

Scientific and Technological Translation in the Light of Cognitive Translation Theory

YU Peixin, JIA Xiaoqing

University of Shanghai for Science and Technology, Shanghai, China

Cognitive translation plays an important role in scientific and technological text translation. This paper analyzes the important role of cognitive translation in understanding text features and stylistic styles, and makes detailed explanations of compound words and abbreviations, passive voice, and nominalization structures.

Keywords: cognitive translation, S&T translation

Introduction

After the 1950s, a new change appeared in the field of translation: The translator's understanding of the original author's composition was added to the understanding of the text. That is, through understanding the background experience of the author of the original text, to figure out the idea that the author wants to express. This view aims to achieve a more accurate and reasonable translation of the author's feelings and ideas through empathy for the author of the original text. People trace the theoretical characteristics of this new view to its origin and confirm that it is the development achievement of cognitive science. Hence the name cognitive translation (Lu & Wang, 2013, p. 606).

Cognition is simply "the acquisition and use of knowledge, which is an internal psychological process" (Gui, 1991, p. 3), while cognitive linguistics, as a new frontier subject formed by the intersection of language science and cognitive science, studies the interaction and relationship between human cognitive process and meta. Cognitive linguistics holds that language is not innate, but is formed through acquired interactive experience and cognitive processing. The differences between languages are greater than the common language ability and other cognitive abilities are inseparable. Syntax, semantics, and pragmatics are closely related, and language cannot be divided into several independent modules. An author is a person who performs the intellectual activities that directly produce a literary, artistic, or scientific work, which expresses the author's intention and is influenced by the author's past cognitive and emotional structure. Therefore, translation should take into account the appearance of the work and the author himself.

The research group believes that cognitive translation is not only applicable to emotive texts. Indeed, the combination of scientific texts and cognitive translation can also explore mutual reference between Chinese and foreign scientific experience and expression differences. Language is one of the ways of thinking expression. A

Grant: 2021 Undergraduate Innovation and Entrepreneurship Training Program (No. XJ2021284).

YU Peixin, undergraduate student, College of Foreign Languages, University of Shanghai for Science and Technology, Shanghai, China.

JIA Xiaoqing, correspondence author, associate professor, College of Foreign Languages, University of Shanghai for Science and Technology, Shanghai, China.

large number of explorations of scientific and technological works are conducive to the comparison of Chinese and Western thinking modes of science and technology, mutual learning and mutual reference, and jointly promote the rapid development of science and technology in the world.

Importance of Cognitive Translation in S&T Translation Teaching

The Cognitive Linguistics View of Translation

Translation theory thinks of the cognitive linguistics, translation based on the reality of people experience, the translator as a cognitive subject participating cognitive activities such as reading comprehension thinking in the accurate mastery of knowledge and meaning expressed by the content of the source language on the shortness of using the target language to express information to identify the source language; the bilingual conversion process is the embodiment of the translators' cognitive process. It is the expression of the translator's real world and cognitive world (Wen, 2021, p. 120). This view brings a new way of thinking about translation: The closer you get to the author, the closer you get to the work. And so it is. Whether in poetry, fiction, prose, expository prose, or any other form of expression, a work is the best expression of an author's inner world.

For scientific texts, the translator is not the author, let alone the second creator of the work. The translator of scientific and technological text only needs to express the meaning the original author wants to express in another language, and transfer the knowledge and information the original author wants to convey to new readers, so that more people can understand the thinking mode and way of the original author (Toury, 1988). Therefore, it is more important to grasp the original author. If the translator can better understand the stylistic features of the original text, that is, his cognition of the features of the original text can be closer to the original author's understanding of these linguistic features, then his translation can more faithfully convey the meaning that the original author wants to express with these linguistic features.

Cognitive Translation and Textual Features

Nowadays, the demand for information retrieval is more important in the era of abundant information. Among them, the accurate grasp of text features has become the key step for detailed classification of texts that are difficult to count. Phrases can be used to express the salient features of the text content compared with other texts, so that readers can find the text they need and have a preliminary understanding and cognition of a new text. That is to say, text features are the most important thing that the author of the original text wants to express. If the translator can objectively and reasonably grasp the core issues in this text, the works will be classified more reasonably, so that the works can play a greater value in the field they should be in.

