

Functional Equivalence in Science Fiction: Translating Culture-Loaded Words in *The Three-Body Problem*

Abstract: *The Three-Body Problem* is a science fiction novel rich in historical and cultural elements, gaining substantial international attention and positively contributing to the dissemination of Chinese culture. This study aimed to examine the culture-loaded words (CLW) in *The Three-Body Problem* and analyze their translation methods. Using a stratified sampling methodology, the research identified the characteristics of the CLW and evaluated their translations under the guidance of functional equivalence theory in terms of communicative, meaning, and emotional equivalence. The findings revealed that the translation of CLW largely achieved communicative equivalence, though occasional inadequacies in meaning and emotional equivalence arose due to meaning weakening and compensation. Regarding translation methods, the translator mainly used free translation to ensure accessibility. Meanwhile, literal translation and combined translation method were applied to preserve cultural characteristics and enhance information transfer. This study examined how functional equivalence could be achieved in translating CLW in *The Three-Body Problem*. It identified key translation methods that maintained cultural nuances and enhanced the accuracy of cultural representation, thus improving the understanding of Chinese science fiction in international contexts.

Keywords: *The Three-Body Problem*; culture-loaded words; functional equivalence; translation

1. Introduction

After the English version of *The Three-Body Problem*[1] was published internationally, it gained widespread attention, establishing its place in the history of contemporary Chinese literature. Set against the backdrop of China's Cultural Revolution, this science fiction explores humanity's first contact with an alien civilization while delving into themes of science, politics, and philosophy. Rich in

Chinese history and traditional beliefs, the novel presents significant challenges for translation due to its extensive use of CLW that reflects historical, political, and social elements crucial for understanding its context. Ken Liu, the translator of the novel, combines his dual cultural background with his scientific expertise to effectively convey the deeper meanings of CLW and Chinese cultural nuances. His translation not only preserves the novel's cultural essence but also serves as a valuable case for studying strategies for translating Chinese culture for a global audience.

This study adopted a stratified sampling method to analyze the CLW in *The Three-Body Problem* and examined their translation strategies through functional equivalence theory. By categorizing the CLW and evaluating the effectiveness of translation methods, the research aimed to identify methods that successfully conveyed cultural information and achieved functional equivalence.

While *The Three-Body Problem* has been extensively studied[2-5], few works have a deeper examination of the translation of its CLW from the perspective of functional equivalence, highlighting the significance and necessity of this paper.

2. Literature Review

2.1 Functional Equivalence Theory

Eugene Nida is a renowned linguist and translation theorist, recognized as one of the most influential figures in Western countries[6]. He first introduced the concept of "dynamic equivalence" in his book *Toward a Science of Translating*[7] and later defined it more clearly in *The Theory and Practice of Translation*[8]. To avoid misunderstandings associated with the term "dynamic" and to emphasize the concept of "function," Nida gradually adopted the term "functional equivalence"[9].

Nida contends that "translation consists in reproducing in the receptor language the closest natural equivalent of the source-language message, first in terms of meaning and secondly in terms of style", which encompasses three fundamental meanings: the

equivalence of source language information, the naturalness of target language expression, and the highest degree of closeness between the two[8]. According to functional equivalence theory, translation should focus not only on comparing the corresponding meanings of vocabulary, grammatical structures, and rhetorical devices but also on the consistency of reader response[10]. He further categorized meanings into rhetorical, grammatical, and lexical meanings, with each type divided into two levels: referential meaning and associative meaning[6].

2.2 Culture-Loaded Words

Different scholars have offered diverse definitions of CLW. Notably, Mona Baker observed that a source-language word might convey a concept entirely unknown in the target culture, whether abstract or concrete, encompassing areas such as religious beliefs, social customs, or even types of food, often referred to as “culture-specific”[11]. In contrast, Chinese scholar Liao described CLW as words, phrases, or idiomatic expressions that represent unique cultural phenomena, which highlighted the distinct lifestyles and traditions formed by particular ethnic groups over long periods of history, setting them apart from others[6]. According to these perspectives, CLW can be viewed as expressions that create lexical gaps due to cultural disparities. Such gaps may cause loss or misunderstanding of cultural content during translation, resulting in discrepancies in information reception between source-language and target-language readers.

Nida categorized culture into five types: material culture, ecological culture, social culture, religious culture, and linguistic culture[12], which provided a comprehensive foundation for examining the cultural elements in language. Building on Nida's categorization, this study adopted his framework to analyze CLW systematically.

