

Tips for College Science Majors in English-Chinese Translation Practice

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Abstract—after an experiment of teaching science majors EST translation, the author explains the importance for science majors to learn and practice English-Chinese translation, and provides some theoretical foundations science majors should learn when they do the translation practice. At the same time, the author summaries some unique stylistic features in EST and some tips students should notice in translation practice considering these stylistic features.

Index Terms—EST (English for science and technology), stylistic characteristic, nominalization, composite sentence

I. INTRODUCTION

Generally speaking, translation is a linguistic practice of employing one language to realize the thoughts expressed in another language exactly and completely (Zhang, 2009). Translation is the bridge between different languages when people communicate different ideas, which enables people of different languages to communicate ideas through reproduction of source languages. To make it simple, translation is to express message of one language (source language) in the form of another language (target language), so that the target language reader could understand what the writers of source language want to express and get similar reading comprehension of source language readers.

While different languages account for different information systems, how to fit the information in one language into the structure of another language is absolutely not an easy task. That's why in Nida's theory, "translation 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 & Taber, 1982, P.12). In this definition, "closest" refers to being close to the source language message; "natural" refers to the natural expression in receptor language; while "equivalent" connects the two together which means "being equal to" but not "identity". So in some sense, the definition stresses the equivalence in message, but not formal correspondence and Nida made clear about his point that in translation practice, conveying of meaning is considered more important than the equivalence of style. Nida's translation theory has great influence both on Western and Chinese translation theory development and it is the basic theoretic knowledge every translator should learn. Nida (1982) also points out in his *The Theory and Practice of Translation* that a good translator should be qualified in the following aspects:

1. He must know the original language well. Just being able to understand the main idea in the original text or understanding the text with help of dictionaries is far from enough. A good translator must be clear about the subtle difference between words, the emotional colors of words and stylistic characteristics that determine the specific style of texts.

2. He must be proficient with the target language, which is even more important than the first point. In translation practice, translators could understand the original texts through dictionaries, notes or some specific technical literature, but nothing could replace his proficiency in target language, while usually the most severe mistakes in translation occur when translators do not have good command of target language.

3. Proficiency with a language is different from proficiency with professional knowledge in some specific field. To translate some technical literature, general knowledge in languages is insufficient, which means translators should be enough familiar with the translation material.

4. He must be able to understand the original writer's intent between the lines, and express this intent out in target texts.

In another very important translation theory ---- Skopos theory, which is the most important theory in the functional school of translation studies, people propose different understanding. In this theory, Germany scholar Hans Vermeer defines translation as "'information' about a source text in another language" (Vermeer, 2000, P.97). This approach engenders a view of translation in which the way a target text functions in a specific cultural context is paramount: "translation is the production of a functional target text maintaining a relationship with a given source text that is specified according to the intended or demanded function of the target text" (Nord, 2001, P.28). George Steiner takes a wide view of translation: "inside or between languages, human communication equals translation." (Steiner, 1998, P.47)

Skopos theory, represented by Germany functionalist Katharina Reiss, Hans J. Vermeer and Christiane Nord, constitutes the mainstream of translation functionalism. Vermeer defines human action as intentional, purposely behavior that takes place in a given situation (Vermeer, 1984, P.49). So "any form of translational action, including

therefore translation itself, may be conceived as an action, as the name implies. Any action has an aim, a purpose... (Vermeer, 1984, P.173). Reiss refers to this kind of translation as "integral communicative performance" (Reiss, 1984, P.112). The most important element determining any translation process is the purpose (Skopos) of the overall translation action. (Nord, 2001, P.27) The translation purpose justifies the translation process... "the end justifies the means"(Nord, 2001, P.124). One of the most important factors determining the purpose of a translation is the addressee, who is the intended receiver or audience of the target text with their culture specific world-knowledge, their expectations and their communicative needs. (Nord, 2001, P.12)

In terms of Skopos theory, the viability of translation brief depends on the circumstances of the target culture, not on the source culture. Since translation has been defined as a translational action involving a source text, the source is usually part of the brief, so the meaning or function of a text is not something inherent in the linguistic signs, and a text is made meaningful by its readers and for its readers. Vermeer finally concluded that any text is just an "offer of information"(Vermeer, 1978, P.38) from which each reader or receiver selects the items he or she finds interesting and important. Vermeer considers the Skopos rule as each text is produced for a specific purpose and should serve this purpose.

