

A Translation Report on the Process Control and Design Basis of Ethylene

Wang Haojing

Sanmenxia Vocational and Technical College, Sanmenxia, Henan, China

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Abstract: With the rapid development of society and the gradual improvement of era, the first productive force of science and technology is increasingly playing a significant role which is irreplaceable. A great number of advanced devices and numerous high-end products emerges at the right moment. As a consequence, researching on the translation of scientific and technological texts begins to become a kind of need on one hand, and on the other hand, it also presents a fashion. This translation project selects three parts from a series of translation materials, originated from Qinghai Salt Lake Magnesium Industry Ltd., which are mainly related to the process control and design basis of ethylene. The source text belongs to the category of the chemical sphere with its due practical value and the industrial meaning, well worthy of translating. The whole translating process will be presented in the form of report. This report mainly consists of four parts. The first part gives a brief description of the task, including the research content, research objectives and significance and the key problems to resolve, etc. The second part has a careful introduction to the process of translating, such as, preparation before translating, text analysis and translation practice. The third part discusses the specific cases from the lexical, syntactic and textual levels. In the fourth part, the author draws a conclusion from this translation project and proposes some unresolved issues.

1. Task description

1.1 Research content

Relying on the selected material, the author will summarize the linguistic characteristics of such chemical technology texts and explore the new rules and translation methods. Besides, the author will also research and analyze those translation theories which have been learned in class to guide this translation practice, well achieving the theoretical value.

1.2 Research objectives and significance

In terms of research objectives, first of all, the author hopes to have a further understanding of the features and translation skills of EST (shorted for English for Science and Technology) texts through this project. Meanwhile, the author will carefully think over those difficult problems encountered in the process of translation in order to effectively improve the ability to solve

translation problems and enhance the translation level. Secondly, on the basis of avoiding leakage translation, mis-translation and other low-level errors, the author will provide a higher-quality translation through analyzing, converting and restructuring, which conforms to the principles of faithful, fluent, standard and professional translation^[1], thus to achieve its proper value both in the industry and in the social sector. Finally, the author hopes that such translation will broaden her horizons and enrich her knowledge on expertise areas. At the same time, the author also hopes to develop good habits of translation and improve translation speed and quality by doing so.

As for the research significance, it mainly contains three aspects. In the first place, the translation material involves a lot of chemical products, reaction processes, equipment and systems, etc., serving as a kind of information-based text with strong practical utility. To some extent, it has its specific industrial and social values. In other words, the project will promote the development of this chemical trade and play a significant role in the economic growth and social progress. And also, it will make a contribution to the translation world. Therefore, it is well worthy of translating and researching as an appropriate project.

In the second place, the material itself belongs to the category of Science and Technology in text, being in line with the author's professional research direction. By translating and studying such material, the author will not only have a further understanding of EST but also be able to apply theories and techniques she has learned in class to practice, really realizing the combination of theory with practice. Furthermore, it will be conducive to improving the author's translation skills more quickly and effectively as well as enriching her professional knowledge and widening her horizons.

In the third place, as a liberal art graduate, during the translation and research, the author will be bound to meet with all kinds of professional problems because of lacking logical thinking capacity. Therefore, it will be a challenge to overcome the lack of expertise knowledge and then solve problems and provide qualified translation within the specified time. Meanwhile, it will also be an opportunity for the translator to enhance the competence of dealing with problems. So by translating and researching this project, the writer will be able to develop good habits of translation and improve the translation speed and quality.

1.3 Key problems to resolve

By analyzing and reading the source text, the author thinks that there are three problems to resolve. Firstly, chemical English is more specialized with lots of technical terms, so it is a problem in terms of how to understand the specialized terms exactly and translate them correctly. Secondly, there are many passive voices and long sentences in technology texts which are difficult to translate, so it is a question on how to flexibly apply translation skills and realize fluent expression. Thirdly, the translation material involves some processes of chemical reactions. As a liberal art student, the author lacks logical thinking ability. Therefore, it is a problem concerning how to overcome the lack of expertise knowledge and provide qualified translation within the specified time.

