

A Comparison of Human and ChatGPT-Generated Translations of Chinese Architecture-Related Culture-Specific Items

Yixuan Li

School of Languages, Literacies, and Translation, Universiti Sains Malaysia, Penang, Malaysia

Mohamed Abdou Moindjie*

School of Languages, Literacies, and Translation, Universiti Sains Malaysia, Penang, Malaysia

Debbita Tan Ai Lin

School of Languages, Literacies, and Translation, Universiti Sains Malaysia, Penang, Malaysia

Abstract—This study investigates the English translation of Chinese architecture-related culture-specific items (CSIs), particularly those related to vernacular dwellings, through a comparison between human and ChatGPT-generated translations. It examines human translations in terms of semantic accuracy, cultural retention, and reader comprehension, drawing on the theory of functional equivalence, with ChatGPT-generated versions used for contrast. The selected CSIs are treated as independent units and analyzed in isolation rather than within their original textual contexts, allowing culturally loaded meaning to be observed more directly in translation. The findings indicate that human translations are generally more adaptable, showing greater flexibility in balancing meaning transfer, cultural specificity, and reader accessibility. By contrast, ChatGPT-generated versions are less consistent. Some are concise and effective, whereas others follow the original too closely, with some loss of clarity and precision. The study therefore suggests that AI-assisted translation is useful for drafting and offering possible alternatives, but it functions more as a support tool than as a substitute for human judgment. The conclusion does not extend to broader discourse contexts or to other types of CSIs.

Index Terms—architecture-related culture-specific items (CSIs), Chinese-to-English translation, ChatGPT, translation comparison, functional equivalence

I. INTRODUCTION

With the ongoing globalization of cultural interactions, Chinese cultural symbols have gained increasing visibility on the international stage. In this context, the accurate translation of culture-specific items (CSIs) has become an essential condition for facilitating effective cross-cultural understanding. As an important medium of cultural transmission, Chinese architecture embodies rich historical and cultural symbolism and has attracted growing interest worldwide. However, compared with other cultural domains, the translation of culturally and historically embedded expressions related to Chinese architecture has received relatively limited attention in both research and practice and remains underexplored in English, with no widely recognized or established equivalents. This situation may hinder the effective international dissemination of Chinese architectural culture and, more broadly, the representation of Chinese cultural heritage.

The growing demand for effective cross-cultural communication within the context of globalization has accelerated the incorporation of artificial intelligence (AI) into translation practices, fundamentally reshaping how meaning is conveyed across languages and cultures. While existing research has recognized the limitations of machine translation (MT) in dealing with CSIs (Sadikhova & Babayev, 2025; You et al., 2025), especially those related to architecture, the performance of large language models (LLMs), such as ChatGPT, in translating Chinese architecture-related CSIs remains insufficiently explored. This lack of focused investigation points to a significant research gap, with direct implications for cultural accuracy in AI-assisted translation.

In view of the background outlined above, this study explores the differences between human and ChatGPT-generated translations in handling Chinese architecture-related CSIs, with examples taken from the popular science text *Zhongguo Wenhua: Jianzhu* (Cai, 2014b), its English translation *Chinese Culture: Architecture* (Cai, 2014a), and the corresponding ChatGPT-generated versions. It is guided by the following three research questions:

- 1) How are Chinese architecture-related culture-specific items handled in human translation?

* Corresponding Author. Email: mohdmoindjie@usm.my

2) What differences can be observed between human and ChatGPT-generated translations in representing Chinese architecture-related culture-specific items?

3) What implications do these observed differences have for AI-assisted translation practice in rendering architecture-related culture-specific items?

To address these research questions, this study examines selected Chinese architecture-related CSIs in human and ChatGPT-generated translations.

II. LITERATURE REVIEW

A. Related Studies

(a). *The English Translation of Chinese Culture-Specific Items*

Over time, studies on the English translation of Chinese CSIs have gradually evolved from theory-oriented discussions to practice-based investigations. Early research primarily focused on the application of established translation theories, such as adaptation theory (Zhuo & Wang, 2007), skopos theory (Liu, 2014; Wang, 2012), and functional equivalence theory (Bu & Wang, 2009), to explore how cultural characteristics of the source text could be conveyed and preserved in translation. Research has increasingly expanded to include a broader range of texts and case studies, extending from classical literature (Huang, 2015; Wei, 2016; Yang, 2018) to intangible cultural heritage (Chen, 2011; Hu & Wen, 2016). This expansion has contributed to both theoretical development and practical innovation in translation. In particular, Amenador and Wang (2022a) analyze 137 publications on the Chinese-to-English translation of public signs, suggesting the need for more thorough and diverse research and recommending improved training for translators. They subsequently turn their attention to the English translation of Chinese CSIs in food menus, where neutralization is found to be the dominant strategy, despite variations in the translation procedures adopted across different categories of CSIs and communicative purposes (Amenador & Wang, 2022b, 2023). Yu and Zhu (2024) describe the representation and translation of Chinese Spring Festival traditions through LEGO playsets by adopting a social semiotic multimodal approach. Their study reveals a form of participatory multimodal translation, in which tactile mediation facilitates flexible and direct engagement for both designers and players.

