

On the Translation of *The Invasion Equation*

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Abstract

From the perspective of Skopos Theory, this article aims at the research on the English to Chinese translation of *The Invasion Equation*, a medical text in English concerning oncology, selected from *The New Yorker*. Starting from the generalization of translation practice, it introduces the background of the translation, the nature of the text, and the specific translation tasks. Then the author briefly introduces the source and content of the medical text, discusses the development and application of Skopos Theory in medical translation, analyzes the characteristics of medical English, and explains how to use Skopos Theory to guide specific medical translation practice. The core part of the research is the analysis of translation strategies. Under the guidance of Skopos Theory, the author discusses strategies of medical translation through detailed analysis of typical examples in the medical text. Since the difficulties encountered in translation are mainly concentrated on professional vocabulary and sentence patterns, the translation of medical text is mainly studied from two aspects: medical vocabulary and long sentences. In translation, it is a must for the translator to follow the three rules of Skopos Theory, namely skopos rule, coherence rule and fidelity rule, and improve the readability of the medical text under the premise of achieving the purpose of translation.

Keywords: Medical English; Skopos Theory; Translation Strategy

Introduction

Numerous scientists around the world are trying to find effective means of cancer treatment and monitoring. But in reality, how to detect cancer timely has plagued the medical community at home and abroad. Under such an international and domestic circumstance, people are paying more attention to medical literature because it is one of the main ways to know the latest advances in medical research. The accurate understanding and translation of medical reports is of vital importance to oncology development. Thus it is urgent and significant for us to carry out medical translation research. Moreover, Translation work on foreign medical papers and research can make it easier for medical workers and even the general public in our country to understand the advanced medical theory, technology and research results of other countries.

In order to strengthen medical exchanges and cooperation between China and other countries through translation, translators need to know medicine well, and accurately express the scientific content of the original text, so that target readers can keep up with the latest medical development. Translation of medical article requires the translator to have rich professional knowledge and great English proficiency. If the translator wants to present the essence of the original text, he/she will need to have comprehensive understanding of medical knowledge, and carefully consult a large number of materials so as to have deep understanding and analysis of the original text.

The paper aims to do the research on the translation of *The Invasion Equation*, a medical text in English concerning the oncology research, selected from *The New Yorker*. The study intends to be meaningful inspiration to oncologists in their cancer research. *The Invasion Equation* was written by Siddhartha Mukherjee. Siddhartha Mukherjee is an Indian-American physician, oncologist, and translator best known for his 2010 book, *The Emperor of All Maladies: A Biography of Cancer*. He studied biology at Stanford University, and obtained a D.Phil. from University of Oxford, and an M.D. from Harvard University.

Materials and Methods

Materials

Skopos Theory

The Skopos Theory, the core of functional theory, was proposed in the late 1970s and early 1980s by Reiss & Vermeer. Skopos is a Greek word, meaning “purpose”. According to the Skopos Theory, a translation should be produced in the context of the targeted language, conforming to the needs of the receivers. The primary principle of the translation process is the purpose of the overall translation action. (Nord, 2001). Vermeer considers that translation, instead of a mechanic action, is an intentional, purposeful behavior which is “preceded in a given circumstance”(Vermeer, 1982). Any action possesses an aim or a purpose with no exception in translation. “The Skopos Theory stresses the interactional, pragmatic aspects of translation, arguing that the whole translation act should be determined by the function or “skopos” that is intended to fulfill in the target context”(Shuttleworth & Cowie, 2004). According to Vermeer, there exist three possible kinds of purpose in the aspect of translation, namely the general purpose of the translator, the communicative purpose of the target text and the purpose of a particular translation strategy or procedure. (Nord, 2001). The Skopos Theory has set up a new angle to translation theory and to translation practice. Translation is regarded as a communication concerning two different cultures rather than an inactive linguistic phenomenon.

As soon as German Functionalist Approach spread to China, it caught the eyes of Chinese scholars with its distinctive, unique academic thinking. German Functionalist Approach has influenced translation in China profoundly. With the spreading of Skopos Theory in China, many scholars combine the theory with local Chinese researches. Wen Jun and Gao Xiaoying (2003) pointed out the influence of different translation purposes on translation strategy in comparing two versions of *Gone with the Wind*. Fang Mengzhi and Mao Zhongming (2004) published a book and in which they pointed out that pragmatic translation should consider the purpose of translation and functions of translation texts.

Recently, many experts have studied the translation of medical reports from the perspectives of traditional linguistics that give priority to the source text. They have achieved some fruitful results in medical translation. Nevertheless, their studies still have some limitations. Their study mainly emphasizes traditional linguistics rather than functionalist approaches. Medical translation belongs to pragmatic translation, and such kind of translation is different from literature translation in many ways. Therefore, this study will discuss the translation strategies and methods for medical reports from the perspective of Skopos theory on the basis of the translator’s translation practice. Skopos theory provides a new perspective for medical translation. With many researchers deepening the understanding of Skopos Theory, the research scope will be expanded and the research type will also be increased.

