

A Study on the E-C Translation of Electrical Equipment Instructions on Discourse Level: A Functional Equivalence Perspective

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Abstract: Firstly, the paper analyses the previous studies on equipment instructions and some comments on previous studies are made. Then, the paper discusses the discourse linguistic features of English electrical equipment instructions through case analyses. Based on the discourse linguistic features, the paper analyzes the feasibility of Nida's Functional Equivalence Theory in the E-C Translation of Electrical Equipment Instructions and how to achieve equivalence on discourse level under the direction of functional equivalence theory. Finally, some translating methods are proposed to achieve equivalence on discourse level in light of functional equivalence theory. For equivalence on discourse level, such methods as substitution, repetition and inversion etc. are adopted to achieve cohesion and coherence.

Keywords: Electrical Equipment Instructions; Functional Equivalence Theory; Discourse Level

1. Introduction

Due to the rapid growth and industrialization, China has become the second largest economy after the United States and is considered to be a burgeoning economy. (Jiang Qinyun, 2015) Along with the rapid development of international trade and economic globalization, more and more foreign electrical equipment are imported into China's market. To import electrical equipment from foreign countries, an effective instruction plays an irreplaceable role. Thus, it is of practical value and great significance to study how to translate the English electrical equipment instructions into Chinese appropriately. Apparently, the E-C translation of electrical equipment instructions is a kind of practical translation for English for Science and Technology (EST). In contrast to literary translation, the translation of electrical equipment instructions has not been systematically studied yet and many traditional theories can't be applied to it, especially for the translation on discourse level.

2. Previous Studies on the Translation of Electrical Equipment Instructions

The translation of electrical equipment instructions is generally analyzed in the EST circles. For many years, the translation of equipment instructions has been attracting many researchers and translators to conduct investigations contributed to exploring more effective translation strategies to further the development of the situation.

2.1 Previous Studies at Home

The translation of electrical equipment instruction is quite a new subject. With the increasing status of the translation in this field nowadays, some translators and researchers in China have come to focus their attentions on the translation of electrical equipment instructions.

Prior to studying the translation of electrical equipment instructions, it is essential to review the research that has been done on it. About 200 articles on equipment translation are found through searching websites CNKI, WANGFANG DATA and DUXIU, of which most apply Skopostheorie. Others adopt such theories as Functional Theory, Functional Equivalence Theory, Reception, Relevance and so on. The research carried out on the translation of electrical equipment instructions from many perspectives could be summarized as follows:

Ling Weimin published an academic paper in 1981, discussing Scientific English and its translation

in *Chinese Translators Journal*, which is regarded as one of the earliest articles related to electrical equipment translation. He presents his insights into the translation of electrical equipment instructions, that English words or phrases may have different meanings, imperative sentences are widely used, and a large number of syntactic structures appear in this kind instructions^[1]. At last, the corresponding translation methods are proposed in this paper.

In 1994, another article related to the translation of electrical engineering by Shuai Jianlin was published. He demonstrates the importance of logical thinking in the scientific English translation process of electrical engineering^[2]. Some features of English electrical engineering translation have been systematically summarized in this article.

Zhu Zhide published the article *English Stylistic Features of Industrial Product Instructions and Its E-C Translation* (2003), in which he discussed stylistic features of product instructions on lexical, syntactic and discourse level in order to have a user-friendly translation. In the translation process of dealing with the widely spread nominalization, the author analyzes and affirms some appropriate translations. In addition, some errors are pointed out and the corresponding translation strategies are put forward^[3].

Zhou Siyuan discusses the linguistic features of industrial equipment manuals and the translation skills in his article *Linguistic Features of Industrial Equipment Manuals and Its Translation under Functional Equivalence Theory* in 2010. The main points that he makes mainly include the following two aspects: firstly, he explains the linguistic features of the instructions and manuals; then he puts forward the corresponding methods and skills of E-C translation to achieve a version of accuracy and smoothness^[4].

Li Zicheng (2014) studies the syntactic features and the translation of English for electrical engineering and automation. Li holds that translation should be faithful to source texts and convey the content and styles of source text accurately and completely, including the original ideas and spirit. Translators are not allowed to arbitrarily distort, add or omit and even tamper with original texts. In their opinions, a good translation must be smooth, conforming to the target language. According to the syntactic features, Li puts forward the corresponding translating methods respectively. It is also stressed in this article that language must be coherent and translation must be logic^[5].

