Preserving Poetic Effect in Human–Machine Collaborative Translation of Mo Yan's *Red Sorghum Family*

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Abstract

The swift progress of artificial intelligence, exemplified by neural network models like GPT-4o, transcends literary boundaries, heralding novel human-machine collaborative models. The challenge of achieving translation efficiency without compromising poetic effect persists. Machine translation often overlooks the cultural imagery, rhetorical nuances, and emotional connotations that are essential to a literary text's poetic appeal. Thus, this study assesses the efficacy of the collaborative translation mechanism in overcoming limitations, employing Mo Yan's Red Sorghum Family as a case study. A corpus of one hundred high-poetic-density sentence segments was selected for a comparative analysis across three translation modalities: machine translation, human-machine collaboration, and Goldblatt's authoritative translation. Quantitative methods and case studies are utilised in the study to demonstrate the inclination of machine-generated text to flatten imagery, weaken rhetorical effects, and disrupt emotional continuity. The paper presents a collaborative approach in which machines process semantics and flag cultural terms. Human translators then intervene with cultural compensation, rhetorical correction, and emotional adaptation. The model significantly reduces the gap with professional translations, providing practical guidelines for translating rural Chinese literature in the AI era.

Keywords: poetic effect, human–machine collaboration, literature translation, *Red Sorghum Family*

1. Introduction

Large language models have evolved over the past few decades, bringing significant changes to machine translation. Tools like Google, DeepL, and ChatGPT are now widely used. The high efficiency enables them to get various literary works to international audiences.

However, literary translation presents unique challenges. It involves poetic elements that blend cultural symbols, rhetorical creativity, and emotional depth. As a result, literary translation still relies heavily on the creative input of human translators. This article explores one of the most challenging aspects of literary translation and introduces a new mechanism of human-computer collaborative translation. The goal is to produce more efficient yet captivating literary works while fostering global cultural exchange and communication.

2. Materials and Methods

Mo Yan, a Nobel Prize in Literature laureate, has gained significant international attention for his works. His novel *Red Sorghum Family* is a classic of magical realism. It is rich in culturally specific imagery and rhetorical complexity. Translating this text requires not only linguistic conversion but also the recreation of deep cultural metaphors. Unfortunately, machine translation often struggles to capture the poetic essence. This struggle stems from a lack of awareness of cultural context (Han & Chai, 2024).

To explore how to ensure translation efficiency while preserving the original poetic effect, this paper examines 100 high-poetic-density sentence segments from *Red Sorghum Family*. These segments cover three major categories of core poetic elements. The paper analyzes three types of translations: machine translation, pure human translation, and human-machine collaboration translation, with its focus on the accuracy of restoring cultural imagery and the alignment of rhetorical emotion. Through comparative analysis of typical translation examples, the advantages and disadvantages of human-machine collaboration in preserving poetic effect are clarified. Additionally, five translation studies experts evaluated the translations based on three dimensions—cultural imagery accuracy, rhetorical effect fidelity, and emotional resonance—using a scoring system from 1 to 5. A variance analysis was conducted using SPSS 26.0.

3. Theoretical Framework and Literature Review

3.1 Theoretical Definition of "Poetic Effect"

The poetic effect of literary translation, defined as the concentrated expression of a text's aesthetic value and cultural connotations, finds its theoretical foundation in a seminal work by the American scholar Stephen Greenblatt, entitled Towards a Poetics of Culture. In this work, Greenblatt (1989) describes the poetic effect as the soul of literary works. He emphasizes that literature is an art of linguistic creation. Therefore, translation is necessary not only for conveying linguistic information but also for showcasing the unique poetic effects of a text. In Mo Yan's literary works, this poetic effect is concretized as an organic unity of cultural imagery, rhetorical artistry, and emotional tension (Xu, 2014). This renders them an ideal text for assessing the efficacy of translation in preserving poetic effect.