Medical texts are one of the best examples. People's need for a better life is growing day by day, which is mainly manifested in the importance of and demand for health. The biomedical field welcomes more researchers to contribute to the continuation of human scientific and technological civilization. At the same time, the era of big data information is quietly coming; the Internet makes the information source into exponential crazy growth. For example, MEDLINE, the National Library of Medicine of the United States, is one of the most authoritative abstracts database in the world, with a total of 24 million articles collected in 2017. The increasing demand for information retrieval in biomedical field emphasizes the importance of text feature understanding (Li, 2021, p. 1). Only by grasping the core features and thoughts that the author of the original

text wants to express can the works be classified more reasonably and effectively for the convenience of readers.

Comparatively speaking, the stylistic style more reflects the author's own personal subjective emotion and experience. In science and technology texts, it is more expressed as the author's analysis of specific principles and the generation of results. In the analysis of theorems, principles, methods, and conclusions, readers can feel the author's thinking process and way of thinking, learn from their own beneficial ways and methods, and improve their own thinking process. Even from the author's experience, we can understand the principle of the author's writing, and use the excellent and desirable experience for our own use, so as to gain a deeper understanding.

Translation of Scientific and Technological Texts

Compounds and Abbreviations

A typical feature of scientific articles is the extensive use of compound words and abbreviations.

A compound word is a combination of two or more words. Most abbreviations are made up of one or more words arbitrarily shortened. The sources of English for Science and Technology are generally divided into three categories. The first category is words borrowed from ordinary English. This kind of words borrowed from the common vocabulary and endowed with a new scientific meaning, the meaning of the evolution. Salt, for example, refers to all salts in chemistry. The second is words borrowed from other languages, mainly Latin and Greek, such as pollen. The third is the new words created by combination and derivation, such as television, microscope, etc.

Compound words have a long history. This word formation method is widely used in scientific and technological texts because it can combine words with two different meanings and meet the requirement of multiple meaning sets in many scientific and technological texts (Wang, 2003, p. 66). S&T English uses word combinations to create new words, making it possible to express in short words what would otherwise require a phrase or clause. The biggest difference between scientific and technological texts and other novels and lyrical texts is that the author needs to express the meaning he wants to express clearly with short and concise sentences (Goldberg, 2006). Compound words solve this problem well. For example, current steering (电流导引), current steering transfer (电流导引传送), current steering transfer circuit (电流导引传送电路). Some compound words have different meanings in conventional texts and scientific texts, which requires the translator to distinguish carefully and think about what the author is thinking.

The same is true of acronyms, which are generally accepted as the preferred acronyms of many writers of scientific texts, in the hope of expressing as much as possible in as few words as possible. Only by mastering the meaning the author intends to express with these acronyms and getting closer to the author's cognition of relevant scientific knowledge in the field of the original text can we better understand the author and restore the author's intention.

Passive Voice

Science and technology articles themselves are scientific, focusing on narrative reasoning, emphasizing the logicity of the relationship between things. In science and technology texts, most definitions, theorems, and principles do not have the executor of the action. Passive voice can better emphasize the object of the action and let readers grasp the key point (Kong, 2019, pp. 194-195). As the porter of the original author's

thoughts, the translator should truthfully express the part that the original author wants to emphasize in the translation, avoid adding unnecessary words in the translation, and restore the author's intention while retaining the concise and concise scientific text.

For example, in medical English, the degree of concern for disease and patients is much greater than that for the originator of behavior, that is, the prevalence of passive sentence patterns. In Chinese, however, the subject of the sentence is generally indispensable. Scientists prefer to use impersonal sentences of this kind when they talk or write about their work, because they should always try to be objective about any scientific activity. For example:

The instruments need to be sterilized. (这些器械需要消毒。)

There are several factors to be considered. (有几个因素需要考虑。)

Nominalization Structure

Scientific articles mostly describe objective facts and rarely mix subjective feelings, so they rarely use the first and second person. However, English and Chinese belong to different language families, and there are great differences in word collocation and writing habits. Therefore, it is necessary to pay attention to the differences between Chinese and foreign expressions in translation, which is also the only way to perceive the author's intention (Ma, 2019, p. 423).