In Vermeer's terms, the target text should meet the standard of "intratextual coherence"(Reiss & Vermeer, 1984, P.109). A communicative interaction can only be regarded as successful if the receivers interpret it as being sufficiently coherent with their situation. The extent to which the translation had met with success could be determined by whether it was interpreted by the target recipient in a way which was coherent with his or her situation, and whether or not it lead to any kind of protest against its meaning of form. (Reiss & Vermeer, 1984, P.112) Accordingly, another important rule of Skopos theory is the "coherence rule", which specifies that a translation should be acceptable in a sense that it is coherent with the receivers' situation (Reiss and Vermeer, 1984, P.113). However, since a translation is an offer of information about a preceding offer of information, it is expected to bear some kind of relationship with the corresponding source text. Vermeer calls this relationship "intratextual coherence". Intratextual coherence is considered subordinate to intratextual coherence, —and both are subordinate to the Skopos rule. If the Skopos requires a change of function, the standard will no longer be intratextual coherence with the source text but adequacy or appropriateness with regard to the Skopos (Reiss & Vermeer, 1984, P.139).

Nord also proposed two kinds of translation processes: documentary and instrumental. The former, as could be known from its name, aims at producing in the target language a kind of document of (certain aspects of) a communicative interaction in which a source-culture sender communicates with a source-culture audience via the source text under source-culture conditions. While the latter aims at producing in the target language an instrument for a new communicative interaction between the source-culture sender and a target-culture audience, using (certain aspects of) the source text as a model.(Nord, 2001, P.47) And the result of an instrumental translation is a text that may achieve the same range of functions as an original text. In this way, translation of English for science and technology (EST) just belongs to the latter type of translation process. And in such translation practice, both target culture and source culture should be considered, as well as the given function of the texts.

II. STYLISTIC FEATURES

Just as what is discussed above, in the increasingly developing modern world, science majors are often faced with many occasions to do the translation practice themselves concerning their own research field. These translation practices, different from literature translation, have their own features and difficulties. Although they are usually informal, and do not require the exact equivalence in style and rhetoric, they are usually restricted and defined by their function and the skopos. In other words, the equivalence of language structure or vocabulary is not as important as the equivalence of message and internal logic. EST usually has plain style and rigid writing criterions, which states objectively with strong logic and high specification. To explain this, first the stylistic characteristics of EST should be clarified, which could be sorted out in two aspects:

1. words

In choice of vocabulary, the EST vocabulary are simple, direct, precise and without ambiguity. Different from oral English or English in literature which is visual and perceptual, EST does not carry with itself any affective color, thus formal and standard written language vocabulary is employed instead of oral vocabulary with the same meaning. What's more, rhetorical devices are not as commonly seen in EST as clear and rigid logic to describe objective laws. All these factors should be considered in translation and usually simple and precise words are employed to make the translation fluent and smooth. The translation of "What does reinforced concrete mean for highway?" "钢筋混凝土的意义" is much better than "钢筋混凝土对公路意味着什么?"

Broadly speaking, EST vocabulary could be divided into three categories: functional words, technical words, and sub-technical words. Functional words are the basic English vocabulary used in all kinds of English styles, including prepositions, verbs, conjunctions, pronouns and adverbs, and they are of the same meaning in different styles, while the other two kinds are unique in EST.

1.1 There are many special technical words in EST which could not be understood by readers without specialized knowledge. These words are composed mostly in the following ways,

a) affixation, like “anti-” in “antiallergenic”(抗过敏的), “semi-” in “semisomnus” (半昏迷), “auto-” and “radio-” in “autoradiography” (自动射线照相术)

b) acronym, like Beginner’s All-purpose Symbolic Instruction Code ---- BASIC (BASIC 语言)

Severe Acute Respiratory Syndrome ---- SARS (非典)

c) In recent years more compounds have been created to refer to the new products in scientific development, such as anti-armored fighting vehicle missile(反装甲车导弹).

1.2 There are many sub-technical words used in EST, that is, the vocabulary that contain different meanings in different disciplines. Most of the quasi special technical terms are common vocabulary. Such as, “frame” means 框架 in daily English, but it means 机架 in mechanics and 帧 or 镜头 in telecommunication.

