# Analysis of Scientific and Technical Texts Translation Based on Communicative Translation Theory

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***Abstract:*** In recent years, China has been developing science and technology and gradually stepping into the ranks of scientific and technological powers. While developing its own science and technology, China is also learning from the advanced scientific and technological achievements of the West, in which scientific and technological translation plays a very important role. Under the guidance of the theory of communicative translation proposed by Peter Newmark, the article analyses the characteristics of scientific and technological texts and discusses the translation methods and techniques of professional vocabulary, special sentence patterns and long and difficult sentences in scientific and technological texts, combining with the analysis of examples in the course of 'scientific and technological translation'.

***Keywords:*** communicative translation; scientific and technical texts; translation methods

## 1. Introduction

Science and technology are the primary factors of productivity. Scientific and technological English is of great significance in promoting the development of our economy and society. As a carrier of scientific and technological translation, the function of scientific and technological English cannot be ignored. For a long time, there are two major problems in scientific and technological translation. The first problem is that traditional translation theory has only a certain guiding effect on scientific and technological translation. Traditional Chinese translation theories mostly focus on literary translation, and it is difficult to apply them directly to scientific and technological translation. Secondly, the readability of scientific and technical translations is poor, often accompanied by incoherence, lengthiness and ambiguity. Scientific and technical translations are less appreciated than literary translations. For information-based text, the translator should do both faithfully convey the main idea of the original text and pay attention to the reader's understanding of the acceptance of the translation, and the translation should try to make the reader get the same reception effect as the original reader as far as possible, which is the essence of Newmark's communicative translation.

## 2. Theory overview

Peter Newmark is a famous translator and translation theorist. 1981, the birth of a book Approaches to Translation, he first proposed communicative translation and semantic translation, which is a major achievement in the development of translation theory in the 1980s. The development of translation theory in the 1980s was a major achievement. Among these two translation strategies, Newmark believes that 'in communicative translation, the translator uses the target text to express the same effect as in the original language; in semantic translation, the translator expresses the true contextual meaning of the source language to the extent permitted by the syntactic structure and semantic aspects of the target text' (Newmark, 2001: 39).

Both communicative and semantic translation theories are significant contributions to Newmark's translation theory, and the focus of the two translation strategies is different. In the field of literature, translators often aim at expressing the context and style of the original text, and more often use the semantic translation theory; most of the texts in the non-literary field are informative, such as political commentaries, news, scientific and technological documents, etc., which not only need to be objective and accurate, but also need to make the readers of the target language and those of the original text have the same feeling and effect in the process of reading. Scientific and technological English is a kind of English application style adapted to the rapid development of science and technology in the world, which contains the types of scientific papers, academic works, innovative results or conference reports based on scientific research and development. Therefore, it is more appropriate to use communicative translation in the scientific and technological genre.

## 3. Application of Communicative Translation Theory in the Scientific and Technical Texts

### 3.1 Lexical level

In scientific writing, a large number of technical terms are used, and there will also be professional usage of common words. Under specific contexts, the translation of professional words will be completely different.

Example 1: Despite a severe economic downturn in a region whose growth once seemed limitless, many energy companies have too much invested in the oil sands to slow down or turn off the taps. (source text)

尽管这个曾经看似前景无限的地区经济严重下滑，但许多能源公司在油砂矿上的投资太多，以至于无法放缓或停止开采。(target text)

Analysis: This phrase “turn off the taps” is hard to judge if it’s a single phrase. Only in a specific language environment can we determine the exact meaning of words in a specific context. Based on the investments of energy companies mentioned above, then “tap” should be translated to mean extraction and development. So the translation is “ 停止开采 .” Therefore, in the process of translation, we can not ignore the importance of context, if translated into “ 关掉水龙头 ”, it will cause the translation is not smooth, even confusing.

In scientific and technical texts, there are also a large number of syntactic words. With the rapid change of science and technology development, a large number of scientific and technological words appear in the form of borrowing, synthesis, contraction, etc.

Example 2: Syncrude oil plant (ST)

合成油炼油厂 (TT)

Analysis: Syncrude is composed of the prefix “syn”, meaning synthesis. Add the word “crude”, translated as “ 合成油 ”, and the basic meaning of “plant” is often translated as “ 植物 ”, which is widely used in scientific English, but the word has different meanings when used in combination with different words. Therefore, “Syncrude oil plant” should be translated as “ 合成油炼油厂 ”.