3.2 Literature Review

The prevalent trend in literary translation is human-machine collaboration; however, research on the impact of such mechanisms on poetic transmission is scarce. The complexities associated with poetic transmission have spurred scholarly interest in human-machine collaborative translation models. The fundamental logic is grounded in labor segmentation, encompassing machine-driven semantic transformation augmented by human input for poetic refinement (Wang & Ke, 2025). The validation of human translator research is robust. The "alienation + annotation" technique in Goldblatt's English translation of Mo Yan's narratives exemplifies a tangible instance of poetic cross-cultural transmission (Pei, 2020). The evolution of machine translation technology has made its limitations more apparent. The reliance on data and rules impairs machines' ability to discern the subtle pragmatic nuances and profound meanings inherent in literary language. According to Han (2024), large language models struggle with a cultural connotation transmission accuracy of less than 30% when interpreting literary allusions. The necessity of human intervention in maintaining poetic aspects is underscored, thereby laying the groundwork for the allocation of duties in human-machine

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Preliminary research has explored the potential of human-machine collaboration. For example, scholars Toral & Way (2018) revealed this model can improve literary translation quality by 40%. However, the study did not focus on the core dimension of poetic quality. Feng (2025) proposed the "machine translation of semantics + human polishing of style" model, providing a labor division approach for human-machine collaboration. Since this model lacks concrete case studies, it is difficult to clarify the actual mechanisms of collaboration involved in preserving poetic effect.

With respect to the specific domain of translating Mo Yan's novels into English, existing research predominantly concentrates on the translation by Goldblatt. For instance, studies by He & Sun (2022) address the translation of the geographical space of "Gaomi Northeast Township," offering a thorough examination of the strategies employed by human translators to convey cultural imagery. However, these studies have not yet incorporated human-machine collaboration models into the research scope of poetic quality preservation, nor have they combined Greenblatt's cultural poetics theory to explore how the synergy between technology and humanities can address the needs of literary poetic quality transmission.

In summary, while previous studies have yielded certain achievements in human strategies for poetic preservation, the limitations of machine translation, and the overall effectiveness of human-machine collaboration, there remains a gap in addressing how human-machine collaboration specifically impacts the preservation of poetic features such as cultural imagery, rhetoric, and emotional tension. This is particularly important for texts like Mo Yan's novels, which have distinct poetic characteristics. Based on this, this paper explores the

division of labor logic and practical path of human-machine collaboration in English-to-Chinese translation, combining theoretical foundations and practical dilemmas to study poetic transmission through technology and the humanities. It compares machine translation, human-machine collaborative translation, and authoritative human translations in *Red Sorghum Family* to explore pathways for preserving poetic elements in literary translation.

4. Poetic Features of *Red Sorghum Family* and Limitations of Machine Translation

4.1 Threefold Poetic Features of *Red Sorghum Family*

The poetic elements of *Red Sorghum Family* are developed through the complex combination of cultural symbols, rhetorical devices, and emotional expression. These characteristics not only embody the poetic essence of literature as emphasized by Greenblatt but also constitute the core challenges in translation practice.

In terms of cultural imagery, "red sorghum" forms a multi-layered symbolic network throughout the book. It serves as a geographical identifier for "Gaomi Northeast Township" ("The autumn wind knocks the sorghum off balance"). It also serves as a metaphor for the wild vitality of the "grandfather" generation ("The sorghum is as red as blood, as hot as fire"). Finally, it carries the rural memories of war and reproduction ("The sounds of battle in the sorghum fields mingle with the cries of infants"). Symbols such as the "suona" and "ancestral hall" also contain specific cultural codes. The sound of the suona, for example, is a "joyful declaration" at weddings and a "mournful dirge" at funerals. Through its rhythmic changes, the suona implicitly conveys the ritual ethics of rural society (He & Sun, 2022). The symbolic meanings of these images exceed their literal meanings, and translators must have a profound understanding of their cultural context to accurately convey them.

With regard to rhetorical devices, Mo Yan utilizes magical realism techniques extensively to construct a defamiliarized aesthetic, thereby creating a unique poetic expression. For instance, the poem "Moonlight clings to the sorghum ears like glue, sticking them to the

blue sky" (Chen, 2022) employs synesthesia to disrupt conventional perception, maintaining the viscous quality of moonlight while conferring upon the sorghum the surreal tension of "floating in the sky." Similarly, in "Grandma's blood splattered on the sorghum, and the sorghum turned even redder" (Chen, 2022), personification is utilized to imbue inanimate objects with emotionality, thereby engendering a tragic aesthetic of "human-object" symbiosis. These rhetorical devices function not only as demonstrations of linguistic dexterity but also as distinctive conduits of emotion and thought, thereby imposing substantial demands on the artistic and re-creative capacity of translation.