2. Process description

2.1 Preparation before translating

Translation, as a kind of linguistic practical activity, is to present some content with one linguistic form instead of another language^[2]. This activity not only involves sole transferring between two languages but also includes complex processes. In most cases, those expertise translators will not translate as soon as they get the source text. On the contrary, they tend to do all kinds of preparation works before translating, such as, to learn the background knowledge, to

establish the vocabulary, to prepare the translating tools, to read the parallel text and so on, ensuring that the following translating can be conducted smoothly. Here are the four aspects mentioned above.

2.1.1 To learn the background knowledge

This translation project on the Process Control and Design Basis of Ethylene includes three chapters in all, which are excerpt from a series of translation materials originated from Qinghai Salt Lake Magnesium Industry Ltd. In terms of the whole material, the selected source texts are not integral and they only act as several representative parts. So it is quite necessary for the translator to learn about the whole material's content, or else, it will be very easy to make a deliberate misinterpretation out of context. In other words, the first task to learn the background knowledge is just to scan all the original texts. Therefore, before translating, the translator first reads the complete content so as to learn about the language's style on the whole and the features of words used.

In addition, another great task is to study related document literature. This material involves a lot of special terms, chemical reactions, mechanical equipment's names and so on with strong profession, which are not familiar to those people without related background knowledge. Especially, the chemical reactions are even very difficult to grasp and understand for an art student because of the restriction of background foundation and logical thinking ability. So the author researches massive relevant materials both in Chinese and English and looks up the chemical terms in the professional dictionaries, expecting to understand correctly those terms and translate them exactly. There is no doubt that such extensive studying and learning on this special field will also help the author understand the source text better and then improve better the target text.

2.1.2 To establish the vocabulary

As all known to translators, to unify terms is very necessary for a long material. At the same time, the source text belongs to the category of EST with numerous specialized terms, which are not familiar to us. What's more, a lot of expressions have their given meanings in the specific areas. Based on such circumstances, the writer underlines these words during general reading, and then carefully looks them up in the dictionary and checks them on the Internet, finally draws their authoritative translation in common use. According to the final results, the writer sets up a list of vocabulary here to aid translating. The glossaries are as follows:

AC Alternating Current
BMS Batch Management System
CAT Configuration Acceptance Test
CCR Central Control Room
COP Critical Operation Parameters
CPU Central Processing Unit
TFT Thin film transistor (flat screen display)
DCS Distributed Control System
DC Direct Current
ESD Emergency Shut Down System
FAT Factory Acceptance Test
FRR Field Rack Room
FDS Fire Detection System
GDS Gas Detection System
HAZOP Hazard and Operability
HVAC Heating, Ventilation and Air Conditioning

IEC International Electro-technical Commission
I/O Input/Output (DCS, FGS, ESD, Etc.)
LFAP Local Fire Alarm Panel
MMS Machine Monitoring System
MOS Maintenance Override switch
PC Personal computer
P&ID Piping & Instrumentation Diagram
PLC Programmable Logic Controller
POS Process Override Switch
PU Packaged Unit
SAT Site Acceptance Test
SIL Safety Integrity Level
SOE Sequence of Event
TÜV Technischer Überwachungs-Verein (Technical Inspection Association). German, 3rd party, certifying authority
UPS Uninterrupted Power Supply

2.1.3 To prepare the translating tools

Having learned the background knowledge and established the list of vocabulary, the writer begins to prepare the translating tools on the basis of the text content and the difficult or easy degree of translating.

At first, the writer prepares reference books, which are indispensable for translating activities. Before translating, the writer should make sure that she has the most essential reference books, dictionaries at hand, such as, Oxford Advanced Learner's English-Chinese Dictionary, Longman Advanced American Dictionary, Modern Chinese Dictionary, Oxford Idioms Dictionary and other paper dictionaries. Besides, the writer also prepares *An Applied Theory of Translation, Translation Theory and Skills* and so on, to act as alternative reference books.

Secondly, the writer prepares the electronic tools. With the rapid development of science and technology, more and more e-tools emerge at the right moment and bring about great convenience for translators. The e-tools mentioned here include the Internet, e-tool books, e-reference books and all other literature and materials which exist in the form of electricity and can be searched in virtue of computers. During this translation activity, the writer makes full use of such e-tools as Lingos, Youdao dictionary online, Google, Baidu search engine and Wikipedia, Baidupedia encyclopedia, etc. to improve the quality and speed of translation.

