

Differences Between Human-Machine Translation in Metaphorical Expressions within the Framework of Cognitive Translation Theory——Taking *The Garlic Ballads* as a Case Study

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Abstract—At the background of the rapid development of Artificial Intelligence technology, this paper takes the two English versions of the translation of *The Garlic Ballads* as the research object, and under the guidance of cognitive translation theory, explores the differences between human and machine translation in metaphorical expression. Through comparative analysis of the two English versions of the translation, it is found that machine translation excels in efficiency and uniformity of terminology, but has limitations in decoding the cultural connotations of metaphors; human translation, on the other hand, can ensure the critical and aesthetic value of metaphors based on in-depth understanding and creative transformation. This study points out that Artificial Intelligence technology can improve efficiency in the initial draft generation stage, while human translation focuses more on the expression of deep semantics and literary artistry, forming a collaborative model of “AI for efficiency and human for quality”. This paper proposes human-machine collaboration strategy and the follow-up development directions of related research, so as to help the translation field achieve balanced development of efficiency and quality in the wave of technological progress.

Keywords—cognitive translation theory, human-machine translation, metaphorical expression translation, *The Garlic Ballads*, Howard Goldblatt, DeepSeek

I. INTRODUCTION

In today's era, Artificial Intelligence (AI) technology is developing rapidly and has deeply integrated into the field of translation, triggering significant changes in the translation model. From simple text translation software to the constantly evolving intelligent translation systems, AI translation demonstrates remarkable advantages in terms of efficiency. However, when dealing with complex and culturally-rich language phenomena such as metaphorical expressions, there are still obvious differences between machine translation and human translation.

Mo Yan's *The Garlic Ballads* is renowned for its profound portrayal of rural reality in China and its unique style of magic realism. A large number of metaphorical expressions in the novel carry profound cultural connotations and critical implications. Against this backdrop, exploring the differences between machine and human translation in the metaphorical expressions of *The Garlic Ballads* not only helps to clarify the advantages and limitations of AI translation in literary translation but also provides a crucial basis for constructing an efficient human-machine collaborative translation model and promoting the balanced development of efficiency and quality in the translation field

amidst the technological wave. This exploration holds great theoretical and practical significance.

II. TERMINOLOGY DEFINITION

A. Cognitive Translation Theory

The Cognitive Translation Theory is an important branch of translation studies. It mainly focuses on the cognitive activities and psychological mechanisms in the translation process, emphasizing how translators achieve meaning transformation and language reconstruction based on their understanding of the source text. Rooted in cognitive science, this theory integrates cognitive psychology, cognitive linguistics, and information processing theory. It posits that translation is not merely a simple conversion of language symbols but a complex process in which translators reconstruct meaning through dynamic cognitive activities. Cognitive translation studies believe that language is formed based on humans' interactive experiences and cognitive processing of the real world. As a bilingual activity, translation is inevitably deeply influenced by cognitive factors [1]. Traditional translation theories mostly focus on text comparison and the principle of equivalence, while the cognitive perspective shifts to the “thinking black box” of the translator as a subject, emphasizing that translation is essentially a complex process in which translators reconstruct meaning through cognitive activities such as perception, memory, reasoning, and decision-making. For example, during the translation process, translators need to understand, analyze, select, and recreate the source text. This process involves complex cognitive operations such as conceptual integration, cognitive construal, and relevance reasoning. By analyzing these cognitive mechanisms, the Cognitive Translation Theory reveals the translator's thinking patterns and decision-making processes during translation, providing a new perspective for translation studies.

In comparing machine and human translation, Cognitive Translation Theory highlights differences in their cognitive processes. Human translators excel at conveying cultural nuances and emotional connotations, thanks to their background knowledge and cultural experiences. While machine translation has improved in language conversion, it struggles with cultural adaptation and emotional expression due to its reliance on data-driven algorithms and preset rules, lacking the cultural and social cognition human translators possess. This difference underscores the significance of a

translator's cognitive ability, as noted in Cognitive Translation Theory, in influencing translation quality. The theory is crucial for understanding translation phenomena, guiding practice, and advancing translation technology.