Example 3: Capital--intensive projects (ST)

资本密集型项目 (TT)

Analysis: “Capital-intensive” is a compound word. It is a compound adjective composed of a noun plus an adjective, meaning “ 资本密集的 ”. In fact, in scientific translation, most compound words or phrases should be translated by literal translation. Only by analyzing the semantics, accurately finding out the central word, and correctly understanding its structure, can we achieve the purpose of accurately expressing the original meaning, which is crucial for us.

### 3.2 Syntactic level

Passive sentences are widely used in scientific and technological translation, which in many cases will make the text more concise and clear. Since scientific writing focuses on stating facts and emphasizing objective accuracy, excessive use of the first and second person will give people an impression of subjective assumption, so the third person is often used as much as possible. The passive voice in scientific writing can better highlight the main body and focus of scientific research. Therefore, translators should take into account the differences and habits of Chinese and English language expression when translating passive sentences in scientific and technical texts, and use more flexible skills to deal with translation to achieve the purpose of communication.

Example 4: Oil sands projects are based on 40-year investment time frames. (ST)

油砂项目的投资期限为 40 年。(TT)

Analysis: This sentence cannot be translated as “ 油砂项目被基于 40 年的投资期限 ”, because this does not conform to the Chinese expression habit, so it should be translated as “ 油砂项目的投资期限为 40 年 ”, which is easier to understand. In English, technical writing usually puts the main information first, in the position of the topic. This is the main reason why passive sentences are widely used. The reason why the passive voice is used in scientific English is because it mainly describes a process, so the focus of the sentence is often not “who did it”, but “what was done” and “how did it”, which determines that the performer of the action is in the position of “unimportant”. So the passive voice is often used in scientific writing.

Another feature of scientific writing is the use of long and difficult sentences with complex structure and rigorous logic, which is also a major difficulty in scientific English translation. Most of the reasons are due to the difference in expression between Chinese and English. Chinese is a paratax-based language, and simple sentences are often used to express the meaning of sentences. English, on the other hand, is a language based on syntaxis, and the text is often long and difficult sentences that can reflect strict logical thinking.

Example 5:The Chinese-owned company Nexen, which had its oil sands production curtailed by regulators for about a month in August because of a pipeline leak, has deferred plans to build another upgrader facility, where tar-like bitumen of the oil sands is converted into synthetic crude oil, until the end of 2020."(ST)

今年 8 月，中资企业尼克森公司因管道泄漏被监管机构削减了约一个月的油砂产量 "。该公司已将建造另一个升级设施的计划推迟到 2020 年底 , 这个升级的设施可以将油砂中的焦油状沥青转化为合成原油。(TT)

Analysis: This long sentence consists of three non-restrictive attributive clauses. If translated sequentially, it is difficult to accurately express the meaning of the original. If translated in reverse order, it is difficult to understand the original meaning. Therefore, in translation, the translator adopts the splitting method, which disrupts the original order of the sentence according to the logic of the sentence and the sequence of time, and divides the clause into independent sentences.

The translation of long sentences is a challenge in scientific English translation because they contain complex grammatical structures. Translating such sentences requires skill, but the method is not fixed. According to the communicative translation theory, the function of the original text should be preserved, the logical level should be analyzed according to the meaning group, and the appropriate translation method should be flexibly selected. The final translation should meet three requirements :(1) clear narrative logic; (2) Accurate scientific expression; (3) Fluent Chinese expression. Translators need to improve their English level, learn scientific and technological knowledge, pay attention to translation skills, sum up experience, and deepen Chinese cultivation to ensure that the translation is both faithful and standardized.

## 4. Conclusion

Scientific and technical texts use a large number of professional terms, special vocabulary and passive sentences to show objectivity and logical rigor, and translators need scientific and technical knowledge to accurately convey meaning and maintain the characteristics of the text. Scientific and technological translation should follow the principle of faithfulness and smoothness, and at the same time explore the artistic characteristics and retain the characteristics of the original text. Newmark believes that the selection of translation theory should consider the type of text, the audience and the purpose of translation, technical style emphasizes the transmission of objective facts, communicative translation pays attention to readers' understanding, and flexibly organizes expression to meet the needs of readers.

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