

AI-Powered Research on Translation Strategies and Methods and Its Advantages and Disadvantages: A Case Study of the Translation of *Ambulance Lectures: First Aid to the Injured*

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Abstract: This article, empowered by ChatGPT and through retrieving relevant historical literature, explores how the translator Sun Yat-sen flexibly employed strategies like domestication and foreignization, as well as methods like omission, addition, and modification in his translation of *Ambulance Lectures: First Aid to the Injured*. Additionally, the research highlights the use of ChatGPT as a tool to assist in the study. While ChatGPT is able to provide comprehensive knowledge quickly and proper translations, improvements are still needed in terms of image accuracy and citation generation. By providing specific context, probing for factual evidence, clarifying the reference objects, and narrowing the scope, prompts can be gradually refined for increasingly satisfactory outcomes.

Keywords: Artificial intelligence; Translation strategies and methods; *Ambulance Lectures: First Aid to the Injured*; Sun Yat-sen

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1. Introduction

Dr. Sun Yat-sen was a great national hero in China's democratic revolution. As a translator, he translated the medical work *Ambulance Lectures: First Aid to the Injured* into Chinese, with the Chinese version titled “红十字会救伤第一法” (hereinafter referred to as “救伤第一法”). This translated work is the first book on the Red Cross in the Chinese-speaking world. This article conducts a comparative analysis of the original and the translation, and, with the aid of artificial intelligence technology, explores the translation strategies and methods employed by the translator.

2. Literature review

Research on Chinese translations is scarce. Ding and Liu held that this translation played a significant role in the initial development of the Chinese Red Cross Society ^[1]. Zou pointed out that this translation is the first Chinese book on the Red Cross and represents a milestone in the history of the Chinese Red Cross Society ^[2]. Chi and Cui examined the translator's motivation and the translation's influence on the translator's thoughts. They argued that it was somewhat inevitable for Sun Yat-sen to translate this book, and the translation process was continually enriching his humanitarian ideas ^[3]. However, the above studies have only focused on the relationship between the translation and the translator's background, motivation, and intellectual development, as well as its impact on the development of the Chinese Red Cross Society. Takegami discovered that Sun Yat-sen added "Red Cross" to its translation's title which did not appear in the original, and changed the original publishing institution to "St. John's Red Cross." He also compared various chapters of the original and the translation, analyzing the translation of certain terms ^[4], without a comparative analysis of the original and the translation from the perspectives of syntax and culture in context. Zou further analyzed the reason for adding "Red Cross" to the title—to promote the development of the Red Cross movement through translation ^[5]. These studies mainly investigate from the perspectives of research on translator and the translation's publishing history. As a far-reaching translation, the Chinese translation has not attracted widespread attention from the translation studies community.

As a tool employed in this study, ChatGPT, an application of language intelligence technology, has had a significant impact on academic research. Many scholars have explored how to fully utilize the tool in teaching and research, especially in fields such as creation, translation, and academic paper writing ^[6]. In translation, Brewster *et al.* assessed the performance of Google Translate and ChatGPT for multilingual translation of pediatric discharge instructions, which demonstrated similar domain-level ratings to professional translations for Spanish and Portuguese. While for Haitian Creole, professional translations demonstrated greater adequacy ^[7]. Long and Zhou extracted high-frequency term lists of a book and established a bilingual term database through a term translation and management process based on ChatGPT and other technologies ^[8].

3. Case analysis

This paper compares the 1885 original edition with the 1897 Chinese translation by Sun Yat-sen, using the ChatGPT-4.0 model in combination with relevant historical records to explore the translation strategies and methods employed by the translator in terms of language, culture, and communication.

3.1. Linguistic level

In the translation process at the linguistic level, the translator must not only consider the phonetic features of the source language but also take into account the target reader's acceptability and cultural background, particularly in the translation of proper nouns. The translator's linguistic habits, that is, the influence of his mother tongue, may also affect translation decisions.

Example 1: Original text: Osborn

Translated text: 柯士宾

In terms of vocabulary, the translator employs transliteration to translate names, influenced by the translator's native Cantonese and the target readers' acceptability. For instance, in "英医柯士宾君," the translator rendered the original author's name "Osborn" as "柯士宾" because the Cantonese pronunciation of "柯士宾" ("o-si-ban") closely resembles the English pronunciation of "Osborn" (**Figure 1**).

