Challenges and Strategies of Multimodal Translation in Sichuan Red Culture Heritage

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Abstract: Based on the background of Sichuan Red Culture, this paper discusses the challenges and strategies of multimodal translation under this cultural background. Firstly, it analyses the characteristics of Sichuan Red Culture and the definition and application of multimodal translation. Secondly, in view of the multi-modal elements of language, music and vision in Sichuan Red Culture, the corresponding translation strategies are put forward. Finally, the application value and prospect of multimodal translation in Sichuan Red Culture are summarized.

1. Introduction

Sichuan Red Culture is an important part of China's revolutionary history, and it covers numerous cultural elements. In today's society, the study and transmission of Sichuan Red Culture has become the focus of academic and social attention. As an emerging translation method, multimodal translation can better present the diversity and richness of Sichuan Red Culture, but at the same time, it also faces various challenges [7]. The most representative one is the establishment and development of the revolutionary base of workers and peasants in Sichuan Province under the leadership of the Communist Party of China. During this historical period, Sichuan became an important battleground of the Chinese revolution, and many revolutionaries and heroes struggled for the revolutionary cause, leaving behind many touching stories and cultural heritages. For example, Wang Jiantang, is a symbol of the bravery and heroism of the Sichuan Army. He participated in dozens of battles, was wounded four times, and was decorated many times. He became famous for carrying the "the dead-character flag" against Japanese troops. This flag witnessed the patriotism of Chinese people, and moreover the integrity of the Sichuan Army for the state and the people.

2. Research Status

In the academic world, the study of Sichuan Red Culture involves a number of fields and levels and is explored in depth from a number of perspectives, including history, literature, art, and music. Among them, historical studies focus on the Long March route of the Red Army and the Yibin Conference in Sichuan, exploring their impact on the entire Chinese revolutionary cause and their significance in contemporary society. The literary studies focus on the manifestation of Sichuan red culture in literature, not only in the glorification of the revolutionary struggle, but also in the portrayal of heroic figures, the careers of warriors, and the emotions of soldiers and civilians. Art studies focus on how Sichuan Red Culture is reflected and expressed in the art of painting and sculpture and explores the inspiration and creative techniques of artists through analysis of character modelling and line use. Music studies focus on how Sichuan Red Culture is reflected and expressed in music composition and explores the creative skills and expression of musicians through the study of musical tunes and the use of musical instruments.

In addition to academic research, the Sichuan government and cultural institutions have also done a lot to promote and publicize red culture. For example, on June 17, 2022, sponsored by the Publicity Department of the Sichuan Provincial Committee, Sichuan Daily organized one of the second season of "Travel and Study in Sichuan" activities named Red Classics and Take a Trip to the Great Man's

Hometown". At the same time, by showcasing the characteristics and charms of Sichuan Red Culture in major festivals and cultural events, the public has gradually developed a strong interest and enthusiasm in it.

Overall, the current research on Sichuan Red Culture is very fruitful and diverse, not only with in-depth investigation by academics, but also with promotion and popularization by the government and the masses. In the future development, it is necessary to better explore and excavate the connotation and value of Sichuan Red Culture, further strengthen its protection and inheritance, and let more people understand the historical background and cultural connotation of Sichuan Red Culture, so as to better promote the revolutionary spirit and the progress of social civilization [12].

3. Definition and Classfication

Multimodal translation is a translation technology that combines multiple forms of information such as text, speech and images. With the rapid development of information technology and the strengthening of the globalization trend, the demand for multilingual communication is increasing, and multimodal translation comes into being [6].

The basic principle is to transform and process different forms of information using a variety of techniques, such as natural language processing, image recognition, sound recognition, etc. At the time of translation, these forms of information are merged, and the translation results are generated through machine learning and data-driven methods. Multimodal translation technology has a wide range of applications in many aspects. First, for some multimedia texts, such as videos and images, multimodal translation can translate them into different languages, making them easily understandable by global users. At the same time, multimodal translation can also be applied in the field of voice interaction, such as intelligent voice assistant and machine translation, to provide a more convenient way of communication [14].

According to the different media approaches, multimodal translation can be divided into the following categories: text-to-text translation, speech-to-text translation, text-to-speech translation, image-to-text translation, video-to-text translation, etc [2].

Text-to text translation is the most common multimodal translation approach, which uses computer programs to analyse and translate text, and can achieve interconversion between different languages. The biggest advantage of this approach is the high real-time and accuracy, but the disadvantage is that it cannot involve the translation of spoken language and speech [3].