Yao Yu (2017) makes a study on the translation of electrical engineering under the guidance of Skopos theory. He suggests translators should accurately understand the source text, smoothly and faithfully translate it and carefully review and check the translation. A good translator has to take all these aspects into consideration when selecting proper translation methods^[6].

Besides the above studies, there are some other studies on CNKI regarding the translation techniques of equipment instructions. The studies are carried out by such scholars as Fan Xue (2012) Cai Jigang (2016) and He Jinman (2018) and so on. Xu Honggang (2016) analyzes the features of words and sentences, such as abbreviations, terminologies, division of sense group, word order and complex sentences. Wei Mengfen (2015) discusses the translation of EST and pays much attention on the translation of lexis. To choose the suitable words in the translated version, Wei puts forward some translating methods. Li Yan (2018) and Zhu Tianfa (2018) expounds the translation skills adopted in word selection, passive voice and attributive clause.

2.2 Previous Studies Abroad

Quite few researchers and translators are found to carry out studies on instruction translation abroad. Thus, for the translation of equipment instructions, there are not so many scholars as in China who have carried out studies in this field.

One of the researchers, Eugene Nida, who develops a complete set of translation studies, has proposed and further refined the concept of equivalence theory, which can be found in his books published in 1960s named *Toward A Science of Translating* (1969), and *The Theory and Practice of Translation* (Nida & Taber, 2004). In these two books, Nida defines the two types of equivalence, namely, the formal equivalence and the dynamic equivalence. Though he does not place great emphasis on the translation of electrical equipment instructions in his works, his functional equivalence theory and his view towards cultural differences have put forward the standard for scientific and technical translation^[7].

Another researcher, Peter Newmark (1988) contributes a lot to the study of technical translation. In his opinion, the translation of electrical equipment instructions belongs to informative translation^[8]. He

discusses in his book entitled *A Textbook of Translation* (2001) that literal translation is an appropriate method in the translation of product instructions due to its linguistic features. Both the content and form should be reserved in translation so that the translation may well deliver the exact message of the source text to target readers^[9]. Thus, in order to get a good translated text, it is essential to render the terminologies exactly.

In his book *Strategies to Translate Information Technology Terms in Theory and Practice*, Luu Trong Tuan points out some problems about terminology translation and proposes two translating principles, i.e. recombination of semantic components and functional equivalence. With the help of these two translating principles, translators may “if the translation units in translating the information technology terms are morphemes, words, or phrases” (Luu Trong Tuan, 2011:11-17)^[10].

In Western language research, the translation of electrical equipment instructions belongs to the category of English for Specific Purposes (ESP). So far, there are almost 32 kinds of ESP. At every stage of ESP, there emerge outstanding representatives and books, and they create many ESP journals, such as *ESP Journal* and *ESP World*.

The theories and research articles mentioned above are mainly about EST translation based on ESP theory, but it sets a foundation and provides a clue to the E-C translation of electrical equipment instructions. Some theories and approaches have been used in the translation of electrical equipment instructions, such as Skopos and structural *translation* theory.

2.3 Comments on the Previous Studies

The above studies have provided valuable references and laid a solid foundation for researchers in their theoretical studies and practical translation. The contributions of previous studies can be summarized as follows: studies on some linguistic features, translation principles and methods of equipment instructions. However, the previous studies of the translation of electrical equipment instructions are just in the fledging period and are perplexed by many problems. The studies still have some limitations, which can be summarized in the following aspects:

Firstly, most of those studies focus on the C-E translation of electronics instructions as merely a few researches on the translation of electrical equipment instructions have been carried out. In addition, most scholars only regard electrical equipment instructions as a common branch of instructions and ignore their unique features.

Secondly, most of those studies lack theoretical support in their proposed translation strategies and methods; and most of those studies fail to apply theories to the study of electrical equipment instructions and the translation.

Thirdly, some translation methods are proposed without theoretical support and easily regarded as subjective; some fail to relate the theory with the instruction features and translation, which makes the article unconvincing. Therefore, there is still much room for further study in this field.