Text Analysis

Medical English is affiliated with English for Specific Purpose, or ESP for short. Like engineering English and legal English, medical English is also a category of professional English. Its linguistic features are similar to those of EST(English for science and technology). It mainly uses translation as a carrier to transfer foreign medical technology and scientific information to China for exchange and learning. Therefore, the contents of this medical report are objective, concise and normative, and are mainly manifested in two aspects.

There are a large number of medical terms in this source text. In the process of translation, it is necessary to pay attention to the special meaning that some common words may have in the medical field. In the formation of medical English words, a large number of roots and affixes were introduced from Italian, Spanish, Latin, and French, which becomes special linguistic forms and has stable word-building meanings in a certain category, thus forming a distinctive vocabulary system.

Medical articles are mostly descriptive, they focus on the description of diseases, which contains a great deal of information. Therefore, passive voices are often used and personal subjects are omitted. Meanwhile, long sentences, clauses, and multiple compound sentences are often used in the original text to make the information and description clearer, more concise and more logical.

Methods

During the translation process, it is inevitable to encounter difficulties and the translator analyzes them from three main sides and suggests possible solving methods. Then the translator conducts an in-depth analysis of the representative examples from the lexical level and the syntactic level, and explores how to use appropriate translation strategies for accurate and efficient translation under the guidance of Skopos Theory.

In lexical level, medical vocabularies have some unique features. Firstly, derivations are largely used. As medical vocabularies contain a lot of Latin and Greek words which are unfamiliar to most of the non-professionals and have many affixes, the whole text seems to be difficult, especially for non-medical persons. Moreover, along with the rapid development of technology, an increasing number of new words are created which makes it harder to understand the text completely. Secondly, amphibious words also play an important role in medical text. Amphibious words mean that meanings of words are different from the common ones in daily life. In another word, sometimes meanings of the same word in medical text are totally changed or different from the original meaning. The last one is the abbreviation, which is the short form of a word or phrase. Usually, abbreviations are some conventional or idiomatical medical words which are familiar to medical staff, but for non-professional translators, it is necessary to retrospect the full words or phrases.

With regard to syntactic level, firstly, compound-complex sentences are widely employed, in which attributive clauses make up a large proportion. Secondly, many non-finite verbs exist in long split sentences. Thirdly, there are a lot of passive voices and nominalized structures used in the medical text.

For the translator, the lack of specialized medical knowledge is the biggest obstacle in the translation. What's more, the translator is unfamiliar with the background of oncology. As a medical report article, the source text has lots of professional terms and the sentences are very long and complex. It requires wide scope of knowledge in medical terminology, and familiarity with medical science. The translator also has to make Chinese people, especially oncologists, fully understand the meaning of the medical report. Accuracy and profession are the most important requirements of the translation. Moreover, during the translation, it is no easy work for the translator to make the utmost

of different tools in translation, such as dictionaries, translating software, network, books or papers related.

Results and Discussion

“Skopos rule” is the primary principle to be followed in translation. The purpose to be achieved in translation determines the translation methods and strategies. It is of great significance to guide medical English translation with Skopos Theory. Translators should adopt appropriate translation strategies according to different translation requirements. The selection and application of translation strategies are studied from the following two aspects: lexical translation and sentence translation.

Lexical translation

The word is the smallest semantic unit in translation. To ensure the accuracy of medical articles, the correct translation of words must be guaranteed. Medical English vocabulary is highly professional, and the translation of words is strictly limited. In medical vocabulary, most words are simple words which have a fixed Chinese meaning. At the same time, common words are also used in medical articles. These words have the characteristics of polysemy—they have specific meanings in different collocations and contexts. The meaning of medical vocabulary is complicated and changeable. When reading the original text, the reader can understand the meaning of these words according to the context, but it is difficult for the translator to translate them. Therefore, translators must understand the professional knowledge of medical articles, use logical thinking to accurately grasp the meanings of words, ensure the seriousness of vocabulary translation, and make the translation more fluent, appropriate and professional. In another word, translators should adopt proper translation strategies and make corresponding adjustments.

The medical words in the article are classified into two categories. The first category is common words with specific meanings in the medical field; the second category is medical terms.

Some common English words in medical articles often produce medical meanings that are different from their original meanings. For example, “function” is generally translated as “功能”, but it is often referred to as “机能” in medical articles; “complication” usually means “复杂” in everyday English, but in pathology it will be translated to “并发症”. For some of the similar words in this article, if the translator does not consider their translation in medical field, they will be stilted and unprofessional.

Example 1:

ST: At least part of the answer might lie in the ecological relationship between a cancer and its host—between seed and soil.