With regard to the emotional expression present in the text, the employment of dialects contributes to the multifaceted nature of emotional expression. A prime illustration of this phenomenon can be observed in the phrase "You fucking Big Claw Wang, you've got some guts!" The initial impression of the phrase as a curse is contradicted by its underlying implication of acknowledging the character's courageous nature. This "pejorative term used in a positive sense" is rooted in the ethical customs of rural society (Zhang, 2022). The intricate web of emotions inherent in such works cannot be adequately conveyed through a straightforward, word-for-word translation. It is essential for translators to discern and convey the underlying, more profound meanings within the context of the original text. This is where the poeticity of literature becomes most evident in the emotional dimension.

4.2 Loss of Poetic Effect in Machine Translation

A comparative analysis was conducted on 100 high-poetic-density sentence segments from *Red Sorghum Family*, utilizing machine translation tools such as GPT-4o and DeepL. The translations produced by these tools were then contrasted with the translation by Goldblatt. The findings revealed that machine translation exhibits significant limitations in effectively conveying poeticity. These limitations confirm Greenblatt's view that poetic quality depends on cultural and artistic perception.

With regard to the transmission of cultural imagery, machine translation frequently results in the flattening of symbolic meaning. To illustrate, a literal translation of "高粱红成血海" would be "sorghum red as a sea of blood." This approach merely retains the literal color description, disregarding the implied war violence metaphor associated with "sea of blood." The folk custom of "辞灶" is rendered as "offer sacrifices to the kitchen god" by machine translation, without providing the cultural context of "sending off the kitchen god on the 23rd day of the 12th lunar month to pray for blessings." This results in the reduction of this symbol-carrying rural memory to a mere action description (Han & Chai, 2024). Machines have been developed that can perform literal translations; however, they have not yet been capable of capturing the cultural connotations that are often present in imagery. This has created a stark contrast with the literary and poetic nature of culture.

The attenuation of rhetorical effects constitutes a prominent issue in machine translation. The translation of "爷爷的嗓门能掀翻屋顶" as "Grandpa's voice is so loud it could blow the roof off." maintains the literal meaning while losing the exaggerated "explosive power of anger" implied in the hyperbole. Similarly, "高粱在风中哭号" is translated as "sorghum sways in the wind," employing a neutral description that undermines the tragic emotions conveyed by personification (Toral & Way, 2018). Machine translation, which prioritizes "fluency" in its algorithms, often weakens the emotional intensity of rhetorical devices, falling far short of the mark.

Machines tend to misinterpret complex emotions. The phrase "鳖羔子，贼一样的大胆！" was translated as "Bastard, as bold as a thief!" This simplifies mixed emotions into pure insult, shacking the rural ethics underlying the relationship between the characters (Yun, 2020). This misinterpretation stems from machines' insufficient understanding of context and cultural norms, making it difficult for them to grasp the subtle layers of emotion in literary language.

To better illustrate the limitations of machine translation, this study conducts a quantitative analysis. The results show that the average preservation rates for machine translation are 32% for cultural imagery, 28% for rhetorical expression, and 41% for emotional resonance, respectively. These rates are significantly lower than those of the Goldblatt translation, which are 82%, 78%, and 85%, respectively ($p < 0.01$). This data corroborates the intrinsic limitations of machine translation in conveying poetic elements and underscores the necessity of human intervention.

5. Approaches to Preserving Poetic Effects Via Human-Machine Collaboration

Machine Translation: Fundamental Role

With its strengths and limitations acknowledged, machine translation is capable of executing basic, mechanical tasks in a collaborative setting. The establishment of an efficiency foundation facilitates the preservation of poetic elements and delineates a clear path for human optimization.

