

“Functional Equivalence” Cases in E-C Translation of Long Sentences in EST Text and Their Implications to Translation Teaching

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The research is financed by 1. Science and Technological Development Project of Binzhou City (滨州市社会科学规划课题 No.2015ZC0118); 2. The Art and Science Project of Shandong Culture Department (山东省艺术科学重点课题 No. ZX2015091); 3. Key Project of Social Science Planning in Binzhou (No.16-SKZC-7);

Abstract

English for Science and Technology (EST) translation plays an increasingly significant role in the scientific field. Compared with the general non-technical English, EST is characterized by its extensive use of long sentences containing enormous amounts of information and complex structures. There are great differences in sentence patterns of EST and of Chinese for Science and Technology. Through case studies, this paper explores the emerging “Functional Equivalence” cases in Chinese translation of long sentences in EST by analyzing the text hypotaxis-prominent English sentences, which are compact in structure. In contrast, parataxis-prominent Chinese sentences are loose in structure. The paper induces that as the effect of EST (one of the information typed texts) on the reader is more univocal than other texts because it aims to convey information to the reader and requires high accuracy. The paper argues that Functional Equivalence Theory can guide the teaching of EST translation due to the fact that it emphasizes the target reader’s response.

Keywords: Functional Equivalence Theory; EST long sentence; translation

1. Introduction

With the reform and opening-up of China, many western translation theories and standards have been introduced into the country. For example, Peter Newmark, one of the communicative school representatives, has made great contribution, arguing that communicative translation attempts to produce an effect as close as possible to that obtained on the readers of the original. In Nida (1986) ’s view, translating activity consists in reproducing in the receptor language the closest natural equivalent of the source-language message, first in terms of meaning and secondly in terms of style (Hu, 1996).

There are complex structures and varied modifiers in EST long sentences, so it is more difficult for readers to grasp the meaning of EST long sentences. Nida put forward Functional Equivalence Theory and held that translation means reproducing resource message by most natural equivalent language from semantics to concept to get a more comprehensive understanding. This theory could act as a standard applied in the translation of EST long sentences (He, 1998).

In translation activity, it is necessary for translators to learn the function of the texts and understand the differences in expression between the source language and target language to achieve functional equivalence and ensure accuracy and objectivity of translation (Gu, 2017).

Researches abroad and home are mostly based on Functional Equivalence Theory or EST long sentences separately and few combines them both. According to Huang (2017), when translating EST long sentences under the guidance of functional equivalence, these four strategies can be taken into consideration: reference, substitution, omission, and lexical articulation to achieve articulation and coherence in the translation.

This paper makes a general description of EST and its characteristics from the syntactical level of the long sentence. It represents the application of functional equivalence in the translation of EST long sentences and suggests translation methods on the rhetoric level under the guidance of Nida’s functional equivalence.

2. Functional Equivalence Theory

In the 20th century, translation began to be studied scientifically and systematically. Different schools of western translation theories have their own perspectives toward translation. As one of the most well-known translation theorists and linguists, Eugene A. Nida puts an emphasis on the outcome of what the reader has received. The emphasis on the outcome is more suitable for translating materials requiring higher accuracy.

2.1 Definition of Functional Equivalence Theory

According to Nida, in translation “Functional Equivalence” should be achieved between two languages rather than the rigid correspondence of words. This theory states that translating is a communicating process, and what the reader has received is emphasized. “Translating consists in reproducing in the receptor language the closest natural equivalent of the source-language message, firstly in terms of meaning and secondly in terms of style.” (Nida and Taber 1969 : 12) That is to say, Nida believes that the meaning of translation is more important than the form.

2.2 The Development of Functional Equivalence Theory

The development process of Functional Equivalence Theory can be generalized into three phases (Fang, 1989). In The first phase is from 1959-1964, translators emphasized the connection between “dynamic equivalence” and “formal equivalence.” In 1964, his book *Toward a Science of Translating* first put forward the idea of “dynamic equivalence”, in which one should aim at establishing a dynamic relationship between receptor and message. In other words, dynamic equivalence gives priority to the receptor’s response with less consideration on the form. Differently, formal equivalence pays much attention to the form of text.

The second phase is from 1969 to 1984. In his book *Language, Culture, and Translation*, Nida (1969) clearly considers “dynamic equivalence” as “the degree to which the receptors of the message in the receptor language respond to it in substantially the same manner as the receptors in the source language.” The concept “formal equivalence” was also replaced by the concept of “formal correspondence,” which is opposed to “dynamic equivalence.”