All in all, preparation before translating plays a very important role in the consequent translating activity. If someone omits this step because of lazing in order to make the things simple, he or she will perhaps meet with more problems so that the things even become more complex. As the saying goes, "Sharpening your axes will not delay your job of cutting wood". A good and full preparation before translating will yield twice the result with half the effort.

2.1.4 To read the parallel text

Parallel texts originally refer to the source text and the target text which are put together side by side and can be literally read^[3]. Afterwards, Li Changshuan uses the parallel texts to indicate the relevant documents and literature of the target language in the book of *The Literary Translation*. The documents and literature can be unique articles, the entries in the encyclopedia or the explanations and examples in the dictionary, etc. Of course, here is the interpretation of the narrow sense of the parallel texts. The generalized parallel texts also include the target language's materials familiar to

the source text, primarily being used to help understand the original text further. In short, the parallel texts are all the documents and literature that are familiar to the source text.

As we all know, translating is a very important way to acquire information. However, it is impossible for a translator to have a good understanding of professional knowledge in each field and it is not realistic to restudy relative professional knowledge in this field when we translate this professional text. Therefore, reading and referencing relative parallel texts can help us solve lots of problems.

Therefore, the author researches a great number of parallel texts by logging on the web site, Google, Baidu and Wikipedia, etc. and meanwhile seeking in the books, magazines and newspaper so as to provide more professional translation.

2.2 Text analysis

The text analysis is the first step of translating. In the book, *A Textbook of Translation*, Peter Newmark says, the text analysis, namely the understanding of the original text, represents the start of translation. A translator should first read the source text with two objectives before translating. One is to grasp what the original text is saying and the other is to analyze the source text from the translator's perspective. The source text need to be both scanned and read carefully. Scanning is to gain the main idea of the text and careful reading is to catch the words' meaning in and out of the context. Basically, the text analysis is the foundation of translation, conducive to deciding the translating strategies and improving the quality of translation^[4].

2.2.1 Introduction and analysis of text content

The translating materials are originated from Qinghai Salt Lake Magnesium Industry Ltd. and the author get them with the help of her supervisor. The source text of this translation project belongs to the chemical sphere with a great number of special terms, chemical reactions and mechanical equipment's names. The whole content, related to the process control and design basis of ethylene, bears quite strong specialty, which is not easy access to common people. What's more, with the rapid development of society and the gradual improvement of era, the first productive force of science and technology is playing a more and more significant role which is irreplaceable. As a consequence, researching and translating such texts begin to become a kind of need on one hand, and on the other hand, it also presents a fashion.

2.2.2 Value of text

The reasons why these materials are selected as the original text will be presented from four aspects as follows: Firstly, the material adds up to about 13,000 words and has not had any Chinese version so far, completely in conformity with the translation project's requirements of the degree thesis of MTI. What's more, according to the author's comprehensive capacity and translating level, both her supervisor and she consider it as appropriate material of translating after carefully checking and identifying. Secondly, the material is primarily related to the process design basis and qualifications, process control as well as safeguarding philosophy of ethylene. As a kind of information-based text, it is very practical with high industrial and social values. Therefore, it is well worthy of translating. Thirdly, the material belongs to the category of Science and Technology in text, in line with the author's professional research direction. By translating such material, the author will not only have a better understanding of EST(English for Science and Technology) but also be able to apply theories and techniques she has learned in class to practice, thus really realizing the combination of theory with practice. Further more, it will be conducive to improving the translator's translation skills more quickly and effectively. Finally, for a liberal art graduate,

during the translation, it is bound to meet with all kinds of industry-specific problems, such as, the translation of specialized terms and the understanding of chemical reaction processes, etc. By learning about and solving these problems, the translator will be able to improve her competence in the translation about expertise sectors.

2.3 Translation practice

As the saying goes, the truth exists in the practice. The purpose we study the translating theories is also to apply them to guide the translating practice. Otherwise, all the theories will lose their original senses.