B. *The Garlic Ballads*

The Garlic Ballads is a full-length novel written by Mo Yan in 1988, which directly confronts reality with a sharp critical attitude. The novel not only reveals the helplessness of farmers in the face of bureaucracy and market risks but also shows the complexity of human nature and social contradictions through rich details and vivid character portrayals. This work is a profound analysis of the survival state of the people at the bottom of society by Mo Yan and also a strong criticism of real-world problems [2]. It constructs a metaphorical system that runs through the whole text. The social events and individual fates on the surface of the narrative always carry symbolic meanings transcending specific contexts, forming a metaphorical reflection of the deep social texture and human predicaments. Through the symbolic processing of images and the metaphorical design of narrative structure, the work extends the edge of realistic criticism by virtue of the tension of metaphors, realizes the organic connection between the surface narrative of the text and its deep implications, and highlights the core value of metaphorical techniques in literary expression.

Mo Yan is a great master of contemporary Chinese literature and the winner of the Nobel Prize in Literature in 2012. He is famous for reconstructing the folk epics of his hometown with his magic-realist writing style. Through a series of excellent works, he combines rural memories, historical fables, and the exploration of human nature with carnival - like narrative language, reflecting the deep-seated pain of China's social transformation period in the absurdity, and constructing a unique "Oriental magic" aesthetic system [3]. *The Garlic Ballads* is one of Mo Yan's works that most directly confronts reality and has the sharpest critical attitude. It not only shows the voices of farmers but also reveals the struggle and helplessness of people at the bottom of society when facing difficulties.

C. *Two English Versions of Translation*

1) *Human Translation—Howard Goldblatt*

Howard Goldblatt is a leading figure in the international translation of Chinese literature, known as "the ferryman for modern and contemporary Chinese literature to the world". With his precise and literary translation, he has introduced the works of dozens of Chinese writers to the English-speaking world. He has developed a unique "cross-cultural re-creation" strategy and broken the barriers between Chinese and Western literature. His translations not only preserve the cultural texture of the original works but also reconstruct the narrative rhythm in English. He is especially good at handling the transformation of dialects, common sayings, and cultural metaphors. The cooperation between Mo Yan and Howard Goldblatt has played a crucial role in the process of Mo Yan's works going global. Mo Yan has great trust in Howard Goldblatt and gives him a great deal of freedom, allowing him to make necessary deletions and adjustments in translation to adapt to the reading habits and cultural backgrounds of Western readers. The cooperation

between the two is based on mutual trust and respect. This positive cooperation has not only promoted the international dissemination of Mo Yan's works but also established Howard Goldblatt's status in the field of Chinese-language novel translation.

2) *Machine Translation—DeepSeek*

DeepSeek is an AI system that integrates cognitive intelligence and professional knowledge. Its core architecture is based on cutting-edge large-language models, with the capabilities of cross - language semantic understanding, multi-modal information integration, and logical reasoning, supporting complex tasks such as academic research, creative writing, and data analysis. In the field of translation, based on the multi - modal neural machine translation framework, it deeply integrates the dual-processing mechanism of the Cognitive Translation Theory. It analyzes the deep-seated cultural logic of the source text through the semantic deconstruction module and then generates expressions that conform to the cognitive habits of the target language in combination with the dynamic adaptation engine. When translating, DeepSeek supports the intelligent integration of term bases and style guides and can provide full-process auxiliary functions such as pre-translation stylistic analysis, in-translation term unification, and post-translation cultural acceptance prediction in human-machine collaborative scenarios.

III. ANALYSIS OF METAPHORICAL DIFFERENCES IN HUMAN-MACHINE TRANSLATION

A. *Analysis of the Whole*

In the comparative analysis of the two English translations of *The Garlic Ballads*, significant differences can be found between the human-translated version (translated by Howard Goldblatt) and the machine-translated version (translated by DeepSeek) in terms of word choice, metaphor handling, and emotion conveyance. The human-translated version pays more attention to literariness and the transformation of cultural images [4]. When dealing with metaphors, it tends to strengthen their symbolic meaning through literary imagery expressions. In addition, the human-translated version has an advantage in the delicate description of characters' emotions and can better convey the humiliation of Gao Yang and the rebellious spirit of Gao Ma. In contrast, the machine-translated version tends to be more literal, and when handling metaphors, it focuses more on the restoration of facts. Relatively speaking, the machine-translated version performs better in presenting the coherence of actions and the rhythm of scenes but is slightly inferior in emotional subtlety and the literary expression of metaphors.

B. *Analysis of Specific Examples*

This selected passage of the article focuses on Chapter 1 of *The Garlic Ballads*. This chapter, through tense scene descriptions and character portrayals, presents the conflicts and contradictions at the beginning of the novel to readers and also provides necessary foreshadowing for the development of the plot in the following text. Besides, in Chapter 1, Mo Yan uses a large number of metaphors to enhance the expressiveness of the story [5].

