

Green Age — Sustainable Innovation in the Middle Ages (Excerpt) Translation Practice Report

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Abstract: In the context of globalization, translation, as an important bridge of cross-cultural communication, plays a key role in promoting the dissemination of scientific and technological information. Guided by the theory of functional equivalence, this report will translate *The Green Age: Sustainable Innovation in the Middle Ages* into Chinese, summarizing the skills and strategies in the translation process, aiming to improve the accuracy and readability of scientific and technological translation, and achieve functional equivalence between source and target language. This paper mainly explores how to deal with the differences between Chinese and English words with translation skills such as parts-of-speech conversion, retention of passivity and adjustment of word order, and discusses the specific application of functional equivalence theory at the lexical and syntactic levels, so as to summarize the methods and general rules of scientific and technological text translation, and further expand the practical application of functional equivalence theory in translation.

Key words: scientific and technological text translation; functional equivalence theory; translation methods

1. Introduction

In today's globalized era, translation has evolved beyond mere linguistic conversion to become a vital bridge for cross-cultural communication and knowledge dissemination[1]. With rapid technological advancement and accelerated information flow, the importance of translating scientific texts in globalization has grown exponentially. From sharing cutting-edge research findings to disseminating innovative technological concepts, precise and high-quality translations play an irreplaceable role in fostering international collaboration and advancing technological progress[2][3]. Scientific texts, characterized by technical rigor, logical precision, and dense terminology, present significant challenges in translation[4]. The pressing issue in scientific translation lies in how to faithfully convey the original scientific essence while aligning with target language conventions and overcoming cultural barriers[5]. The book

*The Green Age: Sustainable Innovation in Medieval Europe** explores medieval European ecological practices and sustainable development wisdom through interdisciplinary approaches combining environmental history and technological history. It showcases unique medieval initiatives in resource utilization and

environmental protection using extensive historical materials[6]. Selected translations from this work provide valuable insights for developing theoretical frameworks and practical methodologies in scientific text translation. Guided by the principle of functional equivalence, this article delves into translation strategies for this text, aiming to offer constructive references for research and practice in scientific text translation.

2. Translation theory and practice

The guiding significance of functional equivalence theory

The functional equivalence theory emphasizes that translation should enable target readers to experience content similar to native speakers[7]. This principle holds significant value in scientific text translation, where texts typically exhibit specialized expertise and rigorous logic. Therefore, translators must prioritize accurate information delivery while ensuring linguistic appropriateness aligned with target readers' cultural contexts[8]. For instance, when translating *The Green Age: Sustainable Innovation in the Middle Ages**, translators should fully account for Sino-English language differences by skillfully applying lexical transformations and sentence structure adjustments. Such techniques ensure the

translated text remains faithful to the original while maintaining natural flow, enabling readers to effortlessly comprehend medieval sustainable innovation initiatives.

Refined management of the translation process

Translation is a systematic process comprising three phases: pre-translation preparation, in-process translation, and post-editing[9]. During the preparatory phase, translators must identify text genres and stylistic features, select appropriate translation theories, and utilize tools to enhance efficiency. When translating *The Green Era*, the translator employed tools like Youdao and DeepL, along with academic literature search tools, to conduct thorough research on technical terminology, establishing a solid foundation for accurate translation. In the in-process translation phase, translators should follow the principle of progressing from macro to micro perspectives, systematically refining draft translations. Throughout this stage, they maintain consistency in technical terminology, appropriately break down complex sentences, and ensure precise information delivery. The post-editing phase requires comprehensive review of translated texts to correct grammatical, spelling, and punctuation errors while optimizing language expression to align with target language norms. Additionally, translators validate equivalence through back-translation methods to ensure quality compliance.

3. Case study and translation strategy

The art of translating nouns

Nouns in texts carry crucial information, and their translation accuracy directly impacts readers' comprehension. Translating "Green Era" presents particular challenges for noun translation[9]. For instance, the term "rag" originally refers to "old cloth" or "damp cloth." The translator adapted it into the adjective "handmade scraps of fabric," modifying "paper" to better align with Chinese expression habits and ensure clear understanding. Similarly, the phrase "excess" literally means "too much" or "abundant," but was translated as "excessive period" through contextual adaptation. This approach not only maintains conciseness but also preserves Chinese linguistic elegance, avoiding the verbosity and obscurity that might result from literal translation[10].