2.3.1 Problems and solutions adopted during translating

Chinese language and English language differ from each other because they belong to distinct families of languages. The former belongs to the Sino-Tibetan language family while the latter belongs to the Indo-European language family^[5]. Besides, they differ vastly from writing habits, figures of speech, collocations of words and expressions, syntax structures as well as means of expression. So while translating, we should pay attention to their respective features and adopt different methods according to different contexts. What's worse, as mentioned above, these translation materials are not very familiar to us because of its profession. So it is bound to meet with all kinds of problems. Here the author selects a few typical ones as examples to represent and at the same time introduces three adopted solutions.

Literature Research: With stronger specialty, this kind of chemical text is not familiar to the author, a literal art student. So in order to accumulate background knowledge, the author looks up relevant literature, electronic books and journal articles in the library and on the Internet to learn about other related texts with more expertise knowledge. Meanwhile, the author gets targeted access to scientific English books, especially professional translation theories, strategies and techniques related to the project.

Survey Research: Although having done a lot of preparation work and devoting much spirit to translation, checking the translation is still a problem for the author. Therefore, the author visits some professors and scholars in this chemical field for their expertise and suggestion.

Computer Aided Translation: It differs from the translating soft wares and does not rely on automatic translation of the computer but complete the translation process via automatic memory and search mechanisms with man's participation^[6]. Compared with pure human translation, it has a higher translation efficiency. The author adopts this method during the first translating.

2.3.2 Translation theories and techniques

After a detailed study of different trends and theories in translation, the author focuses on Eugene A. Nida's theory of functional equivalence.

In the book of *Toward a Science of Translating*, the old terms such as "literal", "free" and "faithful" translation are discarded by Nida in favor of "two basic orientations" or "types of equivalence". The two types of equivalence are formal equivalence and dynamic equivalence. Formal equivalence attempts to render the text word-for-word (if necessary, at the expense of natural expression in the target language). Dynamic equivalence attempts to convey the thought expressed in a source text (if necessary, at the expense of literalness, original word order, the source text's grammatical voice, etc.) In his book entitled *From One Language to Another: Functional Equivalence in Bible Translation*, the term "dynamic equivalence" is replaced by the term "functional equivalence" to avoid the misunderstanding caused by the word "dynamic" which

means “change” while his theory does not ask to change the meaning of a source text. Nida described functional equivalence like this: "Basically ...functional equivalence. The translation process has been defined on the basis that the receptors of a translation should comprehend the translated text to such an extent that they can understand how the original receptors must have understood the original text." And in Nida's work *Language and Culture*, he mentioned that “It is essential that Functional equivalence be stated primarily in terms of a comparison of the way in which the original receptors understood and appreciated the text and the way in which receptors of the translated text understand and appreciate the translated text.” In other words, the equivalence between the response of the receptor of the translated text and the response of the reader of the source text is the main standard of a wonderful translation^[7].

Functional equivalence makes the translation of the original text more readable and understandable for Chinese readers. Thus, the author thinks that functional equivalence theory is appropriate guiding theory for this translation project.

3. Cases analysis

There is no doubt that the selected texts belong to the category of EST on the whole with EST characteristics and styles. As one of important English styles, it has developed with scientific technologies growing, featuring rigorous carefulness, accurate notion, logicity, neat and concise sentences and little change , etc^[8]. Specifically, in this part, the author will represent the linguistic features and translating techniques from three perspectives, namely the lexical, syntactic and textual levels, through analyzing specific cases.

3.1 The lexical level

In terms of the lexical level, nominalization becomes the main feature of such texts. Here nominalization mentioned primarily refers to the application of abstract nouns that show action or state, that is, the nouns deriving from verbs or adjectives. They usually consist of verbs or objectives and the suffixation “-tion”, “-sion”, “-xion”, “-ment”, “-ance”, “-ence” and so on. For example,

(1) This tank is equipped with steam injection in order to heat the water to the required temperature.

(2) Recovered VCM is treated with a stabilizer and caustic soda injections before VCM condensation.

The word “injection” appears both in the example(1) and in the example(2) with the verb root“inject”and the suffixation “-tion”. But they two have different functions and meanings. The former represents an abstract noun while the latter acts as the function of a verb. So the translator translates the first one into“zhurushebei”and the second one into“zhuru”.

