A Study of Post-translation Editing Strategies for Machine Translation under Hermeneutic Theory

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Abstract: Due to the continuous updating of natural language processing and computer performance and the development of artificial intelligence technology, the speed and efficiency of machine translation have been substantially improved. However, under today's technical conditions, machine translation suffers from structural ambiguity and semantic ambiguity, and cannot accurately express the meaning and emotion of the text, which makes post-translation editing necessary. This paper analyzes the importance of machine translation and post-translation editing and the application of post-translation editing from the hermeneutic theory and studies the post-translation editing strategy. With the addition of post-translation editing, the translation results further highlight the linguistic rules and historical and cultural backgrounds embedded in the target language, which to some extent reduces the ambiguities caused by machine translation. Post-translation editing can incorporate the color of human thinking from the perspectives of text comprehension, proofreading and correction, contextual construction, and linguistics to edit machine translation translations and further improve the accuracy, fluency, and readability of machine translations.

Keywords: hermeneutics; machine translation; post-translation editing strategies

1. Introduction

In 1949, Warren Weaver first formally put forward the idea of machine translation, and then in the accelerated development of the process of world economic integration and the increasingly frequent international exchanges, the emergence of a series of new technologies such as natural language processing, data acquisition and processing, machine learning and so on has made artificial intelligence technology usher in an explosive development. The rapid progress of artificial intelligence technology has greatly promoted the development of the translation industry, giving rise to a large number of new technologies such as translation memory, terminology management, neural network machine translation, etc., and triggering an epochal change in the mode of translation production.[1] The translation production mode has undergone an epochal change. From the traditional manual translation mode to a technology-driven translation mode. Among them, based on massive information data and deep learning, machine translation has entered the era of neural network machine translation.[2] While the translation speed and translation efficiency have been greatly improved, the translation cost has also been greatly reduced, which further improves the economic efficiency.

While machine translation brings certain benefits, it also faces a series of challenges. First, when facing translated texts with different requirements, due to the limitations of vocabulary, language rules and corpus, machine translation has limited linguistic expression ability and cannot correctly deal with all the concepts of specialized terms and texts with complex linguistic structures. At the same time, the ambiguity of language easily makes the translation result ambiguous or inaccurate. Since some words may have different meanings in different contexts, machine translation needs to choose the meaning of words according to the context; secondly, in the face of translated texts in different national languages, machine translation cannot correctly identify and understand the linguistic rules, customary expressions, and cultural background of the language, and it can only translate the language itself, which lacks the integration of the color of the human mind, and it can not accurately convey the meaning and the feelings contained by the author, and it is not possible for the translation result to be accurate. It can't accurately convey the meaning of the text and the feelings of the author, resulting in poor quality translation results; third, machine translation doesn't understand the differences in the use of punctuation, and it is improperly used or misused in the translation of the text, which makes the text lack of natural articulation and lack of readability. It can be seen that machine translation can't completely replace human translation, and post-translation editing has the dialectical and flexibility that machine translation can't overcome, and post-translation editing is indispensable in machine translation. Then, how to carry out post-translation editing is a new problem. Therefore, this study starts from the perspective of hermeneutic theory and combines with example analysis to study and explore the post-translation editing strategy of machine translation.

2. Literature Review

2.1 Hermeneutics

Hermeneutics, a word of Greek origin meaning "to understand", is a philosophical technique and theoretical framework for interpreting and understanding texts, and it has also been described as the theory of interpretation and understanding of texts on their own terms, emphasizing a faithful and objective grasp of the text and the author's original meaning. The definition of hermeneutics includes the in-depth reading, interpretation and understanding of a text in order to uncover its deeper meaning and value. At present, hermeneutics has been described and defined by different scholars in the academia and industry. Steiner defines the "hermeneutic approach" as "the in-depth study of textual 'understanding' and the process of exploring textual understanding in terms of the underlying patterns of meaning."[3] In the writings of Friedrich Schleiermacher, hermeneutics has begun to emerge as an independent theory of analysis and interpretation, not only of analyzing and interpreting texts, but also as a methodology for understanding the Other. Wilhelm Dilthey's work expands hermeneutics as an irreplaceable means of understanding and interpreting the many and varied forms of human beings and human culture.[4] The Li Hongyan[5] The definition of hermeneutics as a state of openness, extension, and diversity is equivalent to what Heidegger called the state of "openness" or "opening" here and there as a state of Ganzsinkönnen, i.e., an unsaturated state of holistic, non-closed unfolding. Numerous definitions emphasize the importance of understanding for hermeneutics, which is an open and free understanding.