2.3 Application of Functional Equivalence in Culture-Loaded Words Translation

Functional equivalence theory is suitable for translation in diversified fields, such as

literature, medicine, business, legislation, education, politics, etc., particularly in literature. [13] "The cultural turn in translation marks a pivotal shift from bilingual to quasi-monolingual translation theories, fundamentally challenging not only linguistic translation theories but also the two-millennia-old Western tradition of translation studies rooted in ancient Rome." [14] CLW, as key carriers of cultural identity, presents unique challenges in literary translation. Their accurate rendering requires balancing the transmission of cultural meaning and ensuring readability for target audiences.

As of November 2024, researchers have published 21 academic journal articles and 267 dissertations on CNKI discussing the translation of CLW under functional equivalence theory. These studies analyze source texts with diverse themes, including literature, history, film, conferences, and technology. Some studies highlight the use of functional equivalence in literary and folkloric translations. Huang and Lu explored the English translation of Guangxi folk tales and vernacular literature respectively. Their findings reveal that functional equivalence helps convey local cultural nuances while ensuring accessibility for international readers. Similarly, Zhuang and Shi explored literary texts from lexical, syntactic, and textual levels under functional equivalence theory. In terms of subtitling and media translation, Shi and Zeng examined the translation of subtitles of *Nirvana in Fire* on YouTube and *Young Sheldon* respectively, highlighting that the functional equivalence can improve the translation of CLW of film and television drama subtitles. Meanwhile, some scholars studied the translation of CLW in traditional Chinese medicine texts, such as *Reconstructing the Image of Medicine in the Qin and Han Dynasties of China*, *Jingui Yaolue*, *shanghanlun*. [15-23] In summary, nearly all studies concluded that functional equivalence is both feasible and practical in guiding the translation of CLW.

3. Culture-Loaded Words in *The Three-Body Problem*

3.1 Classification of Culture-Loaded Words

In *The Three-Body Problem*, the author applied a stratified sampling method, as

outlined by Fowler[24], to ensure a representative analysis of CLW from different parts of the novel. One page was selected from every ten pages (i.e., p1, p11, ..., p281, p291) to create a manageable sample that includes sections from the beginning, middle, and end of the book. This approach ensures that the sample reflects the overall structure of the novel, balancing narrative diversity while maintaining a manageable sample size, and reducing the risk of bias toward any particular section of the text.

Nida provides a detailed classification of culture[12], certain specific CLW may be subject to different interpretations[25]. To ensure the accuracy of the sample, the author cross-validated the findings by collaborating with fellow researcher and expert in cultural studies to refine the categorization of ambiguous CLW, thereby enhancing the accuracy and objectivity of the sample.

Table 1: Classification of CLW in *The Three-Body Problem*

Material	Ecology	Social	Religion	Linguistic	Total
9	2	17	4	28	60

Material culture refers to the tangible products created to satisfy human survival and development, including food, tools, architecture, medicine, and clothing. Due to geographic differences, material culture varies significantly across countries and regions, reflecting unique cultural identities. In *The Three-Body Problem*, examples of material culture include “高粱酒(baijiu distilled from sorghum)”, “观星台(astronomical observatory)”, “高粱饭(sorghum meal)”, “旗袍(*qipao*)”, and “浑天仪(*huntianyi*)”, etc.

Ecological culture pertains to the geographic environment and ecological conditions upon which people depend for survival and development, encompassing climate, mountains, lakes, mineral resources, and flora and fauna. Examples from the novel include “乌拉草(*ura sedge*)” and “野山参(*wild ginseng*)”.

Social culture encompasses the cultural aspects formed during social development, including units of measurement, names and titles, historical context, literature and art, and moral customs. Examples include “书呆子 (book-worm)”, “三结合 (the revolution)”, “圣上 (the great emperor)”, “御旨 (order)”, “红卫兵 (the Red Guards)”, and “政委 (Political Commissar)”.