Prompt: What is the Cantonese pronunciation of “柯士宾”?
ChatGPT: The Cantonese pronunciation of “柯士宾” can be roughly indicated using Cantonese pinyin. 柯 is pronounced [o1] in Cantonese. 士 is pronounced [si6] in Cantonese. 宾 is pronounced [ban1] in Cantonese.

Figure 1. Cantonese pronunciation of “柯士宾”

Sun Yat-sen was influenced by his mother tongue and tended to choose Chinese characters whose Cantonese pronunciations were similar to the English pronunciation for translation. Furthermore, the target audience of the first edition was primarily Chinese people in Hong Kong, Macau, Southeast Asia, and other regions, where Cantonese is widely spoken. The translator used transliteration based on Cantonese pronunciation for names, based on phonetic similarity and the readers’ acceptability, making the translation accurate in pronunciation.

Example 2: Original text: Tiles of a mosaic pavement

Translated text: 碎石街 (阶) 砖

In the translated text, common terms from the Guangdong region are used, such as “碎石街 (阶) 砖”^[9]. They are commonly found in the Lingnan region and are effective in drainage (**Figure 2**). Since Sun Yat-sen was from Xiangshan, Guangdong, and had studied and worked in Hong Kong and Macau, this translation was influenced by his surroundings and linguistic habits. It also makes it easier for the target readers to understand and accept.

Prompt: What is “碎石街 (阶) 砖”?
ChatGPT: “碎石街 (阶) 砖” is a type of building material used for paving roads or steps, typically made from small gravel, stones, or a mixture of both. It is especially suitable for areas with frequent rainfall as it facilitates effective drainage. In regions like Lingnan, there is a long-standing tradition of using “碎石街砖” (or stone-paved streets). Examples include the old streets and alleys in Guangzhou and the arcade streets in Foshan, among others.

Figure 2. Stone paving “碎石街 (阶) 砖” used in Lingnan streets

Example 3: Original text^[10]: You naturally will ask, of what use, then, is the nitrogen? Probably you may at some time or other have seen at some chemical lectures that bodies burnt in oxygen gas burn with far greater brilliancy than in ordinary air. Well, we should do the same if only this gas was present, and live our lives far too rapidly; and, consequently, nitrogen is present solely to dilute the oxygen.

Translated text^[9]: 或问：“天气中之淡气有何用处？”如各人曾听过化学讲课者，必见过养气之烧物，比之寻常天气更烈而速。由此推之，倘吾人独生于养气之中，生命必促。故淡气者，特用以和匀养气，而制其烈也。

In Example 3, the original text adopts a teaching tone and uses rhetorical questions to create a closer connection with the reader. The use of analogy makes the content easier to understand. Literal translation is adopted here, retaining the rhetorical devices of rhetorical questions and analogy. Additionally, since the target readers are the masses, the language of the translation is simple and easy to understand, with short sentences, thus reproducing the style of the original text.

3.2. Cultural level

Due to the cultural differences between the source and target languages, the translator must fully understand and

accurately convey the cultural connotations of the original text. The awareness of cultural differences and the acceptability of the readers should be reflected by the translation.

Example 4: Original text ^[10]: The heart in shape is not like what you see on a valentine, but has a more truncated base and apex. Its relative size for any individual is that of the two fists placed together.

Translated text ^[9]: 心之形如莲蕊。其大之比例，适如其本人双拳对合等。

In Example 4, the term “valentine” in the original text refers to a Valentine’s Day card. As shown in **Figure 3**, Valentine’s Day was not widely popularized from the late 19th century to the early 20th century. The Chinese translation was published in 1897, and its target readers were soldiers, sailors, and workers, who likely had never seen Valentine’s Day cards then, but were familiar with the shape of a lotus pistil (“莲蕊”). Here, the translator adopted a modification approach, replacing the metaphor of the heart with “lotus pistil.” This not only accurately conveys the message but also makes it easier for the readers to understand.

