

Translation of Cultural Elements in Popular Science

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Abstract:

Popular science as a genre aims to disseminate scientific knowledge in a manner that is accessible to both experts and non-experts. While translation challenges in this domain are often assumed to be primarily semantic, particularly related to the rendering of technical terms, this perspective overlooks the significant role of cultural and contextual adaptations. In fact, the process of recontextualisation in popular science involves the reformulation of the same content while taking into account factors such as what information to convey, the communicative function of the text, and how to present it effectively while maintaining reader engagement. This study seeks to examine the translation of cultural elements in popular science texts, with a particular focus on how such elements are reproduced in the target language. The analysis is based on two popular science articles on artificial intelligence, originally written in English and translated into French. These texts make a relevant corpus for investigating cultural adaptation. This research highlights the challenges posed by culture-specific references, writing conventions, and reader expectations, which go beyond terminological challenges. To analyse the translation challenges, the study is based on two complementary theoretical frameworks: the translation strategies proposed by Mona Baker and the cultural translation strategies proposed in *Thinking Translation* by Sandor Hervey and Ian Higgins. By analysing the strategies employed in the selected corpus, this study aims to identify patterns in the translation of cultural elements and to evaluate the effectiveness of these choices. Overall, the study contributes to a broader understanding of popular science translation as a multi-layered process involving recontextualisation, cultural adaptation, and communicative function.

Key Words: Popular Science Texts, Recontextualisation, Communicative Function, Cultural Elements, Metaphors.

Introduction

“Science is you! It's your head, it's your dog, it's your iPhone - it's the world. How do you see that as boring? If it's boring, it's because you're learning it from a textbook¹.”

In contemporary society, the dissemination of scientific knowledge to a wider audience has become increasingly important. With the rapid development of new technologies, scientific information now occupies a central role in everyone's life, extending beyond the community of experts to include non-specialists in the domain who seek to understand ongoing advancements. In this context, popular science texts play a crucial role in bridging the gap between scientific communities and the general public. Their primary function is to present

specialised knowledge in a clear, engaging and scientific way, avoiding excessive technicality while maintaining accuracy. As defined by the Cambridge dictionary, “Science presented in a way that is interesting and understandable to people who are not experts²”.

These texts rely on a process of recontextualization, through which scientific discourse is reformulated to take into account the prior knowledge, expectations, and cultural background of the target audience. This process raises key questions such as: What should be communicated, for what purpose, and how can it be presented to engage the reader?

In an increasingly globalised world, the dissemination of such texts depends highly on translation, which

¹ <https://www.oprah.com/omagazine/susan-casey-talks-to-mary-roach-the-wave-packing-for-mars>, Consulted on 30 April, 2026.

² <https://dictionary.cambridge.org/dictionary/english/popular-science>, Consulted on 2 May, 2026

enables scientific knowledge to reach diverse linguistic communities. However, translation in this domain is often perceived as primarily terminological, focusing on accurate rendering of technical vocabulary. This perspective, however, is limited.

The main problem addressed in this study is that it overlooks the significant role of cultural and contextual adaptations. Translation must not only transfer meaning but also adapt to cultural references, writing conventions and communicative strategies to suit the target audience. This study, therefore, aims to analyse how cultural elements are translated in popular science texts, with a particular focus on English texts and their French Translations in the field of Artificial Intelligence.

The analysis is based on a corpus of two popular science articles on artificial intelligence, originally written in English and translated into French. (explain the corpus)

By examining these texts, the study seeks to identify the strategies used in translating cultural elements and to evaluate their effectiveness. To achieve this, this research draws on the translation strategies developed by Mona Baker in *In Other Words* as well as the cultural translation framework structured by Sandor Hervey and Ian Higgins in *Thinking Translation: A Course on Translation Method: French to English*.

Cultural elements

While Popular Science Texts aim to simplify knowledge, they are not culturally neutral. Cultural elements refer to the aspects of the source text that are linked to a specific culture and may be difficult to translate into another language. As noted by Pierre Laszlo in the book *La Vulgarisation scientifique*, popular science texts frequently include cultural elements such as metaphors, idioms and proper nouns that are specific to the source culture. When such elements are translated, they pose particular challenges as they cannot always be transferred directly into the target language.

This article will focus on the translation of metaphorical expressions, as they play a key role in explaining complex scientific concepts and create significant translation challenges.

Metaphors

“It is now generally accepted that metaphor in language is like the lettering in a stick of Brighton rock: whichever part you examine, it will be there”. (Mark Shuttleworth (2011:1))

In popular science texts, metaphors play a crucial role as they are used to explain complex ideas simply and engagingly. This process uses analogy to simplify abstract contexts and make them more accessible to non-specialist readers. However, although these expressions facilitate understanding, they can also complicate the translation process, as they are often culturally embedded and may not have direct equivalents in the target language. This requires careful adaptation on the part of the translator.