While existing studies on the English translation of Chinese CSIs have made substantial contributions, they have largely centered on a relatively narrow range of text types and cultural themes. By contrast, architecture-related CSIs, which are deeply embedded in Chinese architectural culture and material heritage, have received limited and scattered attention in Chinese-to-English translation studies (Ding et al., 2025; Liu & Xie, 2022; Wang & Yu, 2019). In addition, previous research has mainly focused on human translation, with much less discussion devoted to the performance and reliability of LLMs such as ChatGPT in translating CSIs, particularly those related to architecture. To address these gaps, the study compares human and ChatGPT-generated translations of Chinese architecture-related CSIs and examines how cultural meaning is conveyed in each.

(b). *Human Translation and LLM-Based Machine Translation in Cultural Contexts: The Case of ChatGPT*

Existing research on Chinese-to-English translation has increasingly adopted a comparative perspective to examine the performance of human and machine translation (Pan & Zhu, 2015). Across a wide range of text types, from literary to non-literary materials (Du & Lu, 2024) and from relatively simple to more complex linguistic structures (Afzaal et al., 2022), these studies generally suggest that machine translation tends to perform better in preserving surface form and structural consistency, whereas human translation demonstrates greater strength in conveying meaning, contextual nuances, and pragmatic appropriateness.

Meanwhile, the literature points to the need for further improvement in machine translation systems, particularly in handling complex grammatical relations and optimizing lexical choices (Zhang & Zhao, 2024). In response to these developments, recent attention has begun to shift toward LLMs, with ChatGPT emerging as a representative model for rethinking the relationship between human and machine translation. Specifically, Abu-Rayyash (2023) investigates the integration of ChatGPT-4 into translator training and finds that, although ChatGPT-4 enhances training effectiveness in technical translation, it remains inadequate in handling literary and culturally nuanced texts and should therefore be incorporated cautiously within a human-centered training framework. Zhang et al. (2024) conduct a comparative analysis of the English translations of Du Fu's poetry produced by ChatGPT and human translators and show that while ChatGPT reflects strengths in vocabulary diversity, professional human intervention is still required to improve clarity and to better convey Chinese culture. Shahgaldiyev et al. (2025) compare human and machine translation and demonstrate that AI-based machine translation systems are fast and scalable but remain limited in grammatical structuring, lexical equivalence, and discourse coherence, with the conclusion that a hybrid integration of human and AI approaches can enhance translation precision and cultural awareness. These studies consistently emphasize the need to adapt translation practice and translator education to ongoing advances in AI, particularly through the effective integration of human and AI translation, with ChatGPT frequently used as an illustrative case.

Taken together, previous studies have primarily compared human and LLM-based machine translation across various text types, highlighting their respective strengths and limitations in terms of quality, efficiency, and the handling of cultural meaning. However, such discussions have remained largely general, with relatively little attention to more

specific types of CSIs. In particular, despite the richness of architecture-related CSIs, their translation is still insufficiently explored. To address this gap, the study therefore turns to the English translation of Chinese architecture-related CSIs by comparing how human translators and ChatGPT deal with culture-specific content.

B. Theoretical Framework

This study focuses on CSIs. Following Aixelá (1996), they refer to elements in the source text that may cause translation difficulties due to the absence of equivalents or cultural differences in the target language. Their translation therefore entails both linguistic transfer and cultural mediation. Due to their complexity, the analysis requires a framework that can address both meaning and cultural aspects. In this respect, the theory of functional equivalence serves as a useful guide.

According to Nida (2001), translation is not about absolute equivalence, but about achieving functional proximity so that target readers can understand the intended meaning of the source text. In this view, equivalence is dynamic and relative, influenced by linguistic, cultural, and cognitive factors. Functional equivalence thus gives priority to communicative effect over formal correspondence. It can also be understood as a continuum, within which full equivalence is rarely possible, especially in culturally loaded texts, but which still provides a useful way of assessing how meaning is conveyed and how readers respond.

Previous research shows that the theory of functional equivalence has been widely used in translation studies and offers a useful basis for interpretation. In literary translation, particularly in the analysis of lyric prose, it is applicable where equivalence is examined at lexical, syntactic and stylistic aspects (Zhou, 2022). Meanwhile, some scholars have applied the theory to the translation of CSIs, emphasizing how meaning is conveyed to and received by target readers, with a strong focus on communicative effectiveness (Bu & Wang, 2009). However, this perspective tends to prioritise readability and communicative effect in the target text, often at the expense of cultural specificity. For CSIs, translation cannot be reduced to accessibility alone, and it also requires that some of the cultural features embedded in the original be retained. This is why cultural retention is introduced as a complementary dimension to functional equivalence. Additionally, functional equivalence theory has recently been discussed in relation to machine translation (Pan & Zhu, 2015). While such studies contribute to the evaluation of translation, their concerns differ from those of this study. Functional equivalence involves a process of mediation that is closely tied to human judgement and cultural awareness, and is therefore more appropriately explored in human translation.