The third phase is from 1984 to the present time. In 1986, “dynamic equivalence” was replaced by “functional equivalence” in Nida and De Waard’s co-authored book *From One Language to Another*. He pointed out that what makes “functional equivalence” unique is that it prioritizes the receptor’s response instead of the verbal consistency between the original and the receptor’s language. According to Nida’s theory, “The focus of translation should not be the way of displaying, but to be the response of reader to the translated version” (Tan, 1999), which should be contrasted with the possible response made by readers to the original text.

2.3 Key Points of Functional Equivalence Theory

There are three aspects in Nida’s Functional Equivalence Theory. The first one is lexical equivalence, the second one is syntactical equivalence, and the third one is discourse equivalence. Nida (1978) suggests that meaning is the most important, and form comes the second among these three aspects. If the change of form is still not adequate for expressing the semantics and culture of the original text, the translation technique of reinvention can be used to solve the translation issues derived from cultural differences.

3. An Introduction of English for Science and Technology

3.1 The Classification of English for Science and Technology

EST (English for Science and Technology) covers a large scope. In *English Varieties and Translation* (文体与翻译), Liu (1998) briefly described his opinion on EST, arguing that EST is generally written or spoken English regarding science and technology. He also attempted to classify EST into five categories for a better analysis of their characteristics:

1. Scientific and technological books, scientific research papers, scientific and technological reports, experimental reports and schemes;
2. All kinds of scientific and technological information and written materials;
3. Manuals describing the structure and operation procedures of machines, instruments, meters, machinery, etc.;
4. Terminology can be used in talks, meetings and conversations concerning science and technology;
5. Oral commentary or written captions are used in scientific and technological films and videos.

3.2 Previous Research on Translation of EST

It is believed that EST first came into being in the 1950s, along with the development of science and technology. During the 1980s, studies on EST translation and theory were comprehensively conducted. A large number of papers about EST translation study were published in China’s highly influential journal *Chinese Translators* (中国翻译), founded in 1979) in order to explore translation theory and to find efficient translating skills. The journal discusses extensively the translation of pragmatic styles. Another journal on translation is the *Chinese Science and Technology Translators Journal* (中国科技翻译) founded in 1988. As a leading journal for EST, the journal aims to encourage the study of theory and practice of translation, facilitate the study on EST translation. EST translation study advanced enormously in 1980s thanks to the above-mentioned journals as a platform.

Li (2009) believed that the terms, logic, formulas, tables and numbers in EST texts should be understood and translated accurately; EST translators should express concisely and smoothly and conform to the international standards when rendering style, terms, abbreviations, symbols, formulas and measurements, etc. From a stylistic perspective, Fang (1989)

pointed out that literal style and technical style are interpenetrated due to translators' emotional expressions in certain types of EST translation. Therefore, EST translation can be persuasive rather than uncreative and unimaginative.

3.3 Syntactic Characteristics and Long Sentences of EST

Compared with literary language, EST has remarkable linguistic features, mainly in two aspects: lexical and syntactic. Many technical terms can be found in the lexical aspect, which requires translators to consult the relevant professional books to a great extent. Words are the basic units of sentences, according to statistical material. In EST articles, on average, the number of words in an EST sentence is from 20 to 30. EST is more academic, containing more words and compound sentences than other types of articles.

3.3.1 The Differences between English and Chinese Long Sentences

English is hypotaxis-prominent, while Chinese is parataxis-prominent. English sentences are well structured, while Chinese ones are loosely structured. English is used to putting the main point in the sentence-initial subject, then adding additional elements into it, while Chinese is used to stating first and commenting then. A long sentence refers to a simple sentence that contains pretty phrases attributive and adverbial or refers to the subordinate clause that contains various clauses. EST long sentence is more flexible in connection mode.

Nida points out that the accuracy of content should not be judged primarily in terms of "being true" to the author but is not causing misunderstanding of the message by those for whom the translation is intended. Therefore, when translating an EST long sentence into Chinese, one should reorganize the sentence according to Chinese means of expression so as to ensure natural translation.

3.3.2 Syntactic Characteristics of EST

Generally speaking, EST sentences are expressed in a well-organized and original structure to achieve a scientific style, objectivity, conciseness and formality. In some cases, one paragraph is even made up of one single sentence. In Nida's theory, functional equivalence translation is defined as "the closest natural equivalent to the source-language message." In order to accurately understand the meaning of words, context must be taken into consideration. Based on the study of EST texts, there are several syntactic characteristics of EST long sentences, including the wide use of nominalization structure, passive voice and non-finite verbs.