Prompt: When did Valentine’s Day enter China?
ChatGPT: The history of Valentine’s Day entering China can be traced back to the late 19th century to the early 20th century.
1. Early Introduction (Late 19th Century to Early 20th Century)
Valentine’s Day was first introduced to China’s coastal regions by Western missionaries and foreign merchants. <u>The concept of the holiday mainly spread within foreign communities.</u>
2. Initial Spread (Early to Mid-20th Century)
In the early 20th century, <u>the concept of Valentine’s Day started to be introduced to intellectuals and the urban middle class, but it was not widely popularized.</u>



Figure 3. Early introduction and spread of Valentine’s Day in China

Example 5: Original text ^[10]: The red corpuscles give the color to the blood, and in form are bi-concave discs; and when viewed edgewise are very similar in shape to dumb-bells, and on removal from the body have great tendency to adhere together in rolls, like a pile or rouleaux of coins.

Translated text ^[9]: 血之有色，则红轮所呈也。其形为扁体，两面皆凹，侧而观之，似窄腰纱灯，如图七。血轮流出体外，大有牵合之力，垒合如贯钱……

In Example 5, the original text compares the shape of the cross-section of red corpuscles to a “dumb-bell” and, after the blood flows out of the body, likens the stacked red corpuscles to “a pile or rouleaux of coins.” Due to cultural differences, ordinary Chinese people at the time might not have seen “dumb-bells” or “coins,” and they might have trouble imagining the shapes of these objects. Without modification, this could leave readers confused. The translator adopted a strategy of domestication, changing “dumb-bell” and “coins” to “窄腰纱灯” (narrow-waisted silk lantern) and “贯钱” (a string of Chinese coins) respectively (**Table 1**). It is evident that the translator prioritized the culture and readers of target language.

Table 1. Images generated by ChatGPT

Prompts	“其形为扁体，两面皆凹，侧而观之，似窄腰纱灯，” generate an image of “窄腰纱灯.”	“血轮流出体外，大有牵合之力，垒合如贯钱，” generate an image of “贯钱.”
Images generated by Chat-GPT		

Example 6: Original text^[10]: The male subject has the same number of ribs as the female, although many are apt to say, on the strength of their Biblical knowledge, that the male has one less.

Translated text^[9]: (肋骨) 男女俱同。俗传女多一骨, 非也。

The concept of the rib in *Bible* is referred to in the underlined part. It is specifically from the Book of Genesis in the *Old Testament* (**Figure 4**). The original readers, from English-speaking countries, are very familiar with the *Bible*. However, in China, where the cultural context is quite different, the public is not familiar with the book and its content. The translator wisely chose to omit this part, adapting it to the target language readers.

Prompt: What is the conception of number of ribs in the Bible?

ChatGPT: In the Bible, specifically in the Book of Genesis, the concept of the number of ribs comes from the creation story of Eve, where it is stated that Eve was created from one of Adam's ribs.

Genesis 2:21-22 (KJV):

“And the Lord God caused a deep sleep to fall upon Adam, and he slept: and he took one of his ribs, and closed up the flesh instead thereof. And the rib, which the Lord God had taken from man, made he a woman, and brought her unto the man.”

This passage has led to various interpretations and beliefs, particularly the idea that men might have one fewer rib than women because Eve was made from Adam's rib.

Figure 4. The biblical conception of the number of ribs

Secondly, the translation also retains the exoticism and foreign culture. The translator adopted a strategy of foreignization, keeping the image of short hair in the illustrations (**Figure 5**), without adapting the character's image to suit Chinese culture. As can be seen in **Figure 6**, influenced by Western culture and ideas, Sun Yat-sen advocated for short hair. That image can spark curiosity and interest among Chinese readers and introduce new culture, so as to help eliminate backward feudal practices.



Figure 5. The 10th illustration in translation^[9]

Prompt: Did Sun Yat-sen advocate for short hair? What literature or evidence supports this?

ChatGPT: Yes, Sun Yat-sen advocated for short hair as part of the anti-queue movement. Evidence and Literature Supporting This: The Chronological Biography of Sun Yat-sen: This book mentions that in 1905, Sun Yat-sen, through the establishment of the Tongmenghui (Chinese Revolutionary Alliance), explicitly advocated for the abolition of the Manchu hairstyle system, calling for the overthrow of the Qing dynasty and the reform of traditional culture.

Propaganda Materials during the 1911 Revolution: During the 1911 Revolution, anti-Qing slogans included “cutting off the hair” as part of the effort to overthrow Qing autocracy.