In terms of *Red Sorghum Family*, machine translation can effectively process the semantic conversion of narrative paragraphs. A notable example is its ability to translate content that prioritises actions and plot, such as when Yu Zhan'ao led his troops through the sorghum fields. According to relevant studies, machine learning models generate initial translations in 10 seconds, achieving a semantic accuracy rate of 92% (Bai, 2024). This advantage significantly reduces the time human translators spend on sentence structure, allowing them to focus on enhancing poetic effect. This approach keeps a balance between efficiency and translation quality. It is also worth noting that machines can automatically mark culturally significant terms, like "red sorghum" and "suona," as needing symbolic supplementation (Xu, 2024). This pre-tagging reduces the manual effort required to find poetic elements, enabling more targeted optimisation and facilitating human-machine collaboration.

5.1 Human Translation: Poetic Optimisation

To address the shortcomings of machine translation in conveying poetic elements, human translators must intervene at three critical points to preserve cultural imagery, rhetorical effects, and emotional expressions. This process also reflects Greenblatt's emphasis on the creative reinterpretation of poetic elements in literary translation.

As regards cultural imagery, human translators must engage in compensatory translation. Following the machine's direct translation of "红高粱" as "red sorghum," human translators can append the annotation "(a symbol of the indomitable vitality of Gaomi villagers, rooted in their struggle against hardship)," a strategy that serves to both preserve cultural specialty and help readers understand its symbolic meaning. For the term "家堂轴子," the machine translation was adjusted to "family genealogy scroll (a sacred artifact displaying ancestral names, central to rural worship rituals)". This annotation in bracket offers additional cultural context (Xu, 2014). This compensatory strategy helps transmit the poetic value of cultural imagery across cultural boundaries.

The revision of rhetorical effects is another pivotal part for human intervention. Following the machine's translation of "月光像胶水," the human translator makes an adjustment, replacing it with the more nuanced expression, "moonlight, thick as glue, sticking sorghum tassels to the sky." By incorporating additional words, such as "thick" and "sticking," this modification enhances the expressive effect of the synaesthetic imagery. Furthermore, the human translator enhances the effectiveness of the sentence "高粱哭号" by replacing the neutral verb "cried" with the more expressive "wailed," thereby restoring the emotional power of personification (Feng, 2025). This revision ensures that the poetic effects of the rhetoric are effectively preserved in the translation.

Likewise, adapting emotional expressions to a specific context requires human intervention. When analyzing the emotional tone of the term "bastard," context matters. If an elder uses it to refer to a younger person, the machine translation can be changed to "you rascal."

This adjustment keeps a mildly reproachful tone while also implying affection, which is in line with the linguistic habits of rural society (Zhang, 2022). This adaptation is vital in ensuring the complexity and accuracy of emotional expression, thereby serving as a critical component in preserving poetic effect on the emotional dimension.

5.2 Collaborative Effects: Empirical Validation

Five translation experts evaluated the human-machine collaborative translations of 100 sentence segments. They found that the retention rate of cultural imagery increased to 76%. The restoration rate of rhetorical effects reached 72%, and the emotional resonance rate hit 79%. The average retention rate improved by 119%, rising to 75.7% compared to 34.5% for pure machine translation. The gap narrowed to 6% ($p<0.01$) when compared to the Goldblatt's translation, which was 81.7%.

These results clearly demonstrate the significant advantages of the human-machine collaborative translation model in preserving poetic elements. They also validate the model's feasibility and effectiveness.

6. Conclusions and Outlook

6.1 Research Conclusions

A case study of *Red Sorghum Family* shows that poetic preservation of literary translation must account for the symbolic meaning of cultural imagery, rhetorical art, and the complex layers of emotional expression. Machine translation has its limits in handling these poetic elements; it fails to convey poetic beauty independently. However, human-machine collaboration can significantly enhance the preservation rate of poetic qualities. This approach involves human translators creatively reconstructing poetic elements. This collaborative model leverages the efficiency of machines while preserving human translators' cultural sensitivity and artistic creativity. It provides a feasible approach for translating texts with poetic features, like Mo Yan's novels, into English.

6.2 Practical Implications

For translators, it is essential to establish a "poetic priority" mindset. They should prioritize machine processing for narrative and non-poetic content and focus on refining core poetic elements like cultural imagery and rhetoric to optimize workflow allocation. For technological development, it is recommended to incorporate a "poetic element recognition model" into translation tools. These tools should leverage poetic processing strategies in authoritative translations, like those by Goldblatt, to enhance machines' ability to identify cultural metaphors and rhetorical patterns. This will provide more precise guidance for human optimization.

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