2. sentences

2.1 To make the sentence structure clear and precise, there are many gerunds, noun phrases and abstract nominalization structures to indicate actions or states in sentences, such as “Knowledge of forces on the gear makes possible the determination of its size” (如果人们知道传动装置的动力, 就可以判断其尺寸)

2.2 There are many long and composite sentences and logical connectors in EST since EST stresses factual points and rigid logic reasoning, thus one long sentence is usually needed to make the reasoning complete and sufficient, which requires complicated structures and clauses.

eg: It is animals and plants which live in or near water whose remains are most likely to be preserved, for one of the necessary conditions of preservation is quick burial, and it is only in the seas and rivers, and sometimes lakes, where mud and silt has been continuously deposited, that bodies and the like can be rapidly covered over and preserved.

只有在水中或者水边生活的动植物, 才能把遗骸保留下来。因为这样做的条件之一, 就是迅速地埋葬。而只有在泥浆或者淤泥能够接连不断沉积的地方----如海洋河川, 或者湖泊里, 动植物的遗骸或者类似的东西, 才能被很快地覆盖而保存下来。

2.3 There are lots of passive voice structures in EST to make it more objective. At the same time, present tense and assertive sentences are employed more.

eg: So far, four members of Power PC family have been introduced.

目前已经推出了四种 Power PC 系列的产品。

III. TRANSLATION SKILLS

As science majors in college, students should learn on their English classes some translation skills to address these stylistic characteristics of technical literature. And the following steps are what they should be instructed.

1. Translation theories introduction

A good translator should grasp some basic knowledge in translation theories since these theories are valuable experience accumulated by senior workers. So it is necessary that science majors should be introduced to some basic translation theories on college English classes. At least they should be clear about the idea of “translation”:

What is translation?

What is the aim of translation?

What are some criteria of good translation?

What should be a translator’s responsibility in translation?

These are the questions students should be taught to think about when they practice translation of technical literature. And the key to translation education is to teach students principles and methods, help them to grasp ways to obtain information and gain ability of self-study. (Zhang, 2009)

2. Translation Appreciation

Thought non-English majors usually do not have plenty of time spent on translation study, it is still necessary for them to read and study enough good translation works, be them scientific or literature. To appreciate translation works is a quick way to grasp the tricks in translation practice. And it is especially useful and effective for students to be accustomed to the style of EST in translation.

3. Practical skills introduction

When learning translation practice, science majors should be clear that “plainness” and “preciseness” are the most important criteria to following. For non-English majors, “preciseness” is a more difficult criterion to meet. Many science majors make kinds of mistakes in translation due to their limited English language comprehension ability.

eg: All these TV sets are not new, but they are still available.

Incorrect translation: 这些电视机并非都是新的, 但它们都还可以用。

Correct translation: 这些电视机都不是新的, 但它们都还可以用。

This is a mistake that the fairly good students would make, because they remember clearly that “all ... not” structure means partial negation in English. And why they are called “fairly good students”? Because they completely forget that if there are determiners like “these” or “this” or numerals between “all” and modificands, the “all ... not” structure should be taken as total negation, but not partial.

Other than those basic translation skills, science majors should also pay attention to the following points which are

characteristic in EST:

3.1 words

As is mentioned above, one stylistic characteristic of EST is employment of nominalization structures, while one important feature of Chinese language is the use of verbs. So in translation practice, many nominalization structures should be transferred into verbal structures.

eg: This small factory is developing with a surprising speed after undergoing technology renovation.

经过技术改造之后，这家小工厂发展很快，令人感到惊讶不已。

In this English sentence, noun phrases like “with a surprising speed” and “undergoing technology renovation” are used, but in Chinese, they are changed into verbal structures like “经过技术改造” “发展很快”. And some necessary changes in words should be made, for example, some words could be omitted in translation, like “after”, and some words could be added, like “令人”.

3.2 sentences

3.2.1 As what is mentioned above, there are many passive voice structures used in technical literature, which is way to show objectiveness in literature, but in Chinese, things are different, and passive voice structures are not so commonly used, such as the English sentence “You are wanted on the phone” usually would be translated as “有人打电话来找你”. So when doing translation, some ways could be applied to translate passive voice structure, and the key is to change passive voice structure into active voice structure.