TT1:

至少部分答案可能在于癌症与其主人之间的生态关系，即种子和土壤之间的关系。

TT2:

至少部分答案可能在于癌症与其宿主之间的生态关系，即种子和土壤之间的关系。

Example 2:

ST: In 1985, pathologists in Finland assembled a group of a hundred and one men and women who had died of unrelated causes—car accidents or heart attacks, say—and performed autopsies to determine how many **harbored** papillary thyroid cancer.

TT: 1985年, 芬兰的病理学家给一百零一名因无关原因(如车祸或心脏病)死亡的男性和女性做了尸检, 以确定有多少人患有乳头状甲状腺癌。

Analysis: The "host" we encounter in English articles is generally translated as "主人", but in example 1 it is juxtaposed with the former word "cancer". After consulting a medical dictionary, the translator discovered that "host" should be translated as "宿主" in medical English. If it is translated as "主人", the reader will be confused.

"Harbor" is a polysemy. When it is a noun, it means "港口; 避难所"; when it is a verb, it means "庇护; 心怀; 窝藏". According to the context, in example 2 "harbor" is followed by "papillary thyroid cancer", so it should be interpreted here as suffering from a certain disease, and it is most appropriate to translate "harbor" into "患有".

According to the fidelity rule of Skopos Theory, the translation should be faithful to the original text. Before making choices of words, the translator should fully understand the original text. Therefore, the "host" in example 1 should be translated as "宿主"; the "harbor" in example 2 should be translated to "患有".

For medical terminology, if it is only the use of everyday vocabulary in the medical field, it is necessary to pay attention to the conventional meaning in the medical field when translating. For independent medical terminology, there is always a fixed Chinese meaning, so literal translation can be used.

Example 3:

ST: A tumor, Fidler showed, is made of a heterogeneous mixture of millions of cells, only a fraction of which are equipped to leave the **primary tumor**, form an exploitative alliance with the "soil" of another organ, and initiate metastasis.

TT1: 费德勒表示, 肿瘤由数百万细胞的异质混合物组成, 其中只有一部分细胞能够离开主要的肿瘤, 与另一个器官的“土壤”形成剥削性联盟, 并引发转移。

TT2: 费德勒表示, 肿瘤由数百万细胞的异质混合物组成, 其中只有一部分细胞能够离开原发性肿瘤, 与另一个器官的“土壤”形成剥削性联盟, 并引发转移。

Analysis: Because the medical vocabulary translator accumulated by the translator is insufficient, "primary" was directly translated into “主要的” in the initial translation, but here "primary" and "tumor" constitute a nominal phrase "primary tumor". In medical English, The standard meaning of this phrase should be “原发性肿瘤”.

Example 4:

ST: “A visible, clinical metastasis—the kind that we can detect with **CAT** scans or **MRIs**—must only occur once a dormant cell has been reactivated and begins to divide,” he said.

TT1:

我们可以通过CAT扫描或核磁共振检测到的临床可见转移只有在休眠细胞被重新激活并开始分裂后才会发生, ”他说。

TT2:

我们可以通过CAT扫描(计算机X射线断层扫描, 即CT扫描)或核磁共振检测到的临床可见转移只有在休眠细胞被重新激活并开始分裂后才会发生, ”他说。

Analysis: The abbreviations appearing in the source text are mainly acronyms. Most of the acronyms are simple forms that English-speaking countries have adopted. However, due to cultural differences, these words are not familiar to Chinese readers and therefore need to be explained by

the translator. According to Skopos theory, the translation must take into account the reader's background knowledge and cultural difference, the translation should be readable, acceptable, and easy for readers to understand. After consulting the medical professional dictionary, here the "CAT" means "CT scan" and the "MPI" means "magnetic resonance imaging". The author also uses the method of addition in the translation of CAT. Further explanation of CAT, "计算机X射线断层扫描", is added to it in parentheses.

Sentence translation

In medical English articles, original translators often use passive sentences and long sentences. Therefore, specific analysis should be performed in selecting appropriate translation strategies.

The use of passive voice is a major feature of medical English, while passive voice is seldom used in Chinese. Therefore, when translating, we often translate passive sentences into active sentences to make them more consistent with Chinese expressions. To make the target readers feel similar to the original readers, the translator should modify the sentence structure according to the context. The corresponding strategies are: structural substitution or translation of passive sentences into active sentences by adding subject; adding verbs, translating active sentences into passive sentences.

Example 5:

ST: When a suspicious-looking nodule was found, it was biopsied. If the pathology report was positive, the patient's thyroid gland was surgically removed.

TT:

当发现可疑的结节时, 就进行活检(活组织检查)。如果病理报告结果呈阳性, 就手术切除患者的甲状腺。

Example 6:

ST: The patients had been not misdiagnosed but overdiagnosed; that is, cancers were identified that would never have produced clinical symptoms.