In contrast to text-to-text translation, speech-to-text translation translates spoken language into textual content. This type of translation can convert speech into text form and perform subsequent translation work through speech recognition technology. This approach is more efficient and is particularly suitable for spoken communication and voice messaging, etc.

Text-to-speech translation, on the other hand, converts textual content into spoken language. This approach mainly relies on speech synthesis technology to convert text content into speech and perform subsequent translation work. This approach is more intuitive than speech-to-text translation and can better meet the needs of users [20].

Image-to-text translation, on the other hand, translates image content into text. This approach allows the text in the image to be recognized and the subsequent translation to be carried out by means of image recognition technology. This approach is particularly suitable for situations involving images, such as picture translation.

Finally, video-text translation translates video content into text. This approach allows the content in the video to be analysed and translated using video recognition technology and is particularly suitable for areas such as video subtitle translation [20].

Multimodal translation can help us better solve the problem of language communication, and also has a wide range of application prospects. In the future development, multimodal translation technology will become more and more mature, providing us with better communication and exchange experience [15].

4. Difficulties and Challenges

4.1 Language and Cultural Differences

Although the basis of a common human language is the search for communication and understanding. However, different cultural backgrounds and linguistic habits can affect how people understand and interpret information. This influence is also reflected in the field of translation, as cross language translation often faces linguistic and cultural differences, especially in aspects such as conversion and interpretation in translation [17].

First of all, the word "red" in Sichuan Red Culture has a special meaning in Chinese culture, representing the symbol of red revolutionary spirit and ideology. In English, the word "red" is more of a description of color and does not have a symbolic meaning. Secondly, the word "revolution" in Sichuan Red Culture also represents strong political ideas and historical connotations. Therefore, in the translation, a sharper understanding and intuition are needed to select the most accurate and expressive word. For example, the Chinese phrase "Hong Jun Jing Shen, Guang Yao Qian Qiu" is commonly translated to "The spirit of the Red Army shines through the ages". There are significant cultural and linguistic differences that cannot be fully captured in the English translation.

Firstly, the use of the term "Red Army" in the Chinese phrase refers specifically to the Communist Party-led military force that fought in the Chinese Civil War, and later became the People's Liberation Army. The term carries a strong sense of revolutionary ideology and history, which may not be fully understood by non-Chinese audiences.

Secondly, the use of the term "Qian Qiu" in the Chinese phrase implies a long-lasting legacy that extends beyond mere fame or achievement. It suggests a continuity and endurance that is deeply rooted in traditional Chinese culture and resonates with the idea of ancestor worship and reverence for history. Such connotations may not be fully conveyed by the English translation such as "throughout the ages. "

Therefore, a more nuanced translation that acknowledges these cultural nuances might be "The spirit of the Red Army, shining with a legacy of eternal glory", which tries to capture the strong sense of history and continuity conveyed in the Chinese phrase. Thus, it is necessary to find the most suitable expression for the English context in order to better convey this concept [5].

For example, when we translate a story about Sichuan Red Culture, "Bridgehead". In this story, the word "Di Dao Zhan" appears frequently. In Sichuan Red Culture, "Di Dao Zhan" is a very special way of fighting, usually using some simple weapons such as sticks and hoes, so the translation must take into account the linguistic and cultural levels. When translating the story in English, one might use the word "tunnel warfare" to express the meaning of "Di Dao Zhan" but this obviously does not fully convey the original meaning. Because the word "tunnel warfare" may give people a more high-tech feeling, while "Di Dao Zhan" is a very primitive way of combat. Therefore, when translating, we need to use more appropriate words to express the characteristics of "Di Dao Zhan" such as "guerrilla warfare".

In addition, a phrase called "Liang Lu Jing Shen" which is translated in English as "the spirit of the builders of the two plateau highways". But to fully express the meaning of the phrase in English requires an annotation, i.e., facing both hardship and death with great courage, confronting challenges head-on, and fostering army-civilian unity and ethnic solidarity like a family. Another example is the term "Ge Ming Lao Qu". In China, it refers to the revolutionary base areas created under the leadership of the Communist Party of China during the period of the Agrarian Revolution and the Anti-Japanese War. In English, there is no such expression. The term can be translated as "old revolutionary base areas", but this expression does not fully reflect Chinese red culture.

Translation difficulties caused by the cultural differences between Chinese and English languages are ubiquitous in daily life. Especially in translations involving cultural symbols and ideological backgrounds, a deeper understanding of the culture and habits of both Chinese and English is needed to create a most effective translation effect to further achieve the purpose of cross-cultural communication and harmonious coexistence between languages and cultures. The intertranslation of Chinese and English is a very important part of the translation process [4].