1) *The Rotting Garlic*

First, regarding the rotting and stench of garlic that runs through the whole text, the human-translated version renders this sentence as “The noonday sun beat down fiercely; dusty air carried the stink of rotting garlic after a prolonged dry spell”. “Rotting garlic” emphasizes the overall corruption of garlic, which is in line with the general reference of “garlic” in Chinese, and it often represents mundane yet essential aspects of life. The machine-translated version is “the air between sky and earth swirled with murky dust, reeking of rotting garlic shoots”. By using “garlic shoots”, the machine translation focuses on a specific part of the plant, which might dilute the metaphorical link between “rotting” and the broader theme of harvest waste.

Both translations retain the visual and olfactory imagery of decaying garlic, but they differ in emphasis: the human translation preserves the symbolic whole, while the machine version pays more attention to a specific detail. This distinction illustrates the fundamental difference between human translators’ ability to grasp abstract symbolism and machine translation’s tendency to prioritize literal accuracy.

2) *The Eyes of the Blind Girl*

Regarding the eyes of the blind girl Xinghua, the human-translated version is “his blind eight-year-old daughter, who sat frozen at the table like a dark statue, her black, beautiful, sightless eyes opened wide”. This translation explicitly denotes blindness through “sightless eyes,” while simultaneously maintaining the paradoxical imagery of “black, beautiful”. This juxtaposition not only describes the physical appearance but also subtly reflects the contrast between the girl’s inherent beauty and her impaired vision, hinting at deeper symbolic meanings. In contrast, the machine-translated version states “his eight-year-old blind daughter, Xinghua, her eyes two pools of darkness, motionless as a charred log”. By using “two pools of darkness”, it intensifies the visual perception of blackness, but the omission of “sightless” lessens the direct metaphor of “blindness”. This may lead to readers missing the connection to the broader symbolic implications.

Through this comparison, the human-translated version stays truer to the original text’s emphasis on “blindness”, which symbolizes the ignorance of the underprivileged and the government’s concealment of the truth. The machine-translated version, however, leans more towards vivid sensory descriptions, seeking to immerse readers and make them intuitively sense Xinghua’s blindness, yet sacrificing some of the text’s symbolic depth in the process.

3) *The Police’s Handcuffs*

When describing the police’s handcuffs, the human-translated version is “the shiny steel bracelets on his sunburned wrists. They were linked by a slack, heavy, silvery chain”. By using “bracelets,” Howard Goldblatt softens the violent connotation, shifting focus to literary elegance. This choice might subtly downplay the oppressive nature of the restraints, potentially blurring the symbolic weight of authority. The machine-translated version, “the glaring steel cuffs locked around his blackened wrists. A heavy chain dangled between them”, employs “cuffs” to directly denote the instrument of force. This literal translation aligns with the original text’s oppressive metaphor, emphasizing the

handcuffs’ role as a tool of power. The stark imagery of “glaring steel” and “locked” further reinforces their coercive function.

In this case, the machine translation’s fidelity to the original more precisely conveys the symbolic meaning of handcuffs as a symbol of authoritative control. The human translation’s literary flourish, while aesthetically pleasing, may obscure the text’s critical metaphor, highlighting the trade-off between literary style and ideological accuracy.

4) *The Pagoda Tree*

Regarding the image of the pagoda tree, the human-translated version is “he was now embracing a tree so big around he couldn’t see his hands. He and the tree were one”. The verb “embracing” here fosters a visceral connection between Gao Yang’s body and the tree, imbuing the natural object with personified oppressive energy. This choice amplifies the metaphor of “imprisonment” in the original text, as the act of embracing paradoxically suggests a kind of restriction rather than affection. The machine-translated version is “Now embracing the tree trunk, Gao Yang couldn’t see his hands—chained to the tree”, it uses “chained to the tree” to explicitly denote physical bondage. This direct phrasing prioritizes literal accuracy, laying bare the fact of constraint without symbolic nuance. While the human translation relies on metaphor to convey the real meaning, the machine version opts for a straightforward declaration of captivity, highlighting the contrast between symbolic implication and literal description.