TT:

患者未被误诊, 却被过度诊断; 也就是说, 所发现的这些癌症是不会产生临床症状的。

Analysis: According to the fidelity rule, there should be correspondence between the source text and the target text. The target text should be faithful to the original text. However, the degree and form of faithfulness to the original text depend on the purpose of the translation and the translator's understanding of the original text. It is not required that the original text and the target text should be completely correspondent in form and content. When translating passive sentences, the translator can convert passive voice into active voice or passive voice as long as the purpose of translation has been achieved.

In example 5, according to Chinese expression habits, the passive sentences should be translated into Chinese sentences without subjects, which is a kind of typical sentence pattern and a unique language phenomenon in Chinese. The subjects of the original sentences are two noun phrases: "a suspicious-looking nodule" and "the patient's thyroid gland". When translating, the translator adds the verb "进行" to the first sentence and translates both sentences into verb-object structure.

The use of passive voice in English is not always due to linguistic habits, but to emphasize passive facts. Therefore, translators should translate in the order of the original sentence, adding

passive words such as “被” and “让”. The above example 6 emphasizes the fact that patients have been overdiagnosed. Therefore, the literal translation method is the most logical and also complies with Chinese language habits.

In order to express a complex concept and make it logical and compact, medical articles often use long sentences. These long difficult sentences are a big obstacle in medical translation. In general, the translation of a long sentence can be done through the following methods: linear translation, sequential translation, reverse translation, split/combined translation and reorganization. For complex sentences, we must first grasp the core of the sentence, determine the basic pattern of the sentence, and then analyze other components, simplify complex sentences.

Example 7:

ST: Paget’s way of framing the issue—metastasis as the result of a pathological relationship between a cancer cell and its environment—lay dormant for more than a century.

TT1: 癌症转移是癌细胞与其环境之间病理关系的结果，佩吉特这种看问题的方式潜伏了一个多世纪。

TT2: 佩吉特认为癌症转移是癌细胞与其环境之间病理关系的结果，他的这种看问题的方式被忽略了一个多世纪。

Example 8:

ST: The risks were substantial: hair loss, diarrhea, infections, a small possibility of permanent numbness that would leave her hands feeling as if she were wearing leather gloves, yet exquisitely sensitive to cold.

TT:

化疗风险很大：脱发，腹泻，感染，她的手还有可能永久麻木，这会使她感觉好像一直戴着皮手套，还会特别怕冷。

Analysis: According to the Skopos Rule of Skopos Theory, the purpose of the translation is the guide of the entire translation process. Translation should be able to function in the cultural context of the target language and meet the target reader's expectations. In the translation of long difficult sentences, the translator should always bear in mind the purpose of translation and try to figure out the best way of translation.

There are no difficult medical terms or complex clauses used in example 7, but two dashes separate the main sentence from the appositive. It is not easy to fully express the meaning of the original text so that its translation complies with the Chinese language habits. The translator, after fully understanding and analyzing sentences in detail, readjusts the word order and brings the appositive “metastasis as the result of a pathological relationship between a cancer cell and its environment” to the front to achieve good translation effect.

The main part of the sentence in example 8 is not complicated, and there are four parallel components behind the colon. The difficulty lies in the fourth parallel component “a small possibility of permanent numbness”, followed by a long attributive clause, so the translator must deconstruct the clause. In this way, the sentence structure is clearer and the expression is more accurate.

Conclusions

Based on the translation project of medical English translation on oncology, this study briefly introduces the features and contents of original medical texts and accordingly suggests translation strategies with the guidance of Skopos Theory. Apart from that, it analyzes difficulties the translator

encountered in actual translation of medical English. The main part of this study is to elaborate different translation strategies by giving typical examples. Through case analysis, this study has proved the practicability of Skopos Theory in the purpose of guiding the translation practice of medical English.

Medical reports have their own features. The original text has lots of professional words and the sentences are very long and complex. These features lead to difficulties in the process of translation. In translation, the words and terms in medical reports should be precise and professional and the structure of the sentences should be clear. It requires wide scope of knowledge in medical terminology, and familiarity with medical science. In this study, the translator learns from the experience of predecessors in medical English translation, puts the related theories into practice, and shares personal achievements in medical English translation.

In E-C translation practice, translators must not only have a high level of both Chinese and English language, but also have deep understanding of medical science. At the same time, they must also be skilled in the use of theoretical knowledge and translation strategies. To become a qualified translator, one must be proficient in mastering and applying translation theory, and look for translation rules in different articles. Only by combining theory with practice can the translation be more objective and accurate and acceptable to readers.

Through this medical translation study, the author realizes that translators engaged in medical translation need improvement of their translation through constant practice. The author hopes to provide reference for related translators in medical field and make some contribution to medical English translation.

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