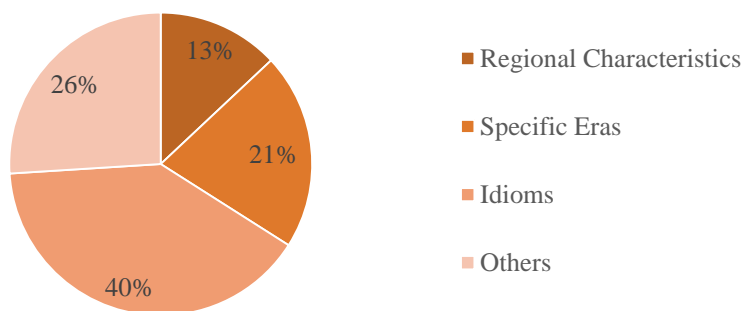
Religious culture is a system of ideology developed by different nations throughout social and historical evolution. Driven by fear of the unknown in nature, people began to contemplate and explore their environment, gradually forming distinct religious beliefs. Religion serves as both a spiritual refuge and a common code of conduct. Examples include “长老 (abbot)”, “叫天天不答，叫地地不应 (no one is listening to their prayers)”, “空 (emptiness)”, and “僧人 (the monks)”.

Linguistic culture exhibits a certain structural stability and is formed by long-used phrases or expressions, such as proverbs and fables. CLW vividly represents the syntactic, lexical, and phonological differences among ethnic groups. In *The Three-Body Problem*, linguistic culture is mainly reflected in idioms like “胸有成竹 (confidently)”, “志同道合 (have common ideals)”, and “耿耿于怀 (never forgot)”.

3.2 Characteristics of Culture-Loaded Words in *The Three-Body Problem*

In *The Three-Body Problem*, the author identifies three prominent characteristics in the cultural information conveyed by CLW. The distribution of these characteristics is illustrated in the figure below.

fig 1 : Characteristics of CLW in *The Three-Body Problem*



3.2.1 Featuring Regional Characteristics

The Three-Body Problem features numerous CLW that are specifically related to the region, particularly northeastern China. The female protagonist, Ye Wenjie, spends many years at the Red Coast Base in the northeast, allowing for a detailed depiction of local products, foods, and plants, providing readers with a glimpse into the unique culture of the region. An example of the description of material products in the village is as follows:

Target Text:	Source text:
Everything was warm and intense: <u>the heated kang stove-beds lined with thick layer of ura sedge, the Guandong and Mohe tobacco stuffed in copper pipes, the thick and heavy sorghum meal, the sixty-five-proof baijiu distilled from sorghum.</u> (pp.319)”	一切都是浓烈和温热的：铺着厚厚乌拉草的火坑、铜烟锅里的关东烟和莫合烟、厚实的高粱饭、六十五度的高粱酒。
Back translation:	一切都温暖而浓烈：加热的火炕床上铺着厚厚的乌拉草、关东烟和莫合烟塞满了铜管、厚实的高粱饭、六十五度的高粱酒。

Through these CLW, Liu Cixin vividly portrays northeastern culture, showcasing a blend of China's rich heritage and the distinctiveness of the northeastern ethnic

regions. The translator has successfully conveyed this aspect of Chinese culture, preserving its authenticity without significant alteration. This representation serves to present a typical facet of Chinese culture to readers both at home and abroad, offering an accurate reflection of the original cultural context.

3.2.2 Embracing Specific Eras

The CLW in *The Three-Body Problem* primarily pertains to two significant historical periods in China: the Cultural Revolution and ancient China. The novel employs a rich array of CLW to depict the Cultural Revolution, such as "革命小将(the revolutionary youths)", "红卫兵(the Red Guards)", and "政委(Political Commissar)", immersing readers in that chaotic and tumultuous era, which brought severe setbacks and losses to the entire nation[26]. Additionally, a virtual game depicted in the novel incorporates historical celebrities from ancient China, such as "周文王(King Wen)", "秦始皇(Qin Shi Huang)", and "墨子(Mozi)". Within the game, these figures are placed in the cultural context of the Three-Body world and are assigned new historical missions, allowing readers to engage with ancient Chinese culture.

3.2.3 Prevailing Idiomatic Expressions

Idioms represent the most direct and concentrated form of cultural information storage and aggregation among Chinese people. As the essence of the Chinese lexicon, idioms encompass various aspects of life, including astronomy, geography, politics, and culture, and often, idioms convey two layers of meaning: literal meaning and extended meaning[27]. For example, "天衣无缝", originated from Chinese ancient mythology, literally means "seamless heavenly robe worn by fairies", with an extended meaning of "something being flawless and perfect".[28] The use of idioms in the text vividly communicates and showcases the rich characteristics of Chinese culture. Other examples include "敬而远之(kept a respectable distance from)" and "寻花问柳(always fluttered carelessly from one woman to another)".

