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English to Chinese Translation Strategies of Complex Structures in Sci-tech Texts under the Guidance of Communicative Translation Theory

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Abstract:
The paper focuses on solving the following difficulties: translating complex structures such as parallel, complex insertion, and complex compound structures. Guided by Newmark's communicative translation theory and based on the communicative context, the author employs corresponding translation methods: cutting and embedding are used in translating complex parallel structures, reversing and splitting-off in complex insertion structures, and recasting and inserting in complex compound structures.

KeyWords:
Sci-tech texts; Complex structures; Communicative translation; Translation strategies

1. Introduction

Regarding the definition of complex structures, researchers mostly define the degree of internal complexity and word number. Guo (2007) and Song (2013) refer to complex structures as sentences with more than 20 words that contain different clauses, each of which modifies different components. Based on the definition of the researchers and a thorough analysis of the source text, the author classifies the complex structures into three types: complex parallel structures, complex insertion structures, and complex compound structures.

Some studies have also been conducted on translating long and complex English sentences. Wu and Jin (1997) gave three commonly used methods: sequential translation, variable order translation, and clause translation. Dang (2006) put forward the "structural analysis method," and Chen (2011) put forward the "logical analysis method" and adopted appropriate translation strategies.

According to Kang (2012), the main reason long and complex sentences are difficult to understand is not attributed to the sentence's length but the various structures inside the sentences and the complicated logical relationship. Therefore, the first step to rendering a good translation is to accurately understand the internal structures and the logical relations between sentences.

Then, under the guidance of communicative translation theory, the author tries to change the exact contextual meaning of the complex structures "in such a way that both content and language are readily acceptable

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and comprehensible to the readership" (Peter, 2001, p. 47). In light of the different types of complex structures identified in the source text and the context in which they are used, the author employs corresponding translation methods: cutting and embedding are used in translating complex parallel structures, reversing and splitting-off in complex insertion structures; recasting and inserting in complex compound structures.

2. Case Analysis

2.1 Complex Parallel Structure

The most important thing when translating complex parallel structures is to find parallel compositions. Parallel compositions may be parallel nouns, phrases, or clauses. Because of the large number of clauses and parentheses, the parallel structure may be divided, and it is very important to clarify the logical sequence.

Liu (2019) points out that, translators usually cut the sentence at the adverbs, relative pronouns, juxtaposition, subject-predicate joints, and sentence groups when translating it into Chinese clauses. In the cutting method, the coordinate components in the complex parallel structures can be distinguished, which is helpful when sorting out the logic. Embedding is often used when parallel attributive, adverbial, or appositive clauses exist.

2.1.1 Cutting

Generally speaking, shorter sentences are preferred by the Chinese. "Sometimes, however, English modifiers are too long to be placed before the modified word in the Chinese version. Using cutting, translators may sever a long English sentence, rearrange the parts in sense groups, and then translate them separately into Chinese" (Xu, 2003, p. 164).

Example 1: The sequestration of carbon in soil is very crucial to mitigate the effect of climate change by reducing the greenhouse gases emission and also to improve the soil quality for better crop productivity in a sustainable manner.

土壤碳封存可以減少溫室氣體的排放，進而減輕氣候變化帶來的不良影響；同樣，土壤碳封存還可以通過可持續的方式，改善土壤質量進而提高作物産量，所以該技術對于兩者而言都十分重要。

In English, the result follows the cause, while in Chinese, the result follows the consequence. So, the author repeats the subject by splitting the predicative "is very crucial" and reverses it to the end to make the sentence clearer. Newmark pointed out that communicative theory is used to overcome language and cultural barriers and ensure effective communication between source and target readers. Therefore, in order to meet the reading habits of the target language readers, the author cuts the sentence into short Chinese sentences. The communicative translation will likely be clearer and use more generic, hold-all terms in difficult passages. So the author presents the sentence relationship by using a semicolon and adding logical words such as "进而 " and " 所以 ".

2.1.2 Embedding

"The so-called embedding means placing the modifiers (including phrases and clauses) before the word be-

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ing modified; thus, the modifiers are embedded in the Chinese sentences" (Xu, 2003, p. 163). In English sentences, modifiers are often placed at the end of sentences when they are longer than two words. When mixed compound relations in coordinated long sentences, some can be converted into adverbial, nominal, and attributive clauses containing conditions, results, time, degree, concessions, and reasons. The proper embedding makes the Chinese version compact and coherent, therefore, it is frequently adopted in translating parallel attributive or appositive clauses.

Example 2: The whole progression of capturing carbon from different sources, processing the captured carbon and then transporting it to the storage site has been cited as an answer to decrease the carbon outflows from fossil fuel-based power plants and other related activities. CCS is instituting...