Hermeneutics has importance and application in several fields. First, hermeneutics is important for communication. Through hermeneutics, people can better understand the views and intentions of others, thus promoting effective communication and exchange. Second, hermeneutics is important for historical research. By reading and interpreting historical texts, one can better understand historical events and figures, thus gaining a more comprehensive understanding of history. Thirdly, hermeneutics helps to understand texts and concepts in different cultural contexts. Through hermeneutics, one can better understand the values, traditions and customs of different cultures and further promote cultural exchange and understanding. Fourth, hermeneutics is important for philosophical reflection. With the help of hermeneutics, people are able to think deeply about and understand the meaning and value of human thoughts, feelings and behaviors, thus promoting the discovery and understanding of the self-world.

2.2 Machine Translation

Machine translation (automatic translation) refers to the process of using computers to convert one natural language (original language) into another natural language (target language) based on artificial intelligence deep learning, big data, natural language processing and other technologies, based on data and corpus, with algorithms as the core operation mechanism, and with the computing power of computers as the main support.[6] It is based on data and corpus, with algorithm as the core operation mechanism and computer's computational power as the main support, the computer analyzes the input original language grammatically and semantically, and then converts the language of the original language and the language that the user wants to get, and finally generates the translation.

The history of machine translation research can be traced back as far as the 1930s, with two main ways of processing language, one rule-oriented and one statistically oriented[7] . French scientist G.B. Altruni first proposed the idea of using machines for translation. Then with the birth of ENIAC, the world's first modern electronic computer, the pioneer of information theory, the American scientist Warren Weaver (Warren Weaver) formally proposed the idea of machine translation in 1949 in his published "Memorandum on Translation". With the development of computer technology and linguistics, as well as the demand for social information services, machine translation has gradually become prosperous. at the beginning of the 21st century, with the development of deep learning and neural networks, machine translation has entered a new era: Neural Machine Translation (NMT). Different from rule-based or statistical machine translation methods, Neural Machine Translation (NMT) uses deep neural networks, especially Recurrent Neural Networks (RNN) and later Transformer Networks (Transformer) models, to directly map source language text to target language text in an end-to-end manner, which no longer requires large-scale linguistic feature engineering or manual design of linguistic features. The computer can automatically obtain and compute vectorized linguistic features from the corpus, which greatly saves manpower and lowers the threshold of linguistic knowledge for developing natural language processing systems. This is a great progress of natural language processing research in knowledge acquisition technology.[8] From the translator's point of view, machine translation can reduce the translator's workload and long-term memory load, release the translator's cognitive resources, and to a large extent reduce the translator's original repetitive and mechanical labor.[9] From the translator's point of view, machine translation can reduce the translator's workload and long-term memory load, release the translator's cognitive resources and largely reduce the translator's original repetitive and mechanical labor.

At present, machine translation has a wide range of applications in various fields. First of all, with the development of the process of world integration, communication between different languages has become more and more frequent. Machine translation can help people realize cross-language barrier-free communication in the case of different languages, and provide instant language conversion services in the case of international business and tourism to help people understand communication. For example, Google Translate and Microsoft Translate in foreign countries, as well as Baidu Translate and Youdao Translate independently developed by Chinese enterprises. Secondly, machine translation technology plays an important role in academic research. Many researchers use machine translation technology to translate foreign language literature in order to better understand international academic dynamics and cutting-edge research. Again, machine translation technology plays an important role in business transactions. Through machine translation, companies can easily understand and translate various business contracts, agreements and legal documents, thus avoiding misunderstandings and disputes caused by language problems. Finally, the rapid development and widespread popularization of Internet technology has made the large planet a global village, and machine translation technology plays an important role in news reporting. Many news organizations use machine translation technology to translate international news reports in order to better understand global developments and events.