4. Functional Equivalence in Translation of Culture-Loaded Words

4.1 Translation Methods of Culture-Loaded Words

The author collected and classified a total of 60 CLW according to Nida's classification [12] and the translation methods[29]. According to the table below, the translator predominantly uses free translation, followed by literal translation and combined translation method. This section analyzed case studies of the translation of CLW in *The Three-Body Problem* based on the frequency of translation techniques used.

Table 2: Culture-Loaded Words and Translation Methods

	Material	Ecological	Social	Religious	Linguistic	Total
Literal translation	2		4	2	7	15
Free translation	1		4	2	16	23
Combined methods	5	2	4			11
Transliteration	1					1
Omission			4		5	9
Substitution			1			1
总计	9	2	17	4	28	60

4.1.1 Free Translation

Free translation involves using a transitive approach when dealing with lexical meanings and rhetorical devices (such as metaphors) to fluidly and authentically convey the original text's meaning[29]. This method can be further divided into paraphrase and idiomatic translation: paraphrase provides an interpretive rendering of the original text, while idiomatic translation employs idiomatic expressions from the target language to replace the original wording[11].

ST1: “……已经有这么多书呆子寻了短见，让他去不是‘肉包子打狗’吗？”

TT1: “...So many book-worms have already killed themselves. If we send him,

he'd be a meat dumpling thrown to the dogs.”

In the context of the novel, due to the collapse of fundamental physical theories, many physicists committed suicide within two months, so the speaker derogatorily refers to them as “书呆子”. In Chinese, “书呆子” historically refers to someone bookish, dogmatic, and inexperienced in practical matters, generally indicating a person who reads without being able to apply their knowledge. So the term carries a negative connotation. The translator employs free translation here, rendering it a “book-worm,” which typically describes someone excessively engrossed in books and studies, often lacking social interaction and practical experience. Some cultures or specific groups may view “book-worm” positively, associating it with being knowledgeable and passionate about learning. Thus, whether “book-worm” is seen as derogatory or complimentary depends on the cultural context and specific circumstances.

To better convey the intended meaning, the author suggests translating the term as “pedant,” which refers to someone overly concerned with traditional rules, particularly those related to academic subjects. While the translator opted for the form-related translation “book-worm,” the author prefers the meaning-related translation “pedant,” aligning with the principles of meaning equivalence theory.

Free translation is employed in the phrase “寻了短见”, a commonly used expression for “suicide.” Here, “寻” as a verb means “to go to a place,” while “短” can be interpreted as “narrow.” Thus, “going to a narrow place” implies “suicide,” or, as the translator puts it, “kill themselves.”

4.1.2 Literal Translation

Literal translation refers to a method that preserves the meaning and form of the source text. Unlike free translation and word-for-word translation, literal translation does not employ transitive approaches but allows for appropriate adjustments in word order. This method can effectively retain metaphors, national imagery, and significant political meanings.

ST2: 她身穿一件很不合体的草绿色衣服，显然想与红卫兵的色彩拉近距离……

ST2: She walked onto the stage dressed in an ill-fitting green outfit, clearly intended to imitate the military uniform of the Red Guards.

The Red Guards were a mass organization established during the Cultural Revolution to defend Chairman Mao, consisting of students from universities and high schools. The literal translation clearly presents the character's image.

ST3: 两人相依为命，在篝火边抵御严寒，泡在湖水中心度过酷热。

TT3: The two relied on each other for survival. They lit fires to hold off the cold, and ducked into lakes to avoid the heat.

ST4: 众目睽睽之下，元首走上巨摆的基座，扳动了一个红色的开关，转身对执政官们说……

TT4: Under the watchful eyes of the crowd, the princeps ascended onto the base of the pendulum and flipped a red switch. He turned to the consuls and said...

In the above sentences, “相依为命” (relying on each other for survival) and “众目睽睽” (under the watchful eyes of the crowd) are Chinese idioms that carry only a literal meaning. Through literal translation, the target audience can easily grasp their significance.

In Example 1, “肉包子打狗” (a meat dumpling thrown to the dogs) is a Chinese pun that implies something is thrown away with no chance of return. By literal translation, the metaphor and stylistic elements **can be** preserved. Although this expression is steeped in Chinese cultural connotations, the literal translation allows the target audience to understand it without difficulty.

4.1.3 Combined Translation Method

When literal and free translations alone cannot effectively convey meaning, combined translation method is employed, such as transliteration with free translation and transliteration with annotation.

