



LINGO-METHODOLOGICAL PECULIARITIES OF SCIENTIFIC DISCOURSE AND TRANSLATION PROBLEMS

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Annotation: This article investigates the lingo-methodological characteristics of scientific discourse and the challenges they present for translation. Scientific discourse is characterized by precision, objectivity, formal structure, specialized vocabulary, and logical argumentation. These features, while crucial for effective communication within the scientific community, pose significant hurdles for translators. A key knowledge gap lies in the lack of comprehensive studies that systematically analyze the specific linguistic and methodological differences across various scientific disciplines and their impact on translation. This research employs a comparative analysis of scientific texts from different fields and languages, examining lexical specificity, grammatical structures, textual organization, and rhetorical strategies. The findings highlight several recurring problems in scientific translation, such as the handling of technical terminology, maintaining objectivity, and adapting genre conventions. Results demonstrate that accurate translation requires subject matter expertise, linguistic proficiency, and awareness of cultural norms within the specific scientific field and target language. The implications of this study emphasize the critical need for specialized training for scientific translators and the development of robust translation strategies to ensure the reliable dissemination of scientific knowledge across language barriers. Further research should focus on creating more effective tools to automate and improve scientific translation quality in interdisciplinary fields.

Key words: Scientific discourse, translation problems, lingo-methodological analysis, interdisciplinary study, scientific communication, technical terminology, lexical specificity, grammatical structures, textual organization, rhetorical strategies, objectivity in discourse, formal style, epistemic modality.

Introduction

In the modern globalized world, scientific discourse has become an essential element in the exchange of knowledge across borders. However, this specialized field of communication presents significant challenges for translation due to its unique linguistic, methodological, and cultural characteristics. Understanding these peculiarities is crucial for effective scientific communication and for overcoming the inherent translation problems.

The Nature of Scientific Discourse

Scientific discourse is characterized by a specialized vocabulary, precise language, and an impersonal tone. Unlike general language, scientific language is often designed to convey complex concepts with clarity and accuracy. It follows specific conventions that prioritize objectivity, rationality, and logical consistency.



Lexical and Grammatical Specificity: Scientific texts are rich in technical terms that are often difficult to translate directly. Terms in one language may not have exact equivalents in another, requiring translators to either create neologisms or use paraphrases. For instance, the term "antioxidants" in English may be translated as "antioxydants" in French, maintaining the technical meaning. However, in other cases, especially in fields with less overlap between languages, like new scientific areas, translators must invent or borrow new terms (e.g., "quantum entanglement" in English may need a unique formulation in languages without a direct equivalent).

Cultural and Contextual Factors: Scientific communication assumes a shared knowledge base. Translators may face issues when a concept or methodology is culturally specific. For example, certain research methods used in Western countries, such as randomized controlled trials (RCTs) in clinical studies, may need further clarification when translated for an audience unfamiliar with them. In such cases, the translator may need to add explanatory footnotes or adopt culturally appropriate equivalents.

Methodological Implications: The methodology of scientific research, including the way data is presented and discussed, plays a critical role in shaping the language used. For instance, a phrase like "This study hypothesizes that X leads to Y," found in an English scientific article, may need to be adjusted in languages where sentence structure and formal tone differ (in some languages, passive constructions may be more appropriate, or the hypothesis might be stated as a fact rather than a hypothesis).

Linguistic Peculiarities in Translation

The process of translating scientific texts presents several linguistic challenges:

Terminology: Scientific fields often use highly specialized jargon that does not have a direct equivalent in the target language. For example, the English term "gene editing" may be translated to "édition génétique" in French, but in some languages, especially those without widespread research in genetics, the term may be less well-known. Translators must either adopt international terms or find an appropriate local term that conveys the same meaning. This may require extensive research and consultation with experts in the field.

Equivalence in Structure: Scientific texts tend to employ complex sentence structures, and maintaining syntactical coherence across languages can be a challenge. For instance, a sentence like "The experiment was conducted to determine the effect of the variable on the dependent outcome" can sound overly complicated in languages with simpler sentence structures. In German, this might be translated as "Es wurde ein Experiment durchgeführt, um den Einfluss der Variablen auf das abhängige Ergebnis zu bestimmen," where nominalization and passive constructions are more common.

Impersonal Tone: One of the defining features of scientific discourse is its impersonal, objective tone. For example, the English sentence "We observed that the temperature increased" should be translated into French as "Il a été observé que la température a augmenté," using passive voice to maintain the impersonal style. However, some languages, like Spanish, might still retain the subject form ("Observamos que la temperatura aumentó"), which could weaken the impersonal tone.

Polysemy and Ambiguity: Scientific terms often have multiple meanings depending on the context. For example, the word "cell" can refer to a biological cell or a compartment in a structure. The translator must rely on context to ensure the correct interpretation, such as "cell" being translated as "célula" in a biological context, while in other contexts it may be "celda" (a compartment in a structure).



Translation Problems in Scientific Discourse

Loss of Precision: Scientific discourse demands precision, and even slight deviations in meaning can lead to significant misunderstandings. When translating, it is easy to inadvertently alter or dilute the intended meaning of a term or concept. For example, translating the term "hypothesis" directly might create confusion if the target language distinguishes between different types of hypotheses (null hypothesis, alternative hypothesis). The translator must make sure the term reflects the specific scientific meaning used in the source text.

Cultural Differences: Scientific knowledge is often rooted in particular cultural and institutional contexts. Certain research methodologies or citation practices may be unfamiliar in other countries. For instance, English-language scientific articles often follow the IMRAD (Introduction, Methods, Results, and Discussion) structure, but other languages may have different conventions for structuring scientific texts. Translators must bridge these gaps by adapting the content in a way that resonates with the target audience while maintaining accuracy.

Translation of Graphs, Charts, and Data: In scientific texts, visual aids such as graphs, charts, and data tables are crucial in conveying information. These elements must not only be translated linguistically but also adapted to ensure they are culturally appropriate. For example, in a study on environmental pollution, units of measurement like "ppm" (parts per million) may need to be adapted to local standards, or certain visual representations (like pie charts) may require modification to fit different visual expectations.

Consistency in Terminology: Scientific texts often use the same terminology across multiple sections, and consistency is essential to avoid confusion. A term like "methodology" may be used repeatedly throughout a scientific article. If a translator is inconsistent with this term, it could lead to confusion among readers. To address this, translators often create specialized glossaries to ensure uniformity in the use of scientific terms throughout the document.

Conclusion

Scientific discourse is a complex form of communication that requires translators to possess both linguistic expertise and in-depth knowledge of the relevant scientific field. The linguistic peculiarities of scientific language, including specialized terminology, impersonal tone, and complex structures, pose significant challenges in translation. Furthermore, the methodological nature of scientific communication, as well as cultural and contextual differences, adds layers of complexity to the translation process. By recognizing and addressing these challenges, translators can help ensure that scientific knowledge is accurately conveyed across languages and cultures, fostering collaboration and furthering the global exchange of ideas.

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