To sum up, all the above studies have contributed a lot to E-C translation of electrical equipment instructions, but not enough to achieve a systematic study of E-C translation of electrical equipment instruction on discourse level. Based on the above considerations, this paper attempts to make a study on the E-C translation of electrical equipment instructions on discourse level in light of Nida's functional equivalence theory, and aims to offer some solutions to the existing problems and seek some practical translation strategies and methods.

3. Discourse Features of English Electrical Equipment Instructions

Electrical equipment instructions usually consist of eight sections: overview, installation, functions, troubleshooting, specifications, options, electro-magnetic compatibility and appendices. They have the striking discourse features.

3.1 Formality in Mode of Speech

Belonging to EST, electrical equipment instructions share some common features in scientific texts, such as objectivity, formality, accuracy, authority and conciseness. Electrical equipment instructions describe scientific facts about electrical equipment, which require the instruction language to be rigorous, standardized, objective, accurate and brief. Thus, the speech mode in electrical equipment

instructions should be serious and formal.

Example 1

WARNING

When operating electrical devices, it is impossible to avoid applying hazardous voltages to certain parts of the equipment. Emergency Stop facilities according to EN 60204 IEC 204 (VDE 0113) must remain operative in all operating modes of the control equipment. Any disengagement of the Emergency Stop facility must not lead to uncontrolled or undefined restart.

This is a warning in an electrical equipment instruction. In electrical equipment instructions, a warning generally functions to attract operators' attention and force them to do what it requires. In the above example, demand is made on operators to comply with these rules on ensuring their personal safety. To enhance persuasion and enforce operators to abide, these requirements are put forward in a formal tone, increasing the sincerity of the tone of the warning, which will raise operators' vigilance. To make electrical equipment instructions more formal and sincere, English contractions are usually avoided in the warning part. As is shown in the above example, "it is impossible" is adopted rather than "it's", the reason for which is that they are different in formality. The former is more formal though both are correct English.

3.2 Tightness in Cohesion

Carroll says in his book *Psychology of Language*, "a discourse is coherent if there are semantic relationships between successive sentences. A central concept is the notion of cohesion" (Carroll, 2005:160)^[11]. Scholars and researchers have identified several types of cohesion, namely, reference, substitution, ellipsis, conjunction and so on. In electrical equipment instructions, cohesion is an essential factor to make sure that the accurate information in an instruction is well understood by readers.

Example 2

Remove Front Cover

- a) Remove the control panel, if attached.
- b) Loosen the captive screw at the top.
- c) Pull near the top to remove the cover.

In the above example, ellipsis is used to achieve cohesion. To be more specifically, the sentence "Remove the control panel, if attached" is short for "Remove the control panel, if the control panel is attached", leaving out the phrase "the control panel is". Ellipsis is quite common in electrical equipment instructions to achieve cohesion. In electrical equipment instructions, sometimes writers leave out the connections between sentences because they think readers are able to infer them. The discourse is coherent because the elements are related to one another.

3.3 Strictness in Logicality

Belonging to EST, an electrical equipment instruction is a type of technical writing, which lay emphasis on strict logicality. From beginning to end, an electrical equipment instruction usually contains seven parts, namely overview, installation, functions, troubleshooting, options and appendices. From such a structure, we can see each part is designed for a specific destination, which on the whole is inter-connected with each other. From beginning to end, each part lays the foundation for the next part. For each part, each step lays the foundation for the next one. In general, operators must follow the steps show in instructions and with one step neglected or operated improperly, serious accident can be caused.

Example 3

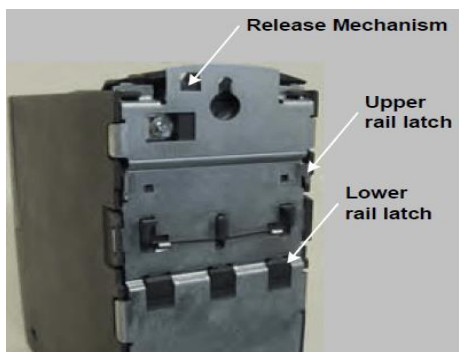


Figure 1: Mounting onto standard rail, Frame Size A

- a) Locate the inverter on the mounting rail using the upper rail latch.
- b) Using a flat blade screwdriver, press the release mechanism downwards and engage the inverter into the lower rail latch.