譯文：人們認爲從化石燃料發電廠和其他相關活動中捕集碳，對其進行處理和封存的整個過程（即CCS）是壹種減排舉措。CCS 正在 ……

Newmark (1981, p. 60) once pointed out that " while semantic translation, like thought, relates to the word or the word group; communicative translation, like speech, relates to the sentence." At the discourse level, EST texts are coherent in logic. The coherence of discourse is attained through cohesion (Halliday&Hasan, 1976). Therefore, Instead of splitting the longer attributive in the second half of the sentence, the author uses the embedding method and treats the whole sentence as a long attributive sentence, which makes it more in line with the rigorous style of science text. In the translation of scientific English, when the verb of the object and object complement is in the passive voice, subjects like "people", "someone", or "we" is often added to make the translation more in line with the grammatical structure of Chinese. Here, the main sentence --The whole progression has been cited as an answer--is a passive sentence, and the author turns it into an active sentence by adding the new subject " 人們 ".

2.2Complex Insertion Structure

"In English, due to rhetorical and stylistic considerations, some fixed structures or collocations are often embedded with longer other components, which makes the integrity of the structure itself or the internal relationship between collocations difficult for readers to perceive" (Kang, 2012, p.159).

Generally speaking, the insertion structure reflects emphasis or supplement to keep the sentence balanced, but there are a few excessively long insertion elements in Chinese. Therefore, when translating, the author often adopts the reversing and splitting-off method to adjust the insertion elements according to the logical structure of the sentence and the Chinese expression.

2.2.1 Reversing

"Reversing in translating long and complex English sentences refers to adjusting the sequence of a given sentence to make it conform to Chinese usage. A sentence element of preposition may be placed at the end of the whole text; on the other hand, an end-position element may be placed at its beginning" (Xu, 2003, p. 165). The principle is to make the word order of the translated text more in line with the Chinese way of expression.

Example 3: The results obtained from the fusion of oxygen combustion and post-combustion capture were

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very interesting, and in order to analyze the whole process, the utmost thing to do is to distinguish the linkage of oxygen mole fraction on the feed side with CO2 mole fraction of the dry flue gas present in the downstream area.

譯文：將氧氣燃燒技術和燃燒後捕集技術進行結合，得到的結果十分理想。要想分析整個過程，最重要的壹步是區分進氣口處的氧摩爾分數與排氣口處幹法煙氣中 CO2 的摩爾分數的關系。

The passive sentence “obtained from the fusion of oxygen combustion and post-combustion capture” is used as a postpositive attributive to modify “results”. It is also the insertion which is inserted between the subject and predicate. The author reverses it into the front of the sentence to keep the balance. The meaning of the first half of the sentence is relatively complete. “in order to analyze the whole process” is used as a parenthesis to connect these two clauses before and after. Therefore, to clarify the logic, the author cuts it off here and treats it as a conditional adverbial of the second sentence.

Terminologies reflect scientific concepts and contents, which should be translated accurately because they are the basis of scientific and technical translation and the prerequisite for the correct understanding and reproduction of the original content. Peter Newmark (2001, p.155) also emphasizes the importance of terminology, “In a word, to translate a text you do not have to be an expert in its technology or its topic; but you have to understand that text and temporarily know the vocabulary it uses.” In this sentence, attention should be paid to these terms like “on the feed side” and “in the downstream area”. Consulting the dictionary or a professional is necessary to ensure their scientificity and accuracy.

2.2.2 Splitting-off

“The so-called splitting means taking certain elements (clause, phrase, or word) out of a sentence and treating them separately” (Xu, 2003, p.165). Commonly, some elements in long English sentences are difficult to handle by cutting and embedding. The practical way is to take them apart and put them at the head of the main line or the end of the sentence to avoid blocking understanding.

Example 4: Monoethanolamine (MEA) is an amine-based separation where different types of amine solvents can be used, such as simple alkanol amines, primary, secondary, tertiary, hindered amines, mildly hindered primary, moderately hindered and cyclic diamines that are relevant for low-CO2 partial pressure streams and give a high restoration rate up to 98% as well as 99% of the purity of the finished product.

譯文：乙醇胺 (MEA) 是壹種是氨基分離劑。根據 CO2 低分壓流的不同，使用不同類型的胺溶劑，如簡單的鏈烷醇胺、伯胺、仲胺、叔胺、受阻胺、輕度受阻伯胺、中度受阻胺和環二胺。此外，胺溶劑再生率高達 98%，分離的 CO2 成品純度高達 99%。

This sentence is a subject-verb-predicate (SVP) mode followed by an adverbial clause, an attributive clause, and a compound clause. Antecedent “Where” leads to an adverbial clause, modifying antecedent “separation”; the predicate of this clause is “can be used”, a passive voice. “ English narration of science and technology is often an objective thing, phenomenon, or process, while the theme is often the person or setting engaged in a certain job. At this time, using the passive voice is not only objective but also can focus the reader’s attention on the narrative object” (Liu, 2019, p. 239). However, the Chinese are not obsessed with the relationship between subject and predicate, so the author translates passive sentences into active ones. There are 8 special

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terms after “such as”; the meaning must be checked carefully. The attributive clause led by “that” contains another clause, and the second phase contains an “as well as”. The author uses the embedding method, and the “that” clause is translated as a prerequisite. Then, she cuts the sentences with 60 words into many short sentences in Chinese and adds the conjunction “ 此外 ”.