5) *Gao Yang’s Urinary Incontinence*

Finally, regarding Gao Yang’s urinary incontinence, the human-translated version “Chilled drops of urine on his thighs informed him that he was peeing his pants... an icy stream of urine ran down his leg” uses “chilled” and “icy” to layer physical coldness with psychological dread. This dual emphasis underscores the collapse of dignity, aligning with the original text’s metaphor where incontinence symbolizes mental breakdown. The sensory detail of “icy stream” evokes both the bodily function and the character’s internal fraying. The machine-translated version “the urine soaked his thighs, his callused feet, pooling beneath his knees. He heard the liquid hiss and gurgle in his pants” prioritizes objective physical description. Verbs like “soaked” and onomatopoeia such as “hiss and gurgle” detail the act’s mechanics but lack the emotional tenor. By focusing on the bodily process rather than its symbolic weight, the machine translation weakens the link to psychological collapse, illustrating a trade-off between literal accuracy and metaphorical depth.

C. *Conclusion of this Section*

Through the detailed comparative analysis of the two English translations of *The Garlic Ballads* above, the significant differences between human translation and machine translation when dealing with literary texts can be clearly perceived. Machine translation performs well in terms of efficiency and term consistency and can quickly and accurately convert language forms, but it has limitations in the cultural decoding of metaphors. In contrast, based on in-depth understanding and creative transformation, human translation can ensure that the critical and aesthetic values of metaphors are retained. The human-translated version,

through the transformation of cultural images and literary expressions, not only enhances the literariness of the text but also strengthens the deep-seated symbolic meaning of metaphors. This in-depth literary processing makes human translation closer to Mo Yan's literary style and can better convey the emotions, metaphors, and social criticism of the original text. Although machine translation has an absolute advantage in translation efficiency, when it comes to the translation of literary works, human translation remains the key to ensuring the cultural depth and aesthetic value of the works.

IV. COLLABORATIVE OPTIMIZATION STRATEGY OF HUMAN-MACHINE TRANSLATION

With the rapid development of artificial intelligence, the collaboration between human and machine translation has become an inevitable trend in the future. To give full play to the advantages of human and machine translation and construct an efficient and high-quality translation model, the following human-machine collaborative translation strategies are proposed in this article:

Regarding the generation and optimization of the first draft, machine translation can be mainly responsible for generating the first draft, while human translation can be in charge of optimization and polishing. Machine translation can quickly process a large amount of text and ensure the accuracy and consistency of language forms. In translation practice, we can take advantage of the high efficiency of machine translation to quickly generate a translation draft, providing a basic framework for subsequent human translation. Human translators can utilize their rich background knowledge and cultural experiences to supplement and correct the cultural connotations and emotional expressions that may be overlooked in machine translation, and optimize and polish the first draft [6].

In terms of expressing the overall emotions and details of the original text, as well as handling cultural images and metaphors, machine translation can be responsible for providing objective descriptions and auxiliary analysis, while human translation can take on the tasks of enhancing emotional subtlety, conducting in-depth interpretation, and making transformations. Machine translation can offer accurate objective descriptions of the overall emotions and details in the original text to ensure the accuracy and coherence of the translation. At the same time, it can analyze the deep-seated cultural logic of the original text through the semantic deconstruction module, providing cultural background information and the preliminary decoding of metaphors for human translators, thus helping them better understand the cultural connotations of the original text. Based on the results of machine translation, human translators can better convey the emotions and psychological states of the characters in the original text through delicate emotional descriptions and literary expressions, enhancing the appeal of the text. They can also adjust the parts that are too literal or mechanical in machine translation, enhancing the literariness and cultural adaptability of the text and retaining the critical and aesthetic values of the metaphors in the original text [7].

In today's translation practice, the human-machine collaborative translation model is gradually becoming an

efficient and high-quality translation strategy. Overall, human-machine collaborative translation can follow the principle of "AI for efficiency enhancement and humans for quality improvement". Machine translation systems, with their powerful big-data models and advanced algorithms, are mainly responsible for improving efficiency throughout the translation process. They can quickly process a large amount of text and ensure the accuracy and consistency of language forms, thus saving a great deal of time for translation work. However, when dealing with literary works, machine translation often has difficulty capturing the literary connotations and emotional expressions of the original text. Human translators, on the other hand, have unique advantages in this regard. With their rich cultural background knowledge, literary attainments, and in-depth understanding of language, they can accurately grasp the literary expressions of the original text and present elements such as emotions, metaphors, and cultural images in an appropriate way. This in-depth literary processing ability cannot be replaced by machines. Therefore, in the process of human-machine collaborative translation, machine translation and human translation should perform their respective duties and complement each other to jointly promote the improvement of translation quality.