Sun Yat-sen's Public Speeches and Writings: In *The Outline of National Reconstruction*, he mentioned the importance of reforms in education, culture, and other areas to promote China's modernization, including the abolition of old customs like the queue.

Actions and Reactions after the 1911 Revolution: After the revolution, the Republic of China government began advocating for the abolition of the queue and the adoption of modern clothing and hairstyles.

Figure 6. Sun Yat-sen's advocacy for short hair and the abolition of the queue

At the cultural level, while the translator has taken the target culture and readers into full consideration, adopting a domestication strategy with modification and omission, the translator had chosen a foreignization strategy for advanced foreign culture, retaining the images in illustrations.

3.3. Communicative level

Any information without communicative intent is meaningless. Besides linguistic and cultural dimensions, the translator must also consider the communicative function, which is reflected in addition and modification of the book title by the translator.

Example 7:

	Book title	Preface
Original text ^[10]	<i>Ambulance Lectures: First Aid to the Injured</i>	The syllabus of the <u>St. John’s Ambulance Association</u> has been strictly adhered to, as these are Lectures given to their classes.
Translation by ChatGPT	救护讲座：伤者的急救	本书严格遵循圣约翰救护协会的课程大纲，因为这些讲座是专门为其课程班级开设的。
Translated text ^[9]	《红十字会救伤第一法》	按照《圣约翰红十字会章程》，凡联班隶会者，当以此编为读本。

In Example 7, the translator added “Red Cross Society” to the title, indicating that the translated work was published by the Red Cross Society. Furthermore, in the preface, “St. John’s Ambulance Association” was translated as “圣约翰赤十字会” (St. John Red Cross Society). The original text does not mention any connection between Samuel Osborn’s experience and the Red Cross, yet the translation refers to him as the “chief doctor of the Red Cross in London.”

Research reveals that the translator may have aimed to promote the establishment of the Red Cross Society in China. During the First Sino-Japanese War, the Japanese Red Cross collaborated with the military to establish a comprehensive wartime medical system, receiving donations and support from the International Committee of the Red Cross (ICRC). In contrast, China was regarded as “backward,” and the Qing military was criticized for being “stubborn.” With China’s defeat, many reform-minded individuals were deeply concerned about the status quo of being impoverished and weakened, leading to an increasing number of movements to establish a Red Cross Society. Newspapers like *Shun Bao* frequently published articles about the Red Cross movement and the Japanese Red Cross. It was through the international praise for Japan and criticism of the Qing that Sun Yat-sen realized that founding a Red Cross Society could help integrate China into the international community and enhance the nation’s image.

Besides, the content of the original *Ambulance Lectures: First Aid to the Injured* aligns closely with the responsibilities and spirit of the Red Cross. Missionary doctors in China played a crucial role in advancing the Red Cross movement. For example, Sun Yat-sen’s mentor Dr. J. Cantlie founded the Hong Kong Red Cross and edited a first-aid manual. Sun’s close friend, Samuel Osborn, had worked in battlefield first-aid and authored the original. All this introduced Sun to the work of first-aid and the Red Cross. He believed that mastering the skills of aiding others and rescue embodied the humanitarian and charitable principles advocated by the Red Cross. Therefore, it is appropriate to add “Red Cross Society” to the title of the translation.

From the content of **Figure 7**, Sun Yat-sen realized the value of the Red Cross Society and the necessity of establishing one in China. Thus, the added “Red Cross Society” aimed to increase its visibility in China, lay the foundation for public support, and advocate for its establishment, thereby contributing to social reform, which is the communicative goal.

Prompt: Referring to the Japanese Red Cross Society of the time, what was the significance of establishing the Red Cross Society in China in the late 19th century?

ChatGPT: China's establishment of the Red Cross Society was deeply inspired by the international Red Cross movement and the Japanese Red Cross Society.
Learning from Neighboring Experience: Drawing on the experiences of the Japanese Red Cross in wartime rescue and social mobilization.
Enhancing Rescue Capabilities: Strengthening the capacity for medical assistance during wartime and natural disasters.
Integrating into the International System: Improving the nation's image through participation in international humanitarian affairs.
Promoting Social Reform: Advancing the modernization of healthcare and spreading the spirit of public welfare and volunteerism.
Inheriting Cultural Values: Combining China's traditional ethos of "helping the world and saving lives" with modern humanitarian principles...