3.3.2.1 Nominalization

Nominalization generally refers to the conversion from a verb or an adjective into a noun or noun phrase grammatically, which essentially conveys an equivalent meaning with its correspondent verb or adjective. Considering the priority given to the receptor's response, the content implied by the nominalization words should be preserved and efficiently communicated by making necessary formal changes that may even depart from the English text. Therefore, converting noun phrases into other forms of the phrase will make the translation easier to understand for Chinese receptors (see the following examples collected from the practical context).

Example 1

Source text: Harmonization of the definition of "producer," "distributor," "placing on the market" in all two Directives would solve this problem.

Translation:一旦将两项法规中“生产者”和“分销商”,“投放市场”和“上市”的概念进行统一,这些问题将迎刃而解。(Yīdàn jiāng liǎng xiàng fǎguī zhōng “shēngchǎn zhě” hé “fēnxiāo shāng”, “tóufàng shìchǎng” hé “shàngshì” de gàiniàn jìnxíng tǒngyī, zhèxiē wèntí jiāng yíngèn'érjiě.) -Translation by the author Cheng Hu, same as below unless specified

Here in the English version, the nominalization of the verb "harmonize" is to lay stress on the action, thus making it the subject of the original sentence. Due to the difference between the linguistic patterns of the two languages, however, English language conveys the same meaning in a way different than Chinese. In order to avoid translationese, the translation converted the noun "harmonization" into its verb form "harmonize" and, most importantly, adopted an "if" adverbial clause. Although the new sentence structure totally departs from the original text, it effectively reproduces the meaning of the message and is quite acceptable for Chinese receptors.

3.3.2.2 Passive Voice

Passive voice is extensively used in EST to emphasize objective facts and stress the most important information in the sentence. In EST texts, most sentences are impersonal ones, because it usually makes a concise and objective description on the object, not emphasizing the behavior conductor. At least one-third of verbs in EST texts use passive voice. In this way, the sentences seldom start with "I," "you," or "the operator to show the subjective attitude of the source language (see the following example).

Example 2

Source Text: When the exploration has been completed, all test holes and pits should be carefully filled to prevent human and stock injury and compacted to prevent leaks.

Translation: 勘察完成后, 应仔细填实所有试验孔和实验坑, 以防止人员和牲畜受伤, 同时应将其压实以防止泄露。(kān chá wán chéng hòu , yīng zǐ xì tián shí suǒ yǒu shì yàn kǒng hé shí yàn kēng, yì fāng zhǐ rén yuán hé shēng chù shòu shāng , tóng shí yīng jiàng jī yà shí yǐ fāng zhǐ xiè lòu.)

In this sentence, “has been completed” is translated as “完成后” (wán chéng hòu) instead of the directly translated version as “被完成,” because EST texts focus on objectivity and authenticity of the expression, the translation ought to pay more emphasis on the meaning of the source text instead of linguistic structure. Therefore, according to Nida’s translation theory, this sentence should be translated using an active voice in Chinese and keeping the original subject.

3.3.2.3 Non-finite verbs

EST requires explicit and concise description, so the use of non-finite verbs is more frequent than daily English. Infinitive verbs, participle and gerund, are usually adopted to replace the function of the clause (see the following example).

Example 3

Source text: By the time of the Montevideo meeting, ninety-eight countries had ratified the pop treaty, committing themselves to remove the “dirty dozen” chemicals from international commerce.

Translation: 在蒙得维的亚会议上, 九十八个国家批准了《持久性有机污染物公约》, 致力于将“十二金刚”这些化学物质驱逐出国际贸易。(zài méng de wéi de yà huì yì shàng, jiǔ shí bā gè guó jiā pī zhǔn le chí jiǔ xìng yǒu jī wū rán wù gōng yuē , zhì lì yú jiàng “ shí èr jīn gāng ” zhè xiē huà xué wù zhì qū zhū chū guó jì mào yì).

In this sentence, “committing” is a present participial phrase that served as an adverbial modifier, complementing those ninety-eight countries’ efforts for the treaty.

4. Application of Functional Equivalence Theory in the Teaching of EST Long Sentence Translation

Each language has its own special features; EST is also no exception and has its own terminology, sentence order and patterns, unique discourse structures, etc. In the teaching of translation practice, many translation methods and skills are adopted so as to establish a relationship between the translated text (Chinese) and its Chinese receptor, which is expected to be substantially the same as the relationship between the original message (in English) and the English receptor.