4.2 The Combination of Image and Words

As globalization continues to advance and transnational communication becomes more and more frequent, the need for picture plus text translation is becoming stronger and stronger. However, from the translators' point of view, there are actually great difficulties in this type of translation, especially when culture is involved [8].

For example, the Sichuan Museum covering an area of more than 88 acres, it is located in the Huan huaxi Historical and Cultural Scenic Area of Chengdu, and is the largest comprehensive museum in the southwest, occupying an important position among public museums in the country. In this museum, the term "Chi Hua Quan Chuan" is translated as "Reddening the whole Sichuan" in English, see Figure 1. This translation presents an image of a political movement that is often combined with a red background, a symbolic red flag and emotional language. In this case, the image should depict a vibrant and passionate atmosphere, with perhaps many people loudly pledging allegiance or waving signs with excited expressions. This type of image seems to always carry a certain degree of propaganda, carefully designed and selected to convey a specific meaning and intention. Therefore, image and text in this translation are interdependent. The text accurately represents what is depicted in the image. At the same time, the image should also match the meaning and purpose of the text. This visual and textual unity and consistency can help create a more persuasive visual effect, which can successfully attract the audience's attention, in social media or advertising.

Figure 1 Reddening the whole Sichuan

In addition, the E-C translation of "Shan Chuan Yong Ji" is "Eternal Memory of Mountains and Rivers", see Figure 2. This image was widely used during the Great Wenchuan earthquake, showing people supporting each other in sadness and pain, demonstrating their resilience and strength in face of natural disasters. The image also depicts the heroic and united image of soldiers in earthquake relief operation, emphasizing the need to cherish and protect the natural and human environments. At the same time, it also expresses mourning and prayers for the deceased in earthquake, hoping that they can rest in peace in heaven.

This case exhibits the translation method of image and text. Through the display of images, viewers can intuitively feel the atmosphere in the picture, such as the infinite power of nature and the profound sadness brought about by disasters. In this context, the translation of text not only needs to convey the meaning of the original but also needs to reflect the atmosphere and emotions in the picture, so as to achieve a more expressive effect.

Therefore, the use of image plus text translation is vitally important. They mutually promote and complement each other in the visual and written communication. In cross-cultural communication, a balanced use of image and text can better promote understanding, and also help to create a diversed communication platform.
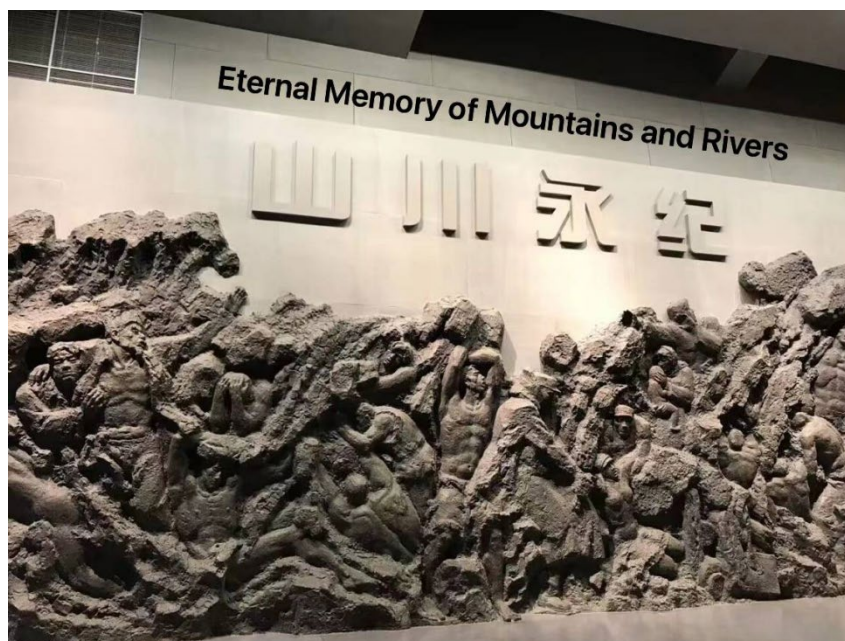
Figure 2 Eternal Memory of Mountains and Rivers

Therefore, a multimodal translation approach using a mix of images and text is essential when translating a revolution-related cultural heritage such as "Chi Hua Quan Chuan" and "Shan Chuan Yong Ji". However, this translation approach also requires the inclusion of appropriate text in the images so that the text and images complement each other rather than overlap or cancel each other out. At the same time, it is also necessary to ensure the accuracy and beauty of the textual expressions so that readers can understand both the cultural connotations and the artistry embedded in them.