We are going to provide a few examples from our corpus to comprehend the challenges posed by these expressions:

- 1) ST: ... woven into the fabric of our daily lives.
TT: ... sont à l'œuvre dans maintes applications

The original expression in English is a metaphor that indicates that AI is deeply integrated and inseparable from everyday life. This metaphor posed a translation challenge because it is culturally and stylistically marked, and a literal translation in French may sound unnatural or overly figurative in a popular science context. In the target text, the metaphor is not retained and is rendered as « sont à l'œuvre dans maintes applications », which expresses the idea of active presence. This is a strategy of paraphrase using a related word, as described by Mona Baker, where the figurative meaning is transferred without preserving the metaphorical image. While the translation is effective in ensuring clarity and accessibility for the readers, it results in the loss of imagery present in the source text.

- 2) ST: ... a virtual rogues' gallery
TT: ... sa liste noire

This second expression is a metaphor referring to a collection of images of known criminals, historically used by police authorities. It evokes a culturally

specific image of surveillance and identification. This expression presents a translation challenge because it is strongly rooted in an Anglophone cultural context and does not have a direct or equally familiar equivalent in French. It has been translated as « liste noire », which removes the metaphorical image and replaces it with a more conventional expression. This also corresponds to the strategy of paraphrasing of Mona Baker. Though the translation ensures clarity and understanding for the readers, there is a loss of cultural and visual richness present in the original text.

This strategy has been used to translate numerous metaphorical expressions:

- 3) ST: ...leave behind a trail of clues
TT: ... vous laissez sur votre passage toutes sortes de renseignements
- 4) ST: ... taking over a building
TT: ... s'installer dans un bâtiment

Other metaphors are, however, translated using different strategies:

- 5) ST: recruitment arms race
TT: ... course aux armements

The third expression is a metaphor that draws on military vocabulary to describe increasing competition in the hiring process. It suggests a situation of escalation, where both applicants and employers use advanced tools, such as AI, to gain an advantage. It has been rendered with « course aux armements » in French, which is a well-established expression and carries similar connotations. This reflects a strategy of translation by an expression of similar form and similar meaning, as described by Baker, where a metaphor is preserved because it exists in both languages. The translation is effective as it maintains both the meaning and the rhetorical impact of the original expression.

Other metaphors which were translated using this technique:

- 6) ST: ... stick with the less photorealistic images

TT: ... s'en tenir aux images moins réalistes

- 7) ST: ... reframe traumatic memories
TT: ... recadrer des souvenirs traumatisants
- 8) ST: ... extend old family photos beyond their borders
TT: ... éteindre des vieilles photos au-delà de leur cadre
- 9) ST: ... a quantum state in the images
TT: ... une sorte d'état quantique des images
- 10) ST: ... memories are a bit like dreams
TT: ... les souvenirs sont un peu comme des rêves
- 11) ST: ... bring people's memories to life
TT: ... donner vie à ces souvenirs
- 12) ST: ... rewind a lifetime
TT: ... rembobiner une vie en un instant

There are metaphors which have been translated using the third strategy of Baker

- 13) ST: ... reclaim a past that was never caught on camera.
TT: ... donne vie à des souvenirs

This metaphorical expression combines ideas related to recovery and visual capture, indicating that lost or undocumented memories can be retrieved with the help of artificial intelligence. In the given context, it draws on the notion of “capturing” moments through photography and extends it to memory. In French translation, it was rendered as « donne vie à des souvenirs », which replaces the original metaphor with a different figurative expression. This was done with the second strategy of Baker, i.e., translation by an expression of similar meaning but different form, where the meaning is preserved, but the metaphorical image is changed. While the translation remains effective globally, it shifts the imagery from

“capturing” memory to “bringing memories to life”, and hence modifies the conceptual framing of the original expression.

A few other metaphorical expressions were translated using this technique:

14) ST: ... the results did not click
TT: ... les sujets n'étaient plus aussi emballés

15) ST: ... growing achieve
TT: ... enrichir ces archives

Conclusion

It is important to note that the strategies of omission and addition were only used occasionally during the translation of the selected texts. This can be explained by the communicative function of popular science texts, which aim to present information in a clear, explicit and engaging manner to non-specialists of the domain. In this context, omitting or adding elements often during translation could risk altering the original meaning and reducing the clarity of the message.

To conclude, the analysis shows that translators adapt different strategies depending on the availability of equivalents in the target language. While all three strategies were used, the paraphrase appeared to be the most frequently used technique, as it allows for conveying the meaning clearly when no direct equivalent exists in the target language. These examples show that the translation of metaphors in the popular science genre is not uniform. Depending on the context, metaphors may be neutralised, adapted or preserved. These choices depend on several factors such as cultural familiarity, language conventions, and the objective of the translation.

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