4.1 The Way of Testing Nida’s Theory in EST Translation

In Nida’s Functional Equivalence Theory, the translation of EST is divided into two steps **under** the guidance of functional equivalence; that is, the lexical equivalence and the syntactic equivalence. In addition, the discourse equivalence is also highlighted in translation.

At the lexical level, for the translator, the beginning of the translation process involves understanding the meaning of the words. Scientific articles mainly deal with the science and technology arguments or illustrate some natural laws, scientific principles and phenomena. In order to make the translation more conforming to these professional words in a specialized field, the translator is required to devote more energy to accumulating and understanding more background knowledge.

Then syntactically, extensive use of passive voice is the most distinctive feature of EST. Generally speaking, the passive voice always puts more emphasis upon the subject to highlight the important science issues so as to accurately convey the scientific information in all-around aspects as far as possible to make the readers grasp the core points of the texts easily to achieve equivalence in syntactical level.

The long and complex English sentence structure is featured with the use of a variety of modifiers, phrases, coordinate components and subordinate clauses; on the contrary, Chinese prefer to use short sentences, relying on the inner meaning to express the logical relationship in the sentence. Therefore, when translating long and difficult sentences, the translators should first read the whole sentence to grasp the core part of the sentence. That is to say, analyzing and finding out the subject, the predicate and object is the crucial premise to understand the whole sentence. What’s more, much consideration is needed to give the tense, voice and tone of the sentence. Finally, appropriate, cohesive words should be selected to translate these difficult sentences.

Discourse is a specimen of linguistic material displaying structural and semantic coherence, unity and completeness (Nida, 1964). As Nida put forward, the discourse as a whole plays a role of conveying a message, which is also called the text. The discourse is the essence of grasping the whole text. The equivalence at the textual level is mainly manifested by cohesion and coherence. In order to achieve correspondence in meaning and equivalence in function between source and target texts, it is essential for the translator to attach great importance to the expression of logical relation as well as the reasonable organization of content.

On the strength of previous research findings, this paper concludes four methods as follows to apply Functional Equivalence Theory in the teaching of translating EST long sentences.

4.2 Following the Original Order

When the thought and meaning of EST are consistent with those in Chinese in the matter of logical thought, sentence structure and spatial-temporal order, it is necessary to follow the original order, which acts as the preferred method when translating EST long sentences. Syntactically, it is the method to achieve functional equivalence easily because it can reproduce original information both in semantic and style (see Example 4).

Example 4

Source text: In this study, we took advantage of the exogenous administration of recombinant RANKL as a means of synchronously inducing M-cell differentiation throughout the small intestinal epithelium to identify genes induced during the process of M-cell differentiation (Yan, 2000)

Translation: 在本研究中, 我们利用外源添加重组 RANEL 作为手段在整个小肠上皮中同步 M 细胞分化, 从而去认定在 M 细胞分化过程中被诱导的基因。(Zài běn yán jiū zhōng , wǒ men lì yòng wài yuán tiān jiā chóng zǔ RANEL zuò wéi shǒu duàn zài zhěng gè xiǎo cháng shàng pí zhōng tóng bù M xì bāo fēn huà , cóng ér qù rèn dìng zài M xì bāo fēn huà guò chéng zhōng bèi yòu dǎo de jī yīn).

The above example adopts the sequential method. Its expression and logic structure are basically the same as Chinese. The main part of the sentence is “we took advantage of...to identify...”, so it ought to put the main part first and then add an object, adverbial clause of purpose, the adverbial clause of manner and temporal adverbial into the sentence.

4.3 Inverting the Original Order

Even though the translator could follow the original order when translating EST long sentences that have similar word order and logic, quite a few EST long sentences differ from Chinese sentences in time sequence and logic sequence. In this case, translators should invest the original order, ensuring translation is more readable for Chinese readers to achieve functional equivalence (see the following example).

Example 5

Source text: It is fully as important that a machine element is made of a material that has properties suitable for the conditions of service as it is for the load and stresses to be accurately determined.

Translation: 荷载和压力应该计算正确, 机器零件应该用性能符合工作条件的材料制造。这两者都是十分重要的。(Hèzài hé yālì yīnggāi jìsuàn zhèngquè, jīqì língjiàn yīnggāi yòng xìngnéng fúhé gōngzuò tiáojiàn de cáiliào zhìzào. Zhè liǎng zhě dōu shì shí fèn zhòngyào de.)