2.3Complex Compound Structure

Layers of modification are the characteristics of complex compound structures, then these sentences become lengthy. There are great differences between English and Chinese in terms of sentence structure and expression habits, so in many cases, long and difficult sentences in English should not be translated into Chinese versions with a similar form. In translating complex compound structures, the author uses recasting and inserting.

2.3.1 Inserting

“By inserting here, we mean putting some additional punctuation marks such as dash, parenthesis, colon, etc., in a long and complex sentence to make the Chinese version clear and smooth” (Xu, 2003, p. 166). Using dashes and brackets in Chinese can make translation more convenient and avoid omissions. However, it should also be noted that the insertion part should not be too long.

Example 5: Comparing with other separation techniques for CO2 capture, membranes have shown different advantages as membranes are cheap, and there is no requirement of regeneration, which makes the heat-exchange systems simpler; solvents are not required for the process, making them more eco-friendly, requires less set-up space and shows great efficacy in separation techniques.

譯文：與其他 CO2 捕集分離技術相比，膜分離法具有另外壹些優點：成本低、無須再生利用（這樣熱交換系統會更加簡單）、不需要溶劑（這樣更環保）、占地面積小並且捕集效率高。

The main clause is a sentence with the subject-predicate-object structure. “Such as” leads the following five-coordinate parts. “which” leads a non-restrictive attributive clause as a parenthesis. “solvents are not required for the process” is a passive sentence, which can be translated into an active structure in order to make the expression coherent. The adverbial clause of result led by “making” is used as a parenthesis to modify “solvents are not required for the process”. “requires less set-up space” and “shows great efficacy in separation techniques”, two verb-object phrases, are juxtaposed with “membranes are cheap”, “there is no requirement of regeneration” and “solvents are not required for the process”.

The communicative translation is ephemeral and rooted in its context. It is not difficult to find many coordinate elements in this sentence, but there are two parentheses in the sentence, and the active sentence is used alternately with the passive sentence pattern, which makes the sentence complicated to understand. Therefore, when translating, the author puts two parentheses in brackets to ensure the sentence is fluent and uninterrupted.

2.3.2 Recasting

“Recasting in translation entails the translator, who, based on an accurate comprehension of the original,

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should flexibly adjust or rearrange it without considering the original structure or sequence" (Xu, 2003, p.167). This method can smooth the translation, but it requires translators to be proficient in Chinese and English.

Example 6: The overall objective of research in global carbon cycle has been taken into account for complete mass balance of the CO2 production which is caused by anthropogenic activities which include its processes and sources that remove it from the atmosphere (sink) and reservoirs where carbon is stored.

譯文：人類活動，作爲碳循環中的壹環以及碳源，産生了大量的 CO2。爲了實現碳中和，人們制定了全球碳循環研究的總目標，包括吸收空氣中的碳（碳彙）以及減少碳庫中的碳。

The emphasis of this long and difficult sentence with 47 words still lies in the nesting of multiple clauses. Based on analyzing grammar, it is also necessary to distinguish the logical relationship that the author wants to express. Analysis of sentence structure shows that "for" leads to the adverbial of purpose, which contains the attributive clause led by the first "which" and modifies "CO2 production".

Communicative translation aims to achieve content and language that are readily acceptable and comprehensible to the readership. In this sentence, the author translates the adverbial of purpose first, which conforms more to Chinese expression habits. The main sentence is passive, and the author adds " 人們 " as the subject and changes it into an active sentence. The second "which" leads the attributive clause and modifies "anthropogenic activities"; "that" leads the attributive clause and modifies "The overall objective"; "where" leads the adverbial clause of place and modifies "atmosphere (sink) and reservoirs". The author removes the shackles of the original English order and recasts the sentence structure to translate more smoothly and clearly.

3. Conclusion

Sci-tech texts are characterized by rigorous logic, clear expression, and plain style. The author's translation strategies are summarized as follows.: cutting is suitable for translating complex parallel structures and dividing the meaning of sentences into meaning groups while embedding can be used in complex parallel structures with attributive or adverbial clauses. Complex Insertion structure makes sentences fragmented, while reversing and splitting off can rearrange the order. Complex compound structures often contain a variety of modifiers, so inserting and recasting are more suitable. However, in an actual translation, the choice of translation methods should be made according to specific situations, and it is often necessary to use several translation methods simultaneously.

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