Given the discussion above, this study uses the theory of functional equivalence as a framework for analysing human translation. By treating CSIs as independent units of analysis, it focuses on semantic accuracy, cultural retention and reader comprehension. Within this framework, semantic accuracy refers to the accurate conveyance of the original meaning, cultural retention concerns the preservation of culturally specific features, and reader comprehension relates to the accessibility of the translation to target readers. Together, these three dimensions help to clarify how culture-specific meaning is rendered in translation.

III. METHODOLOGY

This study adopts a qualitative comparative design within the framework of functional equivalence theory. It aims to explore the human translation of architecture-related CSIs in terms of semantic accuracy, cultural retention and reader comprehension, with ChatGPT-generated versions used for comparison. To enable closer analysis, the selected CSIs are considered individually rather than within their original textual context.

The source material for this study comes from *Zhongguo Wenhua: Jianzhu*, a popular science book published by a Chinese state-affiliated press. It contains numerous Chinese architecture-related CSIs, covering buildings, structural elements and attached features. Through purposive sampling, the section on vernacular dwellings is chosen as a suitable focus for analysis because it is closely connected to everyday life and reflects rich cultural significance, including production patterns, customs, religious beliefs and aesthetic values, which also show regional inflections. Given the evident regional variation of Chinese vernacular architecture, the ten selected cases are discussed in broadly northern and southern groupings to broaden the regional coverage of the sample and support a more representative comparison. Each case includes the Chinese source text, the corresponding human translation, and the ChatGPT-generated version.

In this study, Chinese architecture-related CSIs are treated as independent units and analyzed in isolation, with particular attention to their semantic and cultural meanings. Functional equivalence theory is operationalized through three dimensions, namely semantic accuracy, cultural retention, and reader comprehension. Semantic accuracy addresses whether the core meaning of the original expression is conveyed with sufficient accuracy, cultural retention whether culturally specific features remain visible, and reader comprehension whether the translation is accessible to general target readers. These dimensions are selected to capture the main concerns of the analysis, with a focus on meaning transfer, cultural specificity, and reader accessibility. They are applied primarily to human translations, while ChatGPT-generated versions are used only for comparison.

The analysis focuses on selected CSIs and their corresponding human and ChatGPT-generated translations. Chinese architecture-related CSIs are first identified from the source text and matched with their published English translations. ChatGPT-generated versions are produced for each CSI using the basic ‘vanilla’ prompt “翻译为英文: (Translate into English)”, under a consistent and minimally constrained translation condition without contextual information. The

human translations are then likewise analyzed in isolation for semantic accuracy, cultural retention, and reader comprehension, and compared with the ChatGPT outputs to examine the main differences in their handling of architecture-related CSIs.

IV. RESULTS

The following account examines ten Chinese architecture-related CSIs, which are divided into northern and southern groups. Attention is first given to how these selected CSIs are rendered in the human translations. The analysis, guided by the theory of functional equivalence, further focuses on semantic accuracy, cultural retention, and reader comprehension. On this basis, the corresponding ChatGPT-generated versions are introduced for comparison to reveal key differences in outcomes. Table 1 presents the ten cases.

TABLE 1
TEN SELECTED CHINESE ARCHITECTURE-RELATED CULTURE-SPECIFIC ITEMS FOR COMPARATIVE ANALYSIS

Group	No.	Source Text (Page No.)	Human Translation (Page No.)	ChatGPT-4
Northern	1	北京四合院 (p. 102)	Beijing Siheyuan Building (Courtyard Houses) (p. 124)	Beijing Courtyard House
	2	垂花门 (p. 102)	the festoon gate (p. 125)	Dripping Flower Gate
	3	庄窠 (p. 104)	-	Zhuangke
	4	天窑 (p. 105)	A “sky cave” (p. 128)	Open-air cave
	5	蒙古包 (p. 112)	Mongolian tents (p. 136)	Mongolian yurt
Southern	6	石牌坊 (p. 107)	Stone archways (p. 129)	Stone archways
	7	吊脚楼 (p. 109)	Hanging rooms (p. 132)	Stilt house
	8	五凤楼 (p. 109)	The Wufeng (Five Phoenixes) earthen houses (p. 133)	Wufeng Lou
	9	厝 (p. 109)	Cuo (p. 134)	Traditional house (often used in Fujian and Taiwan to refer to traditional Minnan houses)
	10	碉房 (p. 114