The content of English for Science and Technology mainly introduces the latest scientific research results as well as the content and methods of relevant experiments. In order to ensure the authenticity and objectivity of scientific and technological content and avoid being influenced by the author's own subjective thoughts, relevant processes and facts should be taken as subjects, which is the nominalization structure. Nominalization structure can not only make the content of the article have stronger logical relevance, but also make the whole article more rigorous. The more relevant the content, the more readable the text will be. The author arranges his ideas properly by nominalizing the structure. In order to express the author's meaning and get closer to the author's idea, the translator should pay attention to the logical thinking and language habits of Western English. Only on this basis can the translator actively and effectively complete the translation work of science and technology.

It has been widely acknowledged that English is a kind of static language (Wang, 2020, p. 104). English is accustomed to employing more nouns and what is represented by verbs. As a special style of English, English for Science and Technology is also characterized by the use of nouns and equally nominalization. A lot of nominalization is used to avoid excessive use of simple sentences and subject-verb and verb-object structures, making the text more concise and objective. For example, "glue use", "motor operation", "pressure increase", etc. The nominalization structure can replace verbs and adjectives with nouns, which increases the static nature of the event and makes it more objective and real. Such as: The paper gives an analysis of the problem and offers a solution. And here is another example: The doing of the experiment by this method will entail some loss of equipment. Because of the simplicity and objectivity of nominalization, it is convenient for readers to understand what the writer wants to show us, thus greatly improving the communication efficiency of the original text and enhancing the information function of the original text.

Conclusion

The ultimate goal of cognitive translation theory is to construct a universally accepted or feasible

description model of translation process so as to explain the translation process and its related elements more reasonably. When the translator has a good understanding of the author and the field of the text, he can accurately grasp the text and deliver the work to other readers. In this regard, targeted training can be carried out for relevant students, so that they can gradually master the tone of scientific texts, understand the overall stylistic characteristics of Scientific English, and develop the excellent habit of considering both works and authors through the relationship between the context and paragraph.

References

- Goldberg, A. (2006). *Constructions at work: The nature of generalization of in language*. Oxford: OUP.
- Gui, S. C. (1991). Cognition and language. *Foreign Language Teaching and Research*, (3), 3-9, 80.
- Kong, A. J. (2019). The usage and translation of passive voice in English for science and technology. *Knowledge Library*, (21), 1-4.
- Li, M. Y. (2021). Research on text classification and event detection for biomedicine (Doctoral dissertation, Dalian University of Technology, 2021).
- Lu, W. Z., & Wang, F. X. (2013). A new paradigm in translation studies. *Foreign Language Teaching and Research (Bimonthly)*, 45(4), 606-616.
- Ma, J. L. (2019). A study of nominalization in English-Chinese translation of scientific English. In *Docking Between Beijing and Tianjin—Proceedings of Strategic Implementation Synergy and Integration* (pp. 424-432). Langfang, Hebei: China Academic Journal Electronic Publishing House.
- Toury, G. (1988). A handful of paragraphs on “translation” and “norms”. In C. Schäffner (Ed.), *Translation and norms* (pp. 9-31). Clevedon: Multilingual Matters.
- Wang, J. L. (2003). Features of new words in scientific English. *Journal of Shayang Teachers College*, (5), 66-69.
- Wang, Q. (2020). A report on the E-C translation of nominalization in EST texts: Based on automatic straw applicator manuals (excerpts) (Doctoral dissertation, Shandong University, 2020).
- Wen, H. X. (2021). A study on practical teaching of translation in local universities from the perspective of cognitive linguistics. *Journal of Higher Education*, (24), 120-123.