Figure 7. The establishment of the Red Cross Society in China and its significance

This article identifies a few translation errors in the first edition of the translation, such as “gall bladder” being mistranslated as “腰骨” (waist bone). “Catgut” is a type of cord historically made from the natural fibers of the intestines of sheep or goats, not cats, despite the name; but it was mistakenly translated as “猫肠线” (the gut of cat). However, given the translator’s challenging circumstances at the time and lack of proofreading, such mistranslations were inevitable.

4. Advantages, disadvantages, and optimization methods



In the process of exploring the translation strategies and methods of the book, ChatGPT was used to complete tasks such as translation (Example 7), drawing (Tables 1 and 2), and retrieving background information (Example 2), professional knowledge (e.g. “catgut”), and relevant literature (Figures 4 and 6).

4.1. Advantages and disadvantages

One of the advantages of ChatGPT is that it can provide comprehensive background knowledge quickly, covering a wide range of informational needs. Additionally, the translations generated by ChatGPT are often proper. Researchers can obtain quality preliminary translations within a short time, significantly reducing the time and effort required for manual translation.

However, there are notable limitations in ChatGPT’s ability to generate accurate images and citations. First, although relevant images can be obtained through precise prompts, the images may not fully match the description. As shown in Table 2, without context, the generated image does not align perfectly with the described shape. Providing context can improve this to some extent. Another disadvantage is that ChatGPT cannot automatically generate accurate citations or sources. This means researchers still need to manually search for and verify sources to ensure academic accuracy and rigor. Therefore, while ChatGPT enhances research efficiency, improvements are still needed in terms of image accuracy and citation generation.

Table 2. Image comparison based on two prompts

Prompts	Generate an image of “窄腰” “其形为扁体，两面皆凹，侧面观之，似窄腰纱灯，” generate an image of “窄腰纱灯.”	
Images generated by ChatGPT		

4.2. Optimization methods

While ChatGPT-generated results are generally accurate, they tend to rely heavily on prompts and are significantly influenced by the specifics of multi-turn interactions with users. In case analysis, through optimization methods in **Table 3**, prompts were gradually refined for increasingly satisfactory outcomes.

Table 3. Comparison of original and improved prompts with optimization method

Source	Original prompt	Improved prompt	Optimization method
Table 2	Generate an image of “窄腰纱灯.”	“其形为扁体，两面皆凹，侧面观之，似窄腰纱灯，” generate an image of “窄腰纱灯.”	Providing specific context
Figure 6	Did Sun Yat-sen advocate for short hair?	Did Sun Yat-sen advocate for short hair? <u>What literature or evidence supports this?</u>	Probing for factual evidence
Figure 7	What was the significance of establishing the Red Cross Society in China?	a. <u>Referring to the Japanese Red Cross Society of the time</u> , what was the significance of establishing the Red Cross Society in China b. <u>in the late 19th century?</u>	a. Clarifying the reference objects b. Narrowing the scope

Firstly, more specific context helps generate more targeted and insightful content. Secondly, the accuracy of the generated content needs to be validated. Since the model is trained on existing online data, researchers should critically evaluate the results to ensure reliability. Thirdly, providing clear comparison objects encourages more in-depth and valuable analysis. Lastly, narrowing the scope by clearly defining time and spatial limits can help avoid irrelevant content. In short, the dynamic feedback and adjustment can bring about more innovative results that are closely aligned with research needs.

5. Conclusion

Dr. Sun effectively achieved his communicative and political goals by employing appropriate translation strategies and techniques, considering the original text’s language style, the target language’s cultural context, and the readership. After Sun’s translation was introduced to China, it was recommended as a textbook for medical schools. Subsequently, the Shanghai Branch of the Red Cross was founded in 1904. This demonstrates the translation’s significant role in the early movement of the Red Cross in China, contributing to the establishment of the Chinese Red Cross Society and marking a milestone in its development.

This study also examined the advantages and limitations of ChatGPT in the analysis of strategies and methods for translating medical texts, offering suggestions for improvement. With the support of artificial intelligence technology, we can not only make full use of abundant academic resources but also drive significant

transformations in teaching and research concepts, models, and content. By leveraging intelligent and information-driven practical approaches, the precision and efficiency of translation education will be enhanced, and innovative advancements in academic research will be fostered.

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