4.3 Cultural Identification and Semantic Matching

Culture identification and semantic matching play a crucial role in modern information technology --- whether in the fields of machine translation, natural language processing or intelligent dialogue. To correctly perform culture identification and semantic matching often requires the processing of very complex and diverse information, which may face many challenges [1].

First, cultural identification refers to identifying and understanding the differences between cultures in cross-cultural communication, and the challenge of cultural identification is that there are many differences between cultures. These differences are reflected in various aspects such as language, script, cultural perception, social background, and historical heritage. For example, there is a big difference between Chinese and English. Chinese is a hieroglyphic script, which emphasizes representational forms, while English is a phonetic script, which places more emphasis on phonetics.

Second, semantic matching refers to understanding and matching semantic differences between languages in cross-cultural communication. The challenge of semantic matching lies in the complex relationship that exists between language and context. The same sentence may have different meanings in different contexts, and at the same time, a word may have different meanings in different contexts. Therefore, when communicating across languages, attention needs to be paid to the semantic matching problem [16]. For example, "Hong Ling Jin" is usually translated into English as "red scarf", which in China represents the symbol of revolutionary spirit and unity, and is the symbol of the pioneers. While in China the red scarf represents a symbol of justice and unity, in the West, it may have a different semantic meaning. In Western culture, the red scarf is sometimes seen as a symbol of the Nazi era, as many Nazi soldiers wore red scarves on the lapels of their uniforms.

Further, there is an interaction between cultural identification and semantic matching. Failure to correctly identify the cultural context of a language is likely to cause inaccurate semantic matching. And if the context of the language is ignored, it will also cause semantic ambiguity.

Despite these challenges, cultural identification and semantic matching remain irreplaceably important for advancing information technology. To this end, there is a need to continuously

strengthen cross-cultural and cross-linguistic interaction and communication, while actively using technology, such as machine learning and artificial intelligence, to improve the accuracy and efficiency of cultural recognition and semantic matching; there is a need to gain a deeper understanding of the similarities and differences among cultures, as well as the connections between different language backgrounds and contexts, so that cultural recognition and semantic matching can be performed more accurately.

5. Coping Strategies

5.1 Cross-Cultural Exchange

In order to solve the translation difficulties of language and cultural differences between Chinese and English, translators need to have cross-cultural exchange skills and language learning ability. The differences in grammar, vocabulary, and expressions between the two languages have led to many linguistic misunderstandings. For example, "Gu Dan Ying Xiong" in Chinese refers to a soldier who engages in battle with courage and resourcefulness and can dedicate his life to revolutionary beliefs, while in English it is translated as "Lone Ranger". It is clear that this literal translation does not convey the deeper meaning that the Chinese language is intended to convey. Therefore, when encountering such translation difficulties, one needs to patiently explore the characteristics of both languages in depth, re-examine the meaning and context of the text, and then make an appropriate translation [9].

The differences between Chinese and English cultures can be found in various aspects such as food, rituals and beliefs. Such differences can create barriers in terms of word meaning, emotion and ambiguity. To illustrate the cultural differences in translation, we can take "Yu Xue Fen Zhan" as an example. In Chinese, it is a commonly used phrase used to describe people's hard struggle in difficult situations. However, in English, a direct translation of this phrase may sound too violent or aggressive. Therefore, when translating, appropriate adjustments need to be made based on the different language and cultural context.

For instance, when translating "Yu Xue Fen Zhan" in English, expressions such as "fighting courageously," "enduring hardships," or "persevering through difficult times" can be used to convey the same meaning. These words not only convey the spirit of fighting and struggling, but also avoid the use of excessively violent expressions like "Yu Xue". Furthermore, using these expressions also aligns with the characteristics of English language and culture. In the process of translation, native and target languages need to be carefully considered to avoid literal translations and to ensure accurate and appropriate translations. This requires the translator to have a solid understanding of cross-cultural communication and translation skills, in order to accurately grasp the language and cultural characteristics of the target language and achieve a more precise translation effect.

The development of machine translation technology has made fast translation possible. Using technologies such as artificial intelligence, text information can be translated automatically in two different language environments. Although the technology of machine translation still needs to be improved and may not be accurate enough in some cases, as technology continues to advance, the accuracy of machine translation will continue to improve, making Chinese and English translation more convenient and efficient.

