.1.3. Collocations

Another type of difficulty worth mentioning is collocations involving cognates; for example, the verb "to control" can have multiple meanings in English, including its meanings in French: to verify (vérifier), to gain the upper hand, or master (maitriser).

In general language or some specialized fields, this polysemy and the resulting ambiguity may not have significant consequences. However, this is not the case in medical language. Does the sentence' the doctor must control a patient's hypertension" mean' the doctor should lower the blood pressure figures of this patient" or' must see him at regular intervals to check his blood pressure"? In French, this multi-referential verb has several possible mono-referential equivalents that differ according to the co-occurrence to which they are attached. Thus, we can have the translations mentioned in the following table (Jammal, 2002):

Table 13. Meanings and translations of the verb "to control"

English	French
To control anxiety	Calmer l'anxiété
To control diabetes	Équilibrer le diabète
To control side effects	Corriger des effets indésirables
To control an edema	Assécher un œdème
To control high blood pressure figures	Réduire ou abaisser des chiffres tensionnels élevés
To control a hemorrhage	Arrêter une hémorragie
To control the anemia	Traiter l'anémie
To control a crisis	Gérer une crise
To control the temperature	Réguler la température corporelle
To control the effects of an overdose	Contrer les effets d'une surdose
To control pain	Maitriser la douleur
To control a pandemic	Endiguer une pandémie
To control the spread of an infection	Limiter la propagation d'une infection

Source: (Jammal, 2002) & examples from the author

The examples of this kind of translation challenge are many, Table 14 illustrates one of them:

Table 14. Meanings and translations of the word "occupational"

English	French
Occupational therapy	Ergothérapie ou thérapie occupationnelle
Occupational disease	Maladie professionnelle
Occupational injury	Accident de travail
Occupational health	Santé au travail
Occupational safety	Sécurité au travail
Occupational stress	Stress professionnel

Source: (Jammal, 2002) & examples from the author

3.1.4. Abbreviations and Acronyms

The last challenge that we can't miss mentioning is the translation of abbreviations and acronyms. Translators should always look for the meaning of these acronyms. 'épilepsie P. M.' is not 'P. M.' epilepsy, as shown in the table below, these are two different diseases with different treatments; which means that this confusion could lead to a mistreatment, which can harm the patient.

Table 15. The acronym E.P.M.

English acronym	English full words	French acronym	French full words	Meaning
P.M. epilepsy	Progressive Myoclonic Epilepsy	Épilepsie M.P.	Épilepsie myoclonique progressive	A group of conditions involving the central nervous system and representing more than a dozen symptoms over time, and the presence of both muscle contractions and seizures.
A.S.	Absence seizures	Épilepsie P.M.	Épilepsie petit mal	Absence seizures involve brief, sudden lapses of consciousness. They are more common in children than in adults.

The same abbreviation P.M. has a different meaning in cardiology, which is pacemaker. Knowing this means the translator of medical documents should always take into consideration the specialty of the text.

3.2. Translation Strategies

Generally, understanding the meaning of the original text is the first step in translation, this becomes more obvious when it is a specialized text with lots of specialized terms. And it becomes even more crucial if those terms are transparent due to the confusion they may create and the difficulties we talked about in the previous chapter. To do so, translators have many tools and strategies they can employ in these situations:

3.2.1. Examine the Context

Whether it is the effect of the domain of the text and its sub-specialty or simply the words constituting the sentence that includes the transparent word we need to translate, the context is always helpful since it helps explain the meaning.

In some cases, the wrong interpretation of deceptive cognates that have totally different meanings can often be prevented because a similar word from one's native language does not fit the context. There are, however, deceptive cognates where the context provides relatively little help for the learner or the translator. The most dangerous false friends for both learners and translators are those that occur in much the same context (Ringbom, 2007).

3.2.2. Consult Specialized Dictionaries

Specialized dictionaries are the best friends of a scientific translator, they contain the right word to use in the right place, either they are paper dictionaries, data bases, glossaries or even one of the dictionaries that contains only the false friends, those tools are crucial for a translator to keep him safe from making a mistranslation especially if he isn't familiar enough with the field of the text he needs to translate. Thus, consulting a specialized bilingual dictionary is an inevitable step in scientific translation.

Nowadays, there are many electronic dictionaries and databases that make it easier to know the definition of any new term. And it would be a loss not to use them.

3.2.3. Check for Standardized Terminology

Each field has its own terminology; linguists have conducted a lot of research over the years to unify terminology and give each scientific concept a unique name related to a specialized field, and this is valid even across languages, usually as loanwords or internationalisms.

Parallel texts are the main tool to execute this strategy, documentary research is an important step to become familiar with the subject of the text being translated and its terminology. And it is always good to acquire new knowledge.

3.2.4. Analyze Collocations and Grammar

Dealing with collocations has two faces; it is a challenge, as we already mentioned when we talked about translation challenges, but it can also be a helpful tool in the translation process. Word combinations can sometimes reveal false friends.

Let's take, for example, the sentence 'expérience réalisée dans un laboratoire'; This word combination gives the word 'expérience' the meaning of a 'scientific experiment', not 'a personal experience', which means that the correct translation is 'experiment conducted in a lab', not 'experience conducted in a lab'.