Strategies for passive structural translation

The use of passive constructions in English far exceeds that in Chinese, making their translation into Chinese a critical challenge. In translating *The Green Era*, translators flexibly choose between retaining passive structures and

converting them into active voice based on context. When emphasizing the recipient of actions or objective facts, passive forms are preserved. For instance, the original sentence "People who did these were generally called Ruzsen, Lepper or Plecker..." (those doing such work were typically referred to as Ruzsen, Lepper or Plecker...) was translated as "Those engaged in such work were commonly called Ruzsen, Lepper or Plecker," maintaining the passive structure for objectivity and precision. Conversely, to align with Chinese expression habits and highlight the subject, translators may convert passive structures into active voice. The sentence "Bones can be used to build homes..." (bones can be utilized for constructing dwellings...) was rendered as "People can utilize bones to build houses..." by adding the subject "people," which makes the sentence more vivid, natural, and aligned with Chinese readers' reading preferences.

The technique of translating complex sentences

English compound sentences typically feature complex structures and rich information, whereas Chinese compound sentences emphasize semantic coherence and logical clarity. When translating *The Green Era*, the translator employed strategies such as segmentation and inversion to reasonably decompose and restructure long, complex sentences. Taking segmentation as an example: For English long sentences with intricate structures and substantial information, the translator breaks them down into multiple shorter clauses, ensuring each clause carries independent meaning. By adjusting word order and logical relationships, the sentence becomes more aligned with Chinese expression habits. For instance, "In 1386, for example, when Charles IV granted Frankfurt the authority to reorganize its guilds, the city council revised its regulations. Among other changes, it now decreed that members of the cobbler guild were entitled to sell new shoes."), The translator will split the time adverbial clause, the main sentence and its attributive clause in the sentence into two short sentences, so that Chinese readers can easily understand the meaning of the sentence.

4. Discussion and enlightenment

During the translation of *The Green Age: Sustainable Innovation in the Middle Ages*, the translator gained profound insights into the complexity and challenges of translating scientific texts[11][12]. First, such translations demand both linguistic proficiency and specialized knowledge. Translators must not only accurately decode technical terms and

complex concepts in source texts but also articulate them clearly and precisely in the target language. For instance, when interpreting medieval sustainable innovations, translators need foundational knowledge of medieval history, economy, and technology to fully grasp the original context. Second, translation is not mere replication but cross-cultural communication and creative adaptation. While maintaining textual fidelity, translators should consider the target audience's cultural background and reading habits through strategic adjustments and rephrasing to align with local expectations. When translating Western cultural expressions, for example, translators may employ free translation or contextual annotations to enhance comprehension. Finally, continuous reflection and refinement are essential. Post-translation, thorough proofreading and revisions help identify and resolve issues, thereby elevating the overall quality of the translation.

5. Conclusion

Through the translation practice and analysis of "The Green Age: Sustainable Innovation in the Middle Ages" (Excerpt), this article delves into methodologies and strategies for translating scientific texts. The functional equivalence theory provides robust guidance during translation, enabling translators to achieve equivalent effects between source and target languages while preserving original information, functions, and stylistic features. From noun translation to passive constructions and complex sentence structures, each phase demands flexible application of translation techniques. For instance, in noun translation, adopting part-of-speech conversion strategies aligns with Chinese expression habits by leveraging differences in morphological structures, grammatical functions, and semantic expressions. In passive construction translation, contextual retention or adaptation highlights key points and aligns with target language conventions. For complex sentences, strategies like segmentation and inversion help manage structural differences, ensuring logical clarity and semantic coherence in the final translation. Moreover, we recognize that translation transcends mere linguistic conversion—it is cultural exchange. Translators must cultivate cross-cultural awareness, fully consider linguistic and cultural characteristics, and overcome barriers to ensure translated works achieve effects similar to the source language in target cultures.

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