3. Post-translation Editorial Strategy

3.1 Definition and importance of post-translation editing

Postediting or Post-Editing (abbreviated as PE) is the process of editing, processing, and re-creating the translated text on the basis of machine translation to make it conform to the target of use.[10] Post-Editing The development of Post-Editing is closely related to the development of machine translation technology.

With the development of science and technology, post-translation editing can be divided into two categories, one of which is "post-translation editing in the narrow sense" and the other is "post-translation editing in the broad sense". The so-called "post-translation editing in the narrow sense" or "post-translation editing of machine translation" is the post-translation editing of the translated text obtained directly by machine translation. The so-called "post-translation editing" or "post-translation editing of integrated translation" is the post-translation editing of the initial translation output from the integrated translation environment, i.e., the post-translation editing of the translation obtained from the integrated translation environment composed of translation memory, machine translation and translation management system. post-translation editing[11].

According to the different degrees of post-translation editing, the output of post-translation editing can be categorized into four types: high post-translation editing, complete post-translation editing, mild post-translation editing, and weak post-translation editing. Of these, two main types of post-translation editing are often used: partial post-translation editing involves the elimination of grammatical, bigrammatical, and stylistic errors from the text without changing the style of the translation, and the resulting text is easy to understand and fully comprehensible. Full post-translation editing, on the other hand, involves checking and correcting the text until it is equivalent to a human translation, reflecting not only the essence of the original text but also the depth of industry-specific terminology. A wide range of expressive language elements are used in this process[12] .

Successful translation pursues the balance between the original and the translated text, i.e. the equivalence of the meaning of the original and the translated text. In the process of translation, translators either subjectively mix in their own understanding and thoughts, or cut corners to avoid difficult points, so compensation is an essential part of restoring the original balance. According to Steiner, only the technical compensation between texts can be truly "faithful" to the original text and achieve "complete balance".[13] Steiner believes that only intertextual technical compensation can be truly "faithful" to the original text and achieve "complete balance. In today's scientific and technological conditions, machine translation technology has certain limitations, translation can not fully meet the needs of human beings, so the combination of "machine translation and post-translation editing" mode is developing more and more rapidly. Post-translation editing has the following advantages: firstly, post-translation editing can correct the grammatical and spelling errors produced by machine translation, improve the accuracy, fluency and efficiency of the translation results, and reduce the waste of time and resources in the process of translation; secondly, when facing the machine-translated poems and operas, post-translation editing can better connect with the local cultural and historical background, give full play to the translator's subjective initiative, and make the translation results more in line with the cultural background of the target language and the cultural background of the target language. conform to the cultural background and linguistic habits of the target language, further realizing cultural dissemination. For example, the word "dragon" in China is different from the evil represented by the western dragon. The Chinese dragon is a product of agricultural civilization and carries beautiful symbols such as bravery, vitality and good luck. However, there is no corresponding concept in English, so it can only be translated as "dragon", and in some contexts, it can be translated as "loong", which can obviously better express Chinese cultural characteristics and connotations. Thirdly, when dealing with certain professional terms and industry idioms,

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machine translation may have errors, resulting in ambiguity or ambiguity of certain expressions in the translated text. Post-translation editing can clarify and explain the problems in the translation, improve the consistency of the translation and help readers understand the meaning better.

4. Application of machine translation post-translation editing and its analysis

Example 1:

Oliver:Yes,we're in Hell, but let's just eat cookies for breakfast until we get out.

Conor:Ooh,God.Ugh.Oh,God.

Machine translation:

奥利弗：我知道大家就如同待在地狱般，但是我们就先吃饼干作为早餐吧，直到我们能出去。

康纳尔：哦天哪！哦，哦，天哪！

Post-translation editing:

奥利弗：我知道大家就如同待在地狱般，但是我们就先吃饼干作为早餐吧，直到我们能出去。

康纳尔：哦天哪！[10]

Analysis: As seen in this example, the machine translation translates the sentence "哦天哪！哦，哦，天哪！" The translation is too rigid and contains redundancy. The post-translation edit of "哦天哪！" expresses the emotion, but also closer to the way we think and speak in our daily life, more concise and flexible.