5.2 Cross-Language Communication

With the development of computer vision and machine translation, there are now some tools that can recognize and translate text in pictures. For example, Baidu Translate has launched the "picture translation" function, which can recognize and translate text by simply uploading pictures to the platform. Nowadays, the image translation tool provided by Baidu has greatly improved the efficiency of cross-cultural communication. As an example, in order to better spread Sichuan Red Culture, the photographers took many photos at Zhu De's Former Residence and uploaded them to major websites. Now, by Baidu Translate, more relevant content can be captured and also converted into text in different languages for people to understand; in addition, other image-text materials about Sichuan

Red Culture will be automatically matched.

Another way is contextual translation. By observing and analysing various aspects such as pictures, texts and contexts, we can better grasp the message to be conveyed and thus translate more accurately. In addition, the difficulty can be solved jointly with the support of network resources and professional translation teams [13].

For translators, no matter what translation difficulties they encounter, improving their own translation ability is the most basic and important. Accumulating specialized terminology, understanding the differences between different languages and cultures, and honing one's ability to express oneself, etc. are all keys to continuously improving translation skills [10].

5.3 The Utilization of Artificial Intelligence

Cultural identification requires an understanding of the differences between cultures and a more in-depth knowledge of culture. In addition, it is also necessary to accumulate extensive experience in communication between different cultures and improve cultural sensitivity and adaptability. For machine translation systems, it needs to establish language libraries and databases for different languages and cultures for better cultural recognition and translation; in semantic matching, it is essential to establish semantic libraries for matching words and semantics between different languages. It requires to study the grammar and language rules between multiple languages to improve the semantic matching accuracy of machine translation and other artificial intelligence systems. Meanwhile, machine translation systems should also enhance their understanding of context and semantics to improve their translation quality in multilingual environments [11].

Meeting the challenges of cultural recognition and semantic matching requires taking full advantage of AI technology, while also incorporating the strengths of artificial intelligence. While artificial intelligence has advantages in processing large amounts of data and information, AI is more flexible and creative. Therefore, when performing cultural recognition and semantic matching, machine translation and other AI systems should take full advantage of these advantages and combine human wisdom and experience for more in-depth research and exploration [18].

6. Conclusion

Multimodal translation is an emerging topic in the field of translation, which focuses not only on the translation of modalities such as speech and text, but also involves the translation of non-verbal modalities such as images and videos. In the context of globalization, the importance of multimodal translation is constantly highlighted. Especially in the field of cultural heritage, multimodal translation plays a pivotal role in the process of preserving and transmitting culture.

Sichuan is a famous red tourism area in China, which has rich red cultural resources. However, due to historical, geographical and linguistic reasons, these cultural resources cannot be widely disseminated. In this case, multimodal translation plays a very important role [19].

First, there are some challenges in multimodal translation in terms of phonetic translation. China is a country with 56 ethnic groups, and there are big differences in language and pronunciation among different ethnic groups. Sichuan is a province with a Sino-Tibetan border, and the phonetic features here are also unique. Therefore, these differences need to be taken into account when conducting phonetic translations of red culture. The best way to solve this problem is to build a multi-speech model that integrates the phonetic features of each language and dialect, and to train and optimize the model. During the training of the model, a large amount of speech data from different speech sounds and dialects needs to be collected so that the model can better recognize and translate the sounds.

Next, multimodal translation also presents challenges in terms of image and video translation. Many materials in red culture are stored in the form of images and videos, and these contents need to be processed when multimodal translation is performed. Generally speaking, image and video translation requires image and video recognition before translation by techniques such as deep learning. In this process, cultural differences in images and videos, such as symbols of red culture, colours, etc., need to be taken into account. The best way to solve this problem is to analyse and process images and videos through artificial intelligence technologies to better identify and translate

the content in images and videos.

Last, there are strategies for multimodal translation in preserving and transmitting red culture. First of all, research and understanding of red culture needs to be strengthened for better translation and transmission. And then, there is a need to pay attention to cultural differences and respect the traditions and customs of different ethnic groups and regions when performing multimodal translation. Finally, the translated texts of red culture need to be widely publicized and disseminated by using the Internet and other technical means so that more people can understand and appreciate red culture [12].

In conclusion, multimodal translation has an important role in cultural transmission, especially in the process of preserving and transmitting red culture. Although there are some challenges in performing multimodal translation, by focusing on studying and understanding red culture and adopting the right strategies, the goal of better translation and transmission of red culture can be achieved.

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