(3) The content of the buffer tank is fed to the top of stripping columns 6/7D01 while steam is injected at the bottom thus promoting evaporation and extraction of residual VCM.

In the example (3), “evaporation” and “extraction” are also nominalized from the verbs “evaporate” and “extract”. Here they can act as both nouns and verbs, being translated into “zhengfa”and“tiqu”.

(4) Integrated Control systems, where the DCS and ESD share the same network are preferred, as long as the functional integrity and independence of ESD is secured.

The nominalizations here consist of adjectives and suffixation, namely,“integrity” and “independence”. They are translated into“wanzhengxing”and“dulixing”respectively according to the context.

On the whole, the application of nominalization can simplify the structures of language and

make the language more concise and the information more outstanding.

3.2 The syntactic level

EST texts feature accurate words, concise language, objective expression, clear orderliness and exact content, with strongly special and pragmatic characteristics^[9]. In terms of the syntactic level, a great number of passive sentences will act as its main feature. We take the example as follows,

(1) The control philosophy for Package Units is such that the control, interlock, indication and alarms functions of the packaged equipment will be integrated into the DCS system and the safeguarding functions will be integrated in the ESD system.

(2) Other miscellaneous data acquisition systems (e.g. analyzers) may also be connected with serial data link or hardwired to the DCS for operator display and alarming purposes.

(3) Additional DCS furniture will be required for the integrated control centre in the CCR to accommodate various other miscellaneous devices such as emergency push buttons, hard-wired switches, telephones/intercoms, hardwired alarm annunciators, etc. as deemed necessary.

(4) A general drawing of the major DCS components and associated equipment is shown in the Instrument and Control System Signal Block Diagram - Doc. No. NZ306300-9161-BLD-001.

The four examples above all use the passive voices, which indicates one of the characteristics of EST. There is no doubt that passive sentences are more objective to describe objective things and they simplify the sentence structures, convenient to express the meaning.

3.3 The textual level

The main function of EST is to provide information. So such text has its own styles and features in terms of the textual level. Here the author will introduce two of them. The first feature is the objective, which becomes the essential feature of EST. It is embodied by the use of tense. For example,

Whether instrumentation and control shall be integral part of the packaged unit or shall be engineered by the Detailed Engineering Contractor depends on the nature of the packaged unit, the critical rating, the nature of the instrumentation and controls, the hazardous area classification, guarantee aspects, etc.

The second one is the language's normalization, reflecting by normal grammar and formal language. For example,

For all controls and safeguarding functions of packaged units implemented in the client's DCS and ESD, the package unit vendor shall provide all control and safeguarding narratives (as well as logic diagrams) for the package unit in line with the overall control objectives for the specific plant requirements. This shall be done in close corporation with the Detailed Engineering Contractor and the End-user.

4. Conclusion

To finish this report of the translation project is really a difficult task for the author because of lacking profound understanding of the guiding theory at first. After spending much time in studying on the theory, referring to a few reports and relevant materials, the author's work pays off.

On the one hand, the author accumulates experience in the aspect of translation and translation study. Guiding by the theory of functional equivalence, the author can select appropriate translation strategies and methods to achieve a success translation. In return, this translation project helps the author gain better understanding of the theory. On the other hand, this report urges the author to consider unsettled translation difficulties and then further improve her translation ability. The first

difficulty is still the shortage of proper theory. The theory of functional equivalence has its limits^[10], so it is possible for the translator to be stumped by other problems that can not be solved under the guidance of sole theory. In this sense, the translator should keep her study on more theories and then put them into practice. The second difficulty is the lack of professional knowledge in the special field. It is unavoidable to translate professional terms such as “degassing slurry (nijiāngtuōqǐ)”, “water stripping (shuǐlǐxǐ)” and “polymerization (jùhéfānyǐng)” into Chinese. Although it is convenient to look up them on the internet, but sometimes you will meet those expressions that can only be understood by professionals. In this case, what can you do? In the author’s opinion, translators should pay more attention to the accumulation of all kinds of terms from their practice so as to improve the translating speed.

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