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Translation Analysis of Scientific Texts: Stages and Challenges

Scientific translation as a driving force of modern society in today's information age has become one of the most relevant areas of translation and the one that is constantly in demand mainly among members of the academic community. Scientific translation facilitates many significant scientific and technological innovations and presupposes translating scientific documents like thesis, specialized monographs, researches, academic articles, reports on clinical trials, etc.

Overall, the translation analysis of scientific texts comprises the following important stages [4]:

- pre-translation analysis;
- in-translation analysis;
- post-translation analysis.

Pre-translation analysis is aimed at comprehending and identifying main ideas, target audience and situating the content and context of a scientific text. It is vital to scrutinize initially the entire source text in order to reveal certain obvious features: the subject-matter and main message, complex terminology, cause and effect relations, valuable extra-contextual references. Generally speaking, this is the stage of pre-translation analysis where potential challenges start to emerge and consequently a general strategy for the translation of the scientific text takes shape. As a rule, potential challenges produce so-called "landmarks" in the source text and play a crucial role in the subsequent translation process [2].

All the existing models of pre-translation analysis illustrate two approaches – textocentric and functional that should not be treated as contradicting each other. Textocentric approach focuses of linguistic features of the scientific text (type of the text, type of vocabulary and syntactic organization). Functional approach pays special attention to the external factors of the scientific text.

In-translation analysis is considered a highly interactive process. The translator is fully engaged in a dialogue with the scientific source text. This stage of translation analysis is not always linear, as it may contain already mentioned references (anaphora), further references (cataphora) or even extra-contextual references. When it comes to the title of the scientific text, its translation is usually postponed until the end of the translation process when the translator has a clear idea of the intended meaning of the scientific source text. In-translation analysis requires constant re-analyzing of the translated passages to shed light on ambiguous references and make adjustments to the draft scientific translation [5].

Post-translation analysis is directed towards completion of the first draft target text. It is conducted for the sake of checking omissions of any functional elements or translation queries, assessing the accuracy and completeness of the message transfer. The translated scientific text should be analyzed as a piece of academic writing in the

target language rather than a translation. One should take into account that the first draft is never final. Proofreading and editing ensure the accuracy and readability of scientific translation, that is why multiple re-analysis is quite common.

The main challenges of the translation analysis of scientific texts encompass the following aspects [1]:

- identifying scientific theories and concepts;
- rendering titles of scientific documents from the source language into the target language;
- dealing with unified specialist terminology and clichés;
- searching translation equivalents of lexical borrowings from other languages and author's neologisms [3] for the sake of filling in lexical gaps;
- adapting units of measure, abbreviations and acronyms, names of people and places;
- improving the lexical choice in the target text with the use of synonyms;
- rendering problematic sentences and quotations;
-restructuring sentences to conform to English stylistic conventions;
- reflecting grammar peculiarities (splitting, redundancy, subject-predicate position);
- formatting charts, graphs, and other visual aids;
- adopting corresponding translation strategies (direct – natural (free) translation, symmetric – asymmetric, word-for-word – near idiomatic – idiomatic);
- providing suitable translation techniques (omission, addition, transposition, substitution, integrating, portioning, etc.);
- collaborating with subject experts for the sake of a deep insight into the scientific content;
- using additional sources of the necessary information.

In conclusion, scientific translation is an area of translation that has a profound impact on the academic community. It delivers precision, clarity and consistency with the original scientific documents, that is why the translation process must be well structured and organized. The translation analysis of scientific texts includes the stages of pre-translation analysis, in-translation analysis and post-translation analysis. Each stage is characterized by a set of particular challenges the solution of which requires the translator's linguistic and extra-linguistic competence as well as his close cooperation with subject specialists.

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The Power of Visual Narrative: Using Graphic Novels in English Language Learning

Graphic novels have gained increasing recognition as valuable resources in English language learning due to their unique combination of visual and verbal elements, which engage learners in authentic language context. "When images or figures match the verbal input, they are encoded by both the verbal and non-verbal systems, thus promoting memory more strongly than in the case of verbal or visual input alone" [4]. In other words, "people learn more deeply from words and graphics than from words alone" [3].

This study aims to explore the role of graphic novels in English language learning. The research questions include: What does it mean "to read graphic novels"? What specific features of graphic novels contribute to their effectiveness in language learning contexts? How do graphic novels facilitate language acquisition and comprehension among English language learners?

The material of the research is a popular graphic novel *Seconds* by a famous Canadian cartoonist Brian Lee O'Malley [5].

The methods used in this study involve a comprehensive review of the literature on visual narratives in English language learning [1], [2], [3], [4], and the case study of verbal and non-verbal means of surprise expression in the analysed graphic novel.

Reading graphic novels involves decoding the meanings embedded in their verbal and non-verbal components. The verbal components of graphic novels contain the printed text, which includes lines of the main characters in speech bubbles, titles, narrative blocks, or author's comments in or outside of speech bubbles. Non-verbal graphic means (font, colour, graphic symbols, tables, pictures, etc.) reinforce the