ST5: 沿着石阶，汪淼攀上了金字塔的顶部，看到了一处类似于古观星台的地方。平台的一角有一架数米高的天文望远镜，旁边还有几架较小型的。另一边是几台奇形怪状的仪器，很像古中国的浑天仪。

TT5: Wang climbed up the stairs and reached the apex. The platform looked like an ancient astronomical observatory. In one corner was a telescope several meters high, and next to it were a few smaller telescopes. In another corner were a few strange instruments that reminded him of ancient Chinese armillary spheres, models of objects in the sky.

“浑天仪” is an ancient device invented by Zhang Heng, a great Chinese scientist in the Eastern Han dynasty. The term “浑天仪” is a combination of “浑仪”, an instrument for measuring the celestial sphere's coordinates of celestial bodies, and “浑象”, an instrument used to demonstrate celestial phenomena. And “浑” is shortened from the theory of sphere-heavens, an ancient theory that the Earth is inside the heaven as a yoke in an egg. In this sentence, the combination of free translation and addition—“armillary spheres, models of objects in the sky”—clearly describes its structure and function.

ST6: ……还有那张床，铺的显然是东北的乌拉草。

TT6: And then there was the bed, apparently lined with ura sedge from Northeast China.

China has a vast territory and is rich in resources, with countless flora and fauna found in the mountains of Northeast China. “乌拉草” is a plant that primarily grows in the Changbai Mountains, known for its deodorizing, invigorating, and fatigue-relieving properties. In the example, transliteration with literal translation is adopted. The transliteration of “乌拉” enables the reservation of Chinese cultural characteristics, while the literal translation of “草” identifies their attributes. Overall, this method achieves both meaning and formal equivalence, helping readers understand the terms and appreciate Chinese ecological culture.

4.1.4 Omission

Omission refers to the practice of removing certain words, sentences, or paragraphs

from the original text due to the cultural norms of the target language, ensuring the target text's conciseness and fluency.

ST7: “叶哲泰！”绍琳指着丈夫喝到……“你没想到我会站出来揭发你，批判你吧！？是的，我以前……它认为宇宙有限，更是彻头彻尾的唯心主义……”

听着妻子滔滔不绝的演讲，叶哲泰苦笑了一下。

TT7: “Ye Zhetai!” She was clearly unused to such theater... “You didn’t think I would stand up and expose you, criticize you? Yes, in the past... It threats that universe is limited, which is absolutely a form of reactionary idealism...”

As he listened to his wife’s lecture, Ye allowed himself a wry smile.

The Chinese idiom “滔滔不绝” describes someone speaking continuously and at length, akin to an unending stream of water. This meaning is vividly conveyed in the context, where Shaolin's long-winded defense and critique of her husband is illustrated. The translator's choice to omit this phrase does not detract from its intended meaning.

ST8: ……但在不长的研究生生涯中，他与导师的关系若即若离，他们之间保持着敬而远之的距离。

TT8: But during his brief time as a graduate student, he always kept a respectable distance from his thesis advisor.

“若即若离” implies a relationship that is neither close nor distant, while “敬而远之” conveys a similar sense of maintaining a respectful distance. To better convey the intended meaning and avoid redundancy, the former phrase is omitted in the translation. The example demonstrates that the meaning of the omitted CLW can still be inferred from the surrounding context.

4.2 Realization of Functional Equivalence Theory

After analyzing the translation methods, the author can determine the extent to which functional equivalence is achieved. There are generally four types of functional equivalence: communicative, meaning, emotional, and textual equivalence. Here, the

focus will be on the first three.

4.2.1 Communicative Functional Equivalence

Communicative functional equivalence is the primary and dominant function of language, referring to the transmission and exchange of information between people. In *The Three-Body Problem*, the meanings of all CLW in Chinese are effectively conveyed, allowing target readers to understand the translated text with minimal ambiguity, thus achieving communicative equivalence.

For instance, the translation of CLW featuring regional characteristics—such as “高粱饭” (sorghum meal), “关东烟” (Guandong tobacco), and “红卫兵” (the Red Guards)—demonstrates this success. By employing various translation methods, target readers can both understand and appreciate these elements of Chinese culture.

Furthermore, in cases where the idiomatic translation method could not be used, idioms with dual meanings also convey their implied significance to enhance the fluency and readability of the target text. For example, “寻花问柳” (always fluttered carelessly from one woman to another) literally means “to enjoy the spring scenery,” while its implied meaning refers to seeking physical pleasure. Instead of opting for a literal translation, the translator chose to directly convey its implied meaning to improve readability. As a result, communicative equivalence is largely achieved.