There are three clauses in this sentence; the first one is a subject clause lead by “that,” this subject clause including an attributive clause “that has properties,” the third one is the adverbial clause “as it is for the load.” Analyzing the sentence structure clearly and comprehending relation and sequence among sentences would make translation easier to achieve equivalence between original readers and target readers’ responses.

4.4 Division Method

In Functional Equivalence Theory, when form and content run into conflict, content equivalence has priority over form equivalence. In some EST long sentences, some phrases or clauses don’t have a really compact connection, and some structures are too complex to be translated as one Chinese sentence. Under these circumstances, the translator can consider the division method, dividing the source sentence into several independent Chinese clauses to make sure translation is more acceptable for Chinese readers (see Example 6).

Example 6

Source text: Ms. Jensen found herself in an awkward position: she was U.S. liaison to an agreement her government hadn’t ratified and overseer of a trove of information about chemicals over whose international fate she had no control.

Translation: 詹森女士发现自己处境尴尬: 她虽然担任了此协议的美方联络员, 但是她的政府并没有认可此协议; 她虽然监管着这些化学物质的重要信息, 但是无法控制这些物质的国际命运。(Zhān sēn nǚ shì fà xiàn zì jǐ chǔ jìng gān gà: tā suī rán dān rèn le cǐ xié yì de měi fāng lián luò yuán , dàn shì tā de zhèng fǔ bìng méi yǒu rèn kě cǐ xié yì ; tā suī rán jiān guǎn zhào zhè xiē huà xué wù zhì de zhòng yào xìn xī , dàn shì mó fǎ kòng zhì zhè xiē wù zhì de guó jì mìng yùn).

In this sentence, the main clause is “Ms. Jensen found herself in an awkward position,” the content after the colon is the explanation for the awkward position, and “and” connects two conjunction components. As for “She was U.S. liaison to an agreement”, “her government hadn’t ratified” follows “agreement,” “overseer of a trove of information about chemicals” is

also a conjunction component, and “whose” leads the following attributive clause. This long sentence including several meanings; therefore, it can be divided into several short clauses. If the translator translates this long sentence according to the original order and form, the translation would be a rigmarole, and response correspondence can't be attained. In the process of translation, adding some conjunction words is also an effective method to ensure expression is more fluent.

4.5 Combination Method

When dealing with some EST long sentences, using the above methods only may result in difficulty; as Nida once said, “Sometimes it is not only reasonable but also extremely advisable to reorganize the formal structure of the original text.”

Example 7

Source text: Rocket research has confirmed a strange fact which had already been suspected there is a “high-temperature belt” in the atmosphere, with its center roughly thirty miles above the ground.

Translation: 人们早就怀疑, 大气层中有一个“高温带”, 其中心在距离地面约三十英里的高空, 利用火箭进行研究后, 这一奇异的事实已得到证实。(rén men zǎo jiù huái yí, dà qì céng zhōng yǒu yí gè “gāo wēn dài”, jī zhōng xīn zài jù lí dì miàn yāo sān shí yīng lǐ de gāo kōng, lì yòng huǒ jiàn jìn xíng yán jiū hòu, zhè yī qí yì de shì shí yǐ dé dào zhèng shí).

This sentence can be divided into four parts. “Rocket...fact” is the main part of the sentence, “which” introduces an attributive clause, “there is” leads an appositive clause, “with...” acts as a decorative component for “high-temperature belt.” After considering these four parts, the translator can translate the main part solely and combine the rest.

Based on the above discussion of four EST translation methods, no matter whether literal translation or literal translation is employed, those four methods should be considered. One must not translate the message by matching the words or grammatical structure between Chinese and English because a translator should strive for equivalence rather than identity.

5. Conclusion

As a kind of information type text, English for Science and Technology (EST) is characterized by frequent use of nominalization, passive voice and non-finite verb at the syntactic level, and there is no uniform standard to guide the translation work. The translation of EST requires high preciseness, accuracy and objectivity. In this respect, Functional Equivalence Theory is adaptive because of its high priority on the reader's response.

Nida's view on language and culture, readers' response, and science of translation is concisely reviewed in the paper. The paper evaluates Nida's functional equivalence and analyses the syntactical features of EST at the pragmatic level based on examples, as well as deals with the teaching of translation practice by selecting the most appropriate translation strategies under the guidance of Nida's Functional Equivalence Theory.

Admittedly, this paper is general research on the characteristics and translation of EST. It is hoped that the understanding and application of Functional Equivalence Theory in the translation of EST can inspire readers' comprehension and accelerate the process of scientific exchanges between China and other countries.

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