Example 2: 综合研判国内外形势，今年我国发展面临的风险挑战明显增多，必须爬坡过坎。

Google Translate: Judging the domestic and international situation comprehensively, the risks and challenges faced by my country's development this year have increased significantly, and we must climb the slopes and overcome the hurdles. Judging the domestic and international situation comprehensively, the risks and challenges faced by my country's development this year have increased significantly, and we must climb the slopes and overcome the hurdles.

A comprehensive analysis of evolving dynamics at home and abroad indicates that this year our country will encounter many more risks and challenges, and we must keep pushing to overcome them. A comprehensive analysis of evolving dynamics at home and abroad indicates that this year our country will encounter many more risks and challenges, and we must keep pushing to overcome them.

Analysis: For the sentence "must climb the slopes and cross the hurdles", machine translation adopts direct translation. In Chinese, the words "爬坡过坎" and "坡" and "坎" mean difficulties. So, "爬坡过坎" means to overcome difficulties. In the post-translation editing, the translation of "keep pushing to overcome them" is more appropriate, which minimizes unnecessary misunderstandings to the readers and makes it easier for them to understand the text.

Example 3: 结构简单，对制造精度的要求不高，容易加工，操作简单，维修方便。

Google Translate: The structure is simple, the requirement of manufacturing precision is not high, the processing is easy, the operation is simple, and the maintenance is convenient.

Post-translation edit: With Simple structure, it requires low manufacturing precision, which is easy processing, simple operation and convenient maintenance.[14]

Analysis: Machine translation is more hardened, i.e., direct translation based on what is given in the original text. This translation requires understanding of the meaning and context of the original text and a deep understanding of the language. "容易加工，操作简单，维修方便"是对"制造精度的要求不高", so the post-translation editor adopts the English way of the determiner clause to translate, more intuitive for readers to understand.

Example 4: If no function released at the remote control unit within ten minutes, it switches to standby-mode to save its battery power.

Machine Translation:

如果遥控器在10分钟内没有释放任何功能，遥控器将切换到待机模式，以节省电池电量。

Post-translation edit:

如果遥控器装置在十分钟内没有启动任何功能，它将切换至待机模式以节省电池电量[15].

Analysis: For the word "功能", "启动功能" is more appropriate. The word "release" has the meaning of releasing, letting go, but from the translation context, the post-translation editor adopts the way of utilizing the meaning of the word, which on the one hand makes the translated text free from gerund collocation problem, and on the other hand makes the readers read more fluently.

Example 5: I don't like fish because I hate the bone.

Machine translation: 我不喜欢鱼，因为我讨厌骨头。

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Post-translation editing Translation : 我不喜欢吃鱼，因为我讨厌鱼刺[16].

Analysis: Machine translation of "I don't like fish because I hate bones." There is no problem with the translation itself, but according to human logic, it would be more appropriate to translate "bones" as "fish bones".

Example 6: Gear oils, which are listed in this operating instruction, are manufactured and purchased world-wide by the required quality standards for gear Gear Oil

Machine translation:
齿轮油，在这个操作说明中列出，制造和购买在世界各地的齿轮减速器所需的质量标准。

Post-translation edit:
本操作说明中列出的齿轮油是按照齿轮减速器所需的质量标准在全球范围内制造和购买的。

Analysis: the definite clause led by "which", the result of machine translation has the problem of wrong word order, which is easy to make readers confused and makes the content reading incoherent. The result of post-translation editing is clear at a glance, and post-translation editing is more accurate after understanding the meaning of the passage.