4.2.2 Meaning Functional Equivalence

Meaning function is one of the most important functions in everyday communication and literary works. It encompasses not only the information expressed by the speaker but also what the receiver comprehends. In *The Three-Body Problem*, many references to ancient Chinese figures may be unfamiliar to foreign readers, making explanations necessary. For instance, when “墨子” (Mozi) first appears in the story, the translator uses transliteration with annotation to explain his era and achievements:

“Translator’s note: Mozi was the founder of the Moist school of philosophy during the Warring States Period. Mozi himself emphasized experience and logic, and known as an accomplished engineer and geometer.” (pp.150)

Similarly, the historical context of “纣王” (King Zhou of Shang) is elaborated. Through this combined translation approach, the translator enables target readers to gain a deeper understanding of these figures and the development of the plot, thereby achieving semantic equivalence.

4.2.3 Emotional Functional Equivalence

Emotion is a crucial component of literary works, conveying feelings, sentiments, and attitudes. Thus, the translator must pay attention to emotionally charged terms to enhance the target reader's empathy towards characters, achieving emotional equivalence.

ST9: 杨卫宁很有才华，风度和修养俱佳，不是一个让她讨厌的人，但她自己已心如死灰，很难再燃起爱情的火焰了。

TT9: Yang was a talented man, cultured and with good taste. She didn’t find him unpleasant, but her heart was like ashes from which the flame of love could no longer be lit.

Here, “心如死灰” vividly expresses Ye Wenjie's despair towards love. By employing literal translation, her emotions are powerfully conveyed, thus achieving emotional equivalence.

4.3 Cases of Lessened Functional Equivalence

Through the previous analysis, it is evident that communicative functional equivalence is often achieved during translation. However, emotional and semantic functional equivalences may not be fully realized due to **the** following reasons.

4.3.1 Meaning Weakening

During translation, to enhance readability, the meanings of some CLW may be

weakened. This phenomenon often occurs in the translation of linguistic CLW, which typically encompasses both literal and extended meanings. The simultaneous transmission of two meanings can be achieved by idiomatic translation, which, however, is hard to come into practice as the exact corresponding idioms may not exist due to **the** semantic void between the two languages. Therefore, for language CLW, paraphrasing is often employed, conveying only the extended meaning and failing to achieve full semantic equivalence.

ST10: “系统重新热启动！”冯·诺伊曼胸有成竹地命令道。

TT10: “Restart system!” Von Neumann ordered confidently.

The term “胸有成竹” originates from a traditional Chinese idiom story, where it literally refers to “having a complete image of bamboo in one’s mind before painting it.” Over time, it has evolved to convey the figurative meaning of “possessing a thoroughly considered plan or strategy beforehand.” Here, the extended meaning is conveyed but the literal meaning **is** lost, which fails to achieve the meaning equivalence.

ST11: “下连队这么长时间了，不能总是甩手到处转，劳动得参加，三结合嘛。……”

TT11: “I have been here with the company for so long. I can’t just walk around all day doing nothing. Have to participate in labor. That’s the spirit of the revolution, right?...”

The term “三结合” refers to the revolution carried out by three parties of the revolutionary masses, cadres, and the representatives of the PLA. It is simplified to the easily understandable “the spirit of the revolution” for clarity. Providing an explanation or annotation for this term would not add much value; instead, it could confuse readers. Consequently, the weakening of this term's meaning reduces semantic functional equivalence.

4.3.2 Meaning Compensation

Given that *The Three-Body Problem* is a hard science fiction novel, the role of cultural references in the plot development is limited. Consequently, the translator

prioritized the fluency of the narrative, often employing omission method in meaning transmission. As analyzed regarding omission, Shaolin's lengthy speech conveys the meaning of "滔滔不绝" (to talk incessantly), while the synonym "敬而远之" expresses the meaning of "若即若离" (to maintain a relationship that is neither too close nor too distant). This approach leads to a loss of meaning equivalence. Additionally, there are other instances:

ST12: 现在，眼前这位历经沧桑变得平静淡泊的老人，和那位无知而无畏大史，成了他摇摇欲坠的精神世界的两根支柱。

TT12: In his current state, his mental stability depended on two pillars: this old woman, who had weathered so many storms and become as gentle as water, and Shi Qiang, the man who feared nothing because he knew nothing.