Figure 2: Mounting the inverter onto a 35 mm standard rail (EN 50022)

Removing the inverter from the rail:

- a) To disengage the release mechanism of the inverter, insert a screwdriver into the release mechanism.
- b) Apply a downward pressure and the lower rail latch will disengage.
- c) Pull the inverter from the rail.

The two figures(Fig.1 and Fig.2) above are extracted from the mounting part of an electrical equipment instruction. they specifically tell operators what tools are needed and how to locate the inverter on standard rail and how to remove the inverter from the rail in a sequential order. Due to the strict logicity, when one step is omitted during the mounting, operators may go back to the former steps to check for it.

4. Nida's Functional Equivalence Theory and Its Feasibility in the E-C Translation of Electrical Equipment Instructions

The American translation theorist, Eugene Nida proposes functional equivalence theory in 1964, suggesting translators should strive for the closest possible equivalent translation to arouse similar responses in the original readers and the target readers. The aim of functional equivalence theory is to arouse similar responses between the target readers and the source readers. Just as he puts it, "translating 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" (Nida & Taber, 2004: 12)^[7]. Functional equivalence is analyzed to include the following key aspects: the reproduction or adaption of the source message, the closest natural equivalent, equivalence instead of identity, significant style, the priority of content to style, among which, "natural" concerns the target language, "equivalent" concerns the message of source language, and "closest" based on the highest degree of approximation binds the source text and target text together (Nida, 1964:166)^[12]. To be general, all these key aspects can be concluded into three points: receptor's response, content over form and cultural factors.

To evaluate the feasibility of a translation theory is to test its ability to solve the problems in translating. Katharina Reiss approves with Nida's equivalence theory and categorizes three functions of

text: informative function, expressive function and operative function (Katharina Reiss: 2004)^[13]. Lu Xiaowen states: “functional equivalence theory mainly contains three aspects: meaning, style and reader's response, which takes the equivalence of meaning and style as the base and stresses the similar response between readers of the translated text and readers of the source text.” (Lu Xiaowen, 2011:25)^[14]. Therefore, we could see “Nida's functional equivalence has four requirements: (1) conveying information; (2) delivering the spirit and style of the original author; (3) smooth language, which meets the standard and convention of target language; and (4) similar reader response.” (Hu Juhua, 2009:134)^[15] Generally, Nida's functional equivalence theory has feasibility to guide the translation of electrical equipment instructions as it is a theory with a particular emphasis on the functional equivalence in translation and the reader reactions.

5. Equivalence on Discourse Level

Discourse, known as text, derived from the Latin word “Textus”, links language units into different structures and networks. According to Halliday Hasan, “any natural language” could be a discourse as long as it expresses the whole meaning and isn't completely constrained by sentence grammar meanwhile. Composed of three parts, namely, words, phrases and sentences, discourse is just a way of communicating.

As a way of communicating, discourse has its own principles, also called seven principles, which are cohesion, coherence, intentionality, acceptability, situationality, intertextuality and informativity (Li Lu, 2001:95)^[16]. Translation is regarded as communication between translators and original texts. Thus, the seven principles would facilitate discourse translation and discourse translation of electrical equipment instructions as well. Compared to word, phrase and sentence translation, discourse translation is the ultimate target of translating, and the translation of word, phrase and sentence serves discourse translation. To achieve functional equivalence in discourse translation, this section will probe into two discourse features by citing some examples of the translation of electrical equipment instructions.

5.1 Cohesion

In this section, discourse cohesion will be explored. Cohesion is defined as referring to the range of possibilities that exist for linking something with what has gone before. There are several types of cohesion in English, mainly including reference, substitution, ellipsis and conjunction. English and Chinese belong to different language families. There inevitably exist many differences in cohesive devices. When translating a discourse, one should carefully consider the differences of cohesion devices in these two languages, which are indispensable to achieve smoothness in translation.