(1) Passive voice structure could be translated in an active voice way by adding subjects like “人们” “我们” etc.

eg: It is universally known that oxygen is necessary to life.

人人都知道氧对生命的必要性。

Or passive voice structure could be translated in an active voice way by using the actors introduced by “by” in original sentences as subjects in translated versions.

eg: Heat and light are given off by the chemical reaction.

这种化学反应能发出光和热。

(2) A new active voice structure could be created with application of words like “使，让，由，把，给” etc.

eg: The water pollution should be paid attention to.

水污染问题应该予以重视。

(3) A new active voice structure could also be created by taking the receivers (subjects) in original sentences as actors (subjects) in translated versions.

eg: Three-phase currents should be used for large motors.

大型电机应当使用三相交流电。

3.2.2 Another very difficult point in EST translation should be composite sentences. In this part, one point students should keep in mind is that we could always use many sentences or clauses to translate or explain one composite sentence since grammatical structures are not so rigid in Chinese as they are in English.

Composite sentences could be translated without changing the logical sequence and structure when the English sentence conforms to Chinese sentence structure.

eg: This simple fact shows that the more of the force of friction is got rid of, the farther will the ball travel, and we are led to infer that, if all the impeding forces of gravitation and resistance could be removed, there is no reason why the ball, once in motion, should ever stop.

这个简单的事实证明，摩擦力去除的越多，球就会滚的越远，由此我们可以推断出，如果一切起阻碍作用的地球引力和阻力能够去除的话，就没有理由认为处于运动状态的球可能停下来。

But most of the time, the logic sequence of English composite sentences is quite different or even opposite to Chinese correspondents, in which case the English composite sentences should be translated by reversing the original sequence to make them more logical in Chinese, since one aim of translation is to make the readers of target language understand the message in original language. What's more, since in English language, the sentence structure is more flexible, for example, the adverbial part could be put in the beginning, in the end, or even in the middle of a sentence, while in Chinese language, the adverbial part is usually put in the very beginning to obey the rule of consequence or time sequence.

eg: Aluminum remained unknown till the nineteenth century, because nowhere in nature is it found free, owing to its always combined with other elements, most commonly with oxygen, for which it has strong affinity.

铝总是和其他元素结合在一起，最普遍的是和氧结合在一起，因为铝对氧有很强的亲和力。由于这个原因，在自然界中任何地方都找不到游离状态的铝，所以一直到十九世纪人们才发现有铝这种元素。

Since sentence structure in Chinese is fairly short, the long composite English sentences could be broken apart and the clauses could be translated into independent sentence structure in Chinese.

eg: If the design problem is rather complicated an electronic computer can solve it within sixteen hours after running through 16,000 possible designs.

这个设计问题虽然非常复杂，但是电子计算机快速审阅了 16,000 个可供选择的设计方案之后，便在 16 个小时之内解决了这一问题。

In this example, the adverbial clause of condition is translated with an adverbial clause of concession to make the Chinese easy to understand. Furthermore, the main clause is broken apart into two clauses, and the sequence is reversed. All the skills adopted are to make the translated sentence conform to the target language.

IV. CONCLUSION

For science majors, translation of EST is not like literature translation, which requires more in rhetorical skills and literacy background. To make it simple, two keys students need to pay attention to should be “understanding” and “expressing”: to understand the source language well and to express in target language well. When they learn and grasp the features of EST well, science majors could understand the source language text more complete and better, hence it could be easier to do the translation.

With the rapid development of science and technology, there will be more new disciplines and research areas as well as a lot more new technical words. All of these, plus the more frequent employment of long and composite sentences in EST will make the translation practice more difficult, but at the same time more important. In that case, on the one hand, students should learn and grasp more translation skills in EST translation, on the other hand, the improvement of one’s own English and Chinese language proficiency is also important. At the same time, students should master enough professional knowledge in their own research field, which also is an important reason why science majors should learn and practice English-Chinese translation.

In conclusion, it is very important for science majors to learn and practice translation skills since when they are both expert in their own technical field and expert in English language and translation practice, many troubles and problems in modern scientific and technical development in China will be solved or avoided. When practicing EST translation, students should first know well about the stylistic features of EST; secondly, they should grasp the two languages well; then they should master some basic translation theories and practical skills; finally, they should be expert in their own technical field. Only in this way can they do EST translation well.

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