In the story, when Wang Miao got to know about the alien civilization, he was so astonished that he started to doubt human science and his worldview. As a result, his mental state nearly collapses; the phrase "摇摇欲坠" (teetering on the brink) can be inferred from the text's context.

In this case, while the specific cultural nuances may be lost, the essential meaning is compensated through the context and the narrative, maintaining the overall emotional impact and coherence of the story.

4.4 Evaluation of Translation Methods in *The Three-Body Problem*

After analyzing the CLW and their translation methods in *The Three-Body Problem*, it becomes evident how important these methods are for achieving functional equivalence.

Free translation was mostly adopted in the English version, allowing the natural transmission of the meaning, and facilitating the understanding for target readers. Although some profound cultural significance of certain terms—especially those related to linguistic culture—may be lost for the sake of fluency and readability, the

fundamental meanings are still conveyed within the context. This approach helps prevent misunderstandings, thus achieving communicative function equivalence.

In the case of free translation, phrases like "寻了短见" are rich in Chinese cultural context. A literal translation could confuse readers, thereby failing to achieve even the **basic** meaning equivalence. By free translation, the text aligns with the second principle of functional equivalence proposed by Nida: "If a close, formal translation makes no sense, i.e. is totally obscure in designative meaning, certain changes may be introduced into the text"[12]. Moreover, "三结合", which carries a political connotation potentially unfamiliar to the target audience, is translated simply as "revolution." This aligns with Nida's first principle: "If a close, formal translation is easily to result misunderstanding of the designative meaning, certain changes must be introduced into the text of the translation" [12]. Therefore, when there is a conflict between form and meaning, the latter is prioritized.

The literal translation was adopted as much as possible to present Chinese culture when the literal translation version can be understood by the target readers. Examples include "相依为命" (the two relied on each other for survival), "善解人意" (was so considerate of his feelings), "敬而远之" (kept a respectable distance from), and "心如死灰" (her heart was like ashes). In terms of social CLW, translations like "红卫兵" (the Red Guards) and "政委" (Political Commissar) also achieve meaning and communicative function equivalence. Although readers might face some challenges during reading, repeated exposure to these terms in cross-cultural exchanges will help foreign readers become familiar with and accept such expressions. For instance, "白酒" has been formally accepted and translated as "Chinese Baijiu" by literal translation.

The translator also adopted combined translation method when transliteration, literal or free translation couldn't independently convey the meanings. Most CLW are

translated using a mix of transliteration and literal translation. For instance, "关东烟" (Guandong tobacco) and "乌拉草" (ura sedge) not only identify their attributes by the literal translation of "烟", and "草", but also reserve Chinese culture characteristics by transliteration of "关东" and "乌拉". This approach achieves both meaning and formal equivalence, enhancing readers' understanding of geographical and ecological culture. The same applies to instances of transliteration with addition, such as "神州 19 号" (Shenzhou 19 spacecraft) and "火炕" (the heated kang stove-bed), which convey Chinese characteristics and meanings, allowing target readers to appreciate the text as original readers do, thus achieving equivalence in both meaning and communicative function.

5. Conclusion

This paper analyzed the translation of CLW in *The Three-Body Problem* and evaluated the degree to which translation methods achieve functional equivalence. The study found that communicative equivalence was largely achieved, but there was still room for improvement in terms of meaning and emotional equivalence. The translator frequently employed free translation to achieve communicative equivalence, yet the incomplete transmission of cultural meanings may impact meaning equivalence. While literal translation helped achieve both communicative and meaning equivalence, it may also increase interpretive difficulty for readers. When neither free nor literal translation could independently convey the intended meaning, the translator resorted to combined translation method, such as transliteration with free translation or literal translation with omission, to maximize functional equivalence.

Translating, especially CLW, presents a complex and challenging process for translators. Both translators and researchers in the field should have a deep understanding of both cultures to achieve the highest level of equivalence between the source and target texts, thus facilitating cross-cultural communication. Future research could explore how reader reception influences the choice of translation methods, particularly in science fiction and other genres with CLW.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