3.2.5. Consult an Expert

Consulting an expert in the scientific field could also be a good solution to achieve a better understanding of the transparent words of the text. It is also always recommended to get an expert review of the final result of the translation.

In a scientific text, transparent terms can be deceptive; they might look familiar, but they often have very specific meanings in a scientific context. An expert can always make sure those nuances aren't lost in translation, which is crucial for accuracy.

Moreover, inaccurate translations in fields like medicine or engineering can have serious repercussions, potentially leading to safety issues, financial losses, or damage to reputation. An expert's precision can mitigate these risks.

3.3. A Translation Procedure

We can not in any way say that there is a unique exemplary procedure to translate transparent words in a scientific context; however, in the next paragraphs, we will suggest a procedure that we judge could reduce the chances of falling into the trap of a mistranslation.

3.3.1. Determine the Type of the Transparent Word

When dealing with a transparent word in a scientific text, translators should start by determining the type of this transparent term they need to translate, which is not as easy a task as it might seem.

As previously mentioned, the types of transparent words include loanwords, internationalisms, true cognates, false cognates, and accidental cognates.

We also found that loanwords, internationalisms, and true cognates share the same meaning, which means there is no problem in keeping the same term. Especially since we are talking in the context of sciences, whereas in the general language they are to use with moderation; choosing 'to demand' instead of 'to ask' as equivalent of "demander' is not always the best choice, especially in an informal situation.

In order to figure out the type of a transparent word, referring to the components of the word could sometimes be helpful. If it is constructed from some Latin or Greek affixes, it usually keeps the same meaning, moreover, you can even deduce it based on the meaning of these components. In this case, this transparent word is either a loanword, an internationalism, or true cognates; types that we said don't change across languages.

3.3.2. Find the Definition of the Transparent Word

If the transparent word is neither a loanword nor an internationalism nor a true cognate, look for its definition, then look for its equivalent in the target language. There is no other choice than to ignore the misleading similarities and deal with those words like any other scientific term.

Scientists found that the ratio of good cognates to deceptive ones in English and French is approximately 11 to 1 (Hammer & Monod, 1976). This ratio could be seen as insignificant to some theorists; however, for translators of scientific texts with no scientific background, it is a real danger, especially due to the exactitude needed in any scientific field. Translating scientific transparent words without knowing their meaning could be like walking through a minefield.

To illustrate what we said, let's check the term 'nombre naturel', anyone would say that the translation is obviously 'natural number'; in fact, they are not the same, natural numbers don't include the 0 as shown in the table, whereas 0 is a 'nombre naturel' in French.

Table 16. The difference in meaning between English and French of the words "natural number" and "whole number"

English	Meaning	French
Naturel number	All the positive integers from 1 to infinity and are also used for counting purposes. It does not include zero (0).	Nombre entier positif
Whole number	The set of natural numbers and zero. The whole numbers in set notation is {0,1, 2, 3, 4, 5, ….}	**Nombre naturel**

Source: byjus.com

Translators must know the subject they are addressing, not only to successfully master translation problems, but to, first of all, be aware of and identify potential pitfalls," because "even a seemingly minor misinterpretation and mistranslation, e.g. in a package insert, can have serious practical consequences (Berghammer, 2006).

3.3.3. Decide Which Equivalent to Use

This is one of the most important decisions a translator should make while translating a scientific text. It could be based on many factors.

We should emphasize here the importance of the subfield of the term. The French term 'trauma' has two different equivalents in English, depending on the medical specialty. In psychiatry, it is 'psychological trauma' while in traumatology, it translates to 'physical trauma' or more generally 'injury' or 'wound'.

The next table contains some examples of some of those words that have two equivalents depending on the medical specialty:

Table 17. Examples of terms that differ in English based on the medical specialty

French word	**Specialty**	**English**
Trauma	Traumatology	Physical trauma, injury, wound
	Psychology	**Psychological trauma**
Constipation	General medicine	**Constipation**
	Pediatrics	**Fecal incontinence, encopresis**

At this point, the translator should be aware of all of these variables and the different equivalents of the transparent words, so that he can choose the correct one based on the subspecialty of the text.

4. Conclusion

Translating a specialized text has some real challenges, translating transparent terms within those texts is even more challenging and demands a lot of scientific knowledge. However, a translator can always consult a specialized bilingual dictionary, parallel text, or even use the help of an expert in the matter.

Same as in general translation, since specialized translation is one of its types, the first step is to understand the text, choose the equivalents, construct the target text, and finally review the final product to avoid any semantic or grammatical mistakes. The specificity here is that this kind of text demands more focus on the nuances of each term, which is not always evident, especially when dealing with transparent words, which are one of the trickiest components.

To sum up, transparent words are not always semantically transparent, assuming the meaning of a word based on its similarity to another one is not always safe and could lead to a complete mistranslation.

Transparent words are not a solid base on which you can build a translation, especially in the context of science, where exactitude is imperative.

In a nutshell: transparent words are not to be trusted!

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