V. FURTHER RESEARCH OF HUMAN-MACHINE TRANSLATION

In addition to the above collaborative strategies for first-draft generation and emotional-detail processing, the subsequent research of this study will also focus on instruction interaction and corpus improvement training to further optimize the human-machine translation collaboration.

Regarding the research strategy of instruction interaction, it is necessary to deeply explore how to construct a more precise and effective instruction system. On the one hand, standardized research on the instructions given by human translators to machine translation should be carried out. Currently, there are significant differences in the expression methods and levels of detail when different translators issue instructions, which affects the feedback effect of machine translation. For example, when translating literary works and dealing with metaphorical expressions, some translators may simply require "handle the metaphors well", while others will elaborate "paraphrase the metaphors in the original text according to the cultural habits of the target language and highlight their symbolic meanings". Therefore, through the analysis of a large number of cases, standard instruction templates for different translation tasks and text types should be summarized, enabling translators to convey translation requirements to machines more standardizedly and accurately.

On the other hand, the understanding and execution capabilities of machines for instructions need to be enhanced. Machine translation systems should strengthen their semantic analysis capabilities for natural-language instructions to avoid translation errors caused by misunderstandings of instructions. A semantic understanding model can be used to conduct in-depth analysis of instructions in combination with the context. At the same time, a reinforcement learning algorithm can be introduced to allow machines to optimize

their instruction-execution strategies during the process of continuously receiving instructions and feedback. For instance, when a translator issues an instruction like “highlight the emotional color of the original text”, the machine can not only identify the key information but also adjust the selection of translation words and sentence patterns based on previous learning experiences to better convey the emotions [8].

In terms of the research strategy for corpus improvement training, expanding and optimizing the corpus is the key. For literary translation, representative literary text corpora should be increased, especially classic literary works containing rich metaphorical expressions and cultural images. Taking *The Garlic Ballads* as an example, more similar contemporary Chinese literary works can be included in the corpus, enabling machine translation to fully learn the unique language styles, cultural connotations, and metaphor-construction methods of Chinese literature during the training process. At the same time, texts from different fields and genres should be supplemented to enable machine translation to adapt to diverse translation requirements and avoid translation deviations when dealing with cross-field texts.

In addition, attention should be paid to the annotation, organization, and update of the corpus. Texts in the corpus should be carefully annotated to clarify key information such as metaphorical expressions, culture-loaded words, and emotional tendencies, and then classified and organized according to certain rules. In this way, during the training of machine translation, the model can more purposefully learn the translation methods for different types of information and improve its processing ability for complex texts. For example, sentences containing metaphors can be classified and annotated according to metaphor types (such as ontological metaphors, structural metaphors, etc.), allowing the machine to deeply learn the translation techniques for various metaphors during the training process and improve the translation quality of metaphorical expressions.

Through in-depth exploration in instruction interaction and corpus improvement training, it is expected to break through the key bottlenecks in current human-machine translation collaboration. The coordinated advancement of a standardized instruction system and the improvement of machine instruction-processing capabilities, combined with the comprehensive expansion, precise annotation, and continuous update of the corpus, will fully empower the human-machine translation collaboration model. This can not only greatly improve the accuracy and efficiency of translation but also demonstrate unique advantages in the translation of literary and multi-field texts. It will help the translation industry move towards a new stage of intelligent and high-quality development and build a more solid and efficient bridge for cross-language and cross-cultural communication.

VI. CONCLUSION

Against the backdrop of the rapid development of artificial intelligence technology, the field of translation is undergoing unprecedented changes. Machine translation has achieved remarkable results in terms of efficiency improvement and term unification. However, when it comes to the cultural connotations embedded in metaphors, its decoding ability is insufficient, and it also has shortcomings in literary expressions. Human translation, based on in-depth analysis of texts and relying on creative transformation techniques, can effectively preserve the critical spirit and aesthetic value carried by metaphors.

Based on these findings, this paper proposes a human-machine collaborative translation strategy, aiming to give full play to the advantages of both and construct an efficient and high-quality translation model. The human-machine collaborative translation model can not only enhance translation efficiency but also, especially when dealing with complex metaphorical expressions in literary works, ensure translation quality. This collaborative model not only helps to promote technological progress in the translation field but also provides new ideas and methods for the cross-cultural dissemination of literary works.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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