References

- [1] Liu, C.(2014). *The Three-Body Problem (Ken. Liu, Trans.)*. New York: Tor Books.
- [2] Liu, W. (2022). *Translation strategies of culture-loaded terms in The Three-Body Problem from the perspective of the Skopos theory* [Master's thesis, Beijing Foreign Studies University].
- [3] Zhang, X. (2022). *A study on the translation of culture-loaded words in The Three-Body Problem Trilogy from the perspective of frame theory* [Master's thesis, Shandong University].
- [4] Han, L. (2023). *A corpus-based stylistic study on the differences between Ken Liu's translated The Three-Body Problem and his non-translated English science fictions* [Master' s thesis, Henan University of Technology].
- [5] Wang, W. (2023). *A study on the translation methods for terminology in San Ti I & III from the perspective of general terminology theory* [Master' s thesis, Nanjing University of Information Science and Technology].
- [6] Liao, Q. (2000). *Exploration of Contemporary Western Translation Theories*. Nanjing: Yilin Press.
- [7] Nida, E. (1964). *Toward a science of translation*. London: E. J. Brill.
- [8] Nida, E. (1982). *The theory and practice of translation* (2nd photomechanical reprint). Leiden: E. J. Brill.
- [9] Waard, J. de, & Nida, E. (1986). *From one language to another: Functional equivalence in Bible translating*. Nashville: Thomas Nelson.
- [10] Nida, E. (1993). *Language culture and translating*. Shanghai: Shanghai Foreign Language Education Press.

- [11] Baker, M. (2000). *In other words: A coursebook on translation*. Beijing: Foreign Language Teaching and Research Press.
- [12] Nida, E. (1945). Linguistics and ethnology in translation-problems. *WORD*, 1(2), 194–208.
- [13] Li, Y. (2023). *A report on the translation of London to Ladysmith via Pretoria (excerpts) from the perspective of functional equivalence theory* [Master's thesis, Beijing University of Posts and Telecommunications]
- [14] Pan, W. (2024). From literary translation back to cultural transmission: Re-siting translation of Chinese classics to other cultures. *Foreign Languages in China*, 21(5), 97 - 105.
- [15] Huang, L. (2024). A study on the English translation of culture-loaded words in Guangxi folktales from the perspective of functional equivalence. *Master and Masterpiece*, 2024(13), 88–90.
- [16] Lu, L. (2024). A study on the English translation of culture-loaded words in Guangxi local literature under functional equivalence theory: A case study of Fan Yiping's Shangling Lovers. *Master and Masterpiece*, (07), 74–76.
- [17] Zhang, Y. (2023). *A translation report on the Chinese-English translation of Ancient Bashu and Its Cultural Interaction and Integration with South Asia (excerpt) guided by functional equivalence theory* [Master's thesis, Sichuan Normal University].
- [18] Shi, F. (2024). *A Chinese-English translation practice report on Shaanbei Elders (excerpt) guided by functional equivalence theory* [Master's thesis, Yan'an University]
- [19] Shi, P. (2023). *A Study on the English Translation of Culture-loaded Words in Subtitles of Nirvana in Fire on YouTube from the Perspective of Functional Equivalence Theory* [Master's thesis, Xihua University].
- [20] Zeng, F. (2023). *On the E-C Translation Strategies of Culture-loaded Words in the Subtitle Translation of Young Sheldon from the Perspective of Functional Equivalence Theory* [Master's thesis, Jilin University of Finance and Economics].
- [21] Su, L. (2020). *A translation practice report on Reconstructing the Image of Qin*

and Han Medicine (excerpts) under the guidance of functional equivalence theory
[Master's thesis, Shanghai University of Traditional Chinese Medicine].

[22]Zhang, J., & Pu, H. (2020). English Translation of Culture-loaded Words in Jingui Yaolue under the Guidance of Functional Equivalence Theory. *Western Chinese Medicine*, 33(02), 157–160.

[23]Chen, J., He, S., & Tang, L. (2019). Retrospectives and Thinking on English Translation Course of *Shanghanlun*. *Chinese Journal of Integrative Medicine*, 39(11), 1400–1403.

[24]Fowler, F. J. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage Publications.

[25]Nida, E. A. (2001). *Language and Culture: Contexts in Translating*. John Benjamins Publishing Company.

[26]Shi, H. (2024). *Research on the Evolution and Enlightenments of the Communist Party of China's Self-Revolution in Its Centennial* [Doctoral dissertation, Guizhou Normal University].

[27]Hu, X. (2024). Translation of Chinese Idiom from the Perspective of Sociolinguistic Semiotics. *Western Journal*, (02), 69 - 72.

[28]Du, R. (2016). *New Century Chinese-English Dictionary*. Foreign Language Teaching and Research Press.

[29]Xiong B. Conceptual confusion in translation studies: A case study of 'translation strategies,' 'translation methods,' and 'translation techniques'. *Chinese Translators Journal*. 2014;35(03):82 - 88.