Example 4

a) When the drive inverter is normally powered-up it is assumed that the motor is stationary and the drive inverter accelerates the motor from standstill and the speed is ramped-up to the setpoint which has been entered. However, in many cases this condition is not fulfilled. A fan drive is a typical example. When the drive inverter is powered-down the air flowing through the fan can cause it to rotate in any direction.

b) The “Flying restart” function (this is enabled using P1200) allows the drive inverter to be switched to a motor which is still spinning. If the drive inverter was to be powered-up without using the flying restart function, there would be a high possibility that a fault with overcurrent F0001 would occur.

In the above example, it can be observed that different cohesion devices are adopted in English and Chinese to make the texts smooth. Of all the forms of cohesion, reference is mainly adopted in the source texts to achieve the smoothness. When translating such sentences, one should adopt the translating method of substitution, which means in the translated version, the references are substituted by the specific words and phrases due to the different expression means to achieve cohesion. In the first example, the first word “it” is rendered in “the motor is stationary”, the second “it” in “the fan” according to the contexts. Accordingly, in the second example, the word “this” is translated to “the function”. Besides, division is also adopted in the example to achieve cohesion. For example, the first sentence is divided into several sentences in the translated version. Considering that the logic pattern of the target texts differs from that of the source texts, translators should pay enough attention to the differences in logic between these two languages and make some adjustments in target texts. Upon

the different types of cohesion applied in English and Chinese electrical equipment instructions, translators should also examine the inner relations implied in conceptual paragraphs to find out what the pronouns specifically refer to, then replace them with the specific corresponding referents. Only in this way, can cohesion be achieved in the translation.

5.2 Coherence

Based on the Linguistic features of electrical equipment instructions on discourse level, we will discuss how to achieve discourse equivalence on coherence in this part. Carroll points out, "...coherence of a text, the degree to which different parts (words, sentences, paragraphs) of a text are connected to one another." (Carroll, 2005:160)^[17]. "Coherence is achieved primarily through the appropriate use of cohesive ties between sentences" (Carroll, 2005:167). Generally speaking, in discourse translation, the logics of discourse and the inner relations between different conceptual paragraphs are two important factors that influence coherence and discourse equivalence.

Example 5

A setpoint can be entered via the analog inputs, the serial communication interfaces, the JOG function, the motorized potentiometer as well as also using fixed frequencies. The fixed frequencies are defined using parameters P1001 – P1015 and selected via binector inputs P1020 – P1023, P1025, P1026. The effective fixed frequency setpoint is available via connector output r1024 which means that it can be connected further. If this is to be used as setpoint source, then either parameter P1000 or P0719 should be modified or BICO parameter r1024 should be connected to the main setpoint P1070 or supplementary setpoint P1075. Contrary to parameter P0719, when parameter P1000 is modified, this implicitly changes BICO parameters P1070, P1075.

As is shown in the example, strict logicity is shown through the arrangement of the source text, "overall to partition", specifically, which starts from "the ways to enter a setpoint", then "the ways to define a setpoint", at last, "the effects of the change of a setpoint". The target text follows the arrangement of the source text to reserve the strict logicity of electrical equipment instructions. The inner relationship between different conceptual paragraphs could be seen through the cohesion between sentences by ellipsis, conference and conjunctions. To show the inner relationship and realize coherence in translation, the target text mainly uses repetition, like the translation of the last two sentences. Take the first sentence for example, the translating method of inversion is adopted when considering the differences in the discourse cohesion and habit of the target language. It also can be discovered that Chinese and English versions employ different cohesive devices to create coherence in texts, with more conjunctions in the source text, like "and", "then", "or" and "as well as". In English, coherence is generally regarded as the "visible network" of a discourse, while Chinese sentences lack conjunctions but with the characteristic of Chinese parataxis. By considering the different ways to realize coherence between Chinese and English, it will be much easier for translators to realize functional equivalence in discourse translation.

6. Conclusion

In this paper, a tentative study has been made on the topic of the E-C translation of electrical equipment instructions on discourse level, including the overview of previous studies on the translation of equipment instructions, the linguistic discourse features of electrical equipment instructions, an introduction to functional equivalence theory and the translation of electrical equipment instructions on discourse level in light of functional equivalence theory. The paper aims to offer some appropriate translation methods to achieve functional equivalence for the practical translation of electrical equipment instructions.

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