5. Editorial Strategy Research

Post-translation editing for machine translation has become an important field as technology and market needs evolve. The demand for machine translation is increasing in the face of accelerated globalization and growth in the language services market. Many corporations, government organizations and individuals rely on machine translation for a variety of linguistic tasks, and as a result, the market for machine translation post-translation editing is expanding. Although machine translation technology has made significant advances, there are still some challenges and limitations. For example, the results of machine translation can have direct translation, redundancy, misplaced logic and word order, and not fitting the meaning of the context, etc. Human editors are needed to correct the errors and improve the quality of the translation, and to add the color of human thinking on the basis of machine translation. In order to do a good job of post-translation editing, we think we can start from the following points:

Confirmation of purpose: After the initial machine translation, we should make clear the purpose of post-translation editing, which is to improve the accuracy of the translation, improve the readability of the text, improve the quality and credibility of the translation, and moreover, to change the style of the text so as to make it more in line with the stylistic environment of the target language. Through post-translation editing, translators can scrutinize and correct these errors to ensure the accuracy of the message conveyed; they can adjust the structure and expression of sentences to make them more in line with the habits of the target readers, so as to improve readability.

Text understanding: On the basis of machine translation, the translator needs to understand the meaning and context of the original text, have a deep understanding of both the source language and the target language, be able to infer the context, enhance the coherence and consistency of the translated text, and make the translated text as a whole have a perfect connection. If the translator does not make a connection between the context when editing after translation, and there are inconsistencies or repeated use of the same words in the translated text, the text may be fragmented, making the text illogical.

Proofreading and correction: The translator needs to proofread and correct the machine translation results during the editing process in order to correct errors in grammar, spelling, wording and so on. The same words involved in two sentences may be translated differently by the machine translation, and the post-translation editing can then better correct the improper wordings. It is also necessary to optimize and adjust the machine translation results according to the expression habits and norms of the target language.

Contextual construction: Hermeneutics emphasizes the relevance of the meaning and context of a text. This also means that it is necessary to pay attention to the contextual differences between the original text and the translated text, and try to construct a translation that is more in line with the target language context. When the translator carries out the translation work with a large time span, it is necessary for the translator to fully grasp the language use of the era in which the translation is made, and to be very familiar with the language environment of the era in which the original text is made, and the most important thing is the translator's overall understanding of the translated text; only when these three things are combined and fused with each other, a correct, rigorous and readable text will be formed at the beginning of the foundation. At the same time, in the process of contextualization, we need to connect with the core values of the times.

Reader involvement: Hermeneutic theory suggests that the reader is part of the meaning of the text. Translators need to consider the needs and cognitive styles of their target readers during the editing process to ensure that the translated text is easy to understand and accept. In the post-translation editing process, the

translator needs to consider the situations in which the text will be used, and thus consider whether the translation should be edited to make it simpler or more artistic.

Refinement and Improvement: On the basis of maintaining the original meaning, make appropriate refinements and improvements to the translation, by adjusting sentence structure, using more appropriate vocabulary or adding rhetorical color to make the text more fluent and natural and in line with the expression habits of the target language, while further improving the overall reading experience.

Other factors: Post-translation editing is a job that requires the deep intertwining of several fields, so translators also need to explore machine translation and post-translation editing in depth from the perspectives of linguistics, psychology, and cognitive science. Linguistics, psychology and cognitive science all involve in-depth understanding of human cognition and thinking, as well as the process of how to process and organize information. The rigor of computer programming that machine translation has makes the results of machine translation more stereotypical, and a better translation requires the translator to combine various aspects of linguistics and psychology to further modify and improve the translation after machine translation.

6. Conclusion

With the continuous advancement of globalization and the development of information technology, machine translation and post-translation editing will play an increasingly important role in various fields. From the perspective of hermeneutics theory, this study firstly explains the definitions of hermeneutics, machine translation and post-translation editing to understand the importance of machine translation and post-translation editing. Secondly, examples of post-translation editing in life and its analysis are given to further argue and deepen the importance of post-translation editing. Finally, the strategy of post-translation editing after machine translation is initially discussed, and it is believed that post-translation editing requires multiple fields and multiple disciplines to intermingle with each other in order to complete a better translation. The purpose of this thesis is to further improve the translation quality, reduce errors and increase accuracy of post-translation editing. Variable scenarios require translators to be more flexible in post-translation editing while at the same time possessing better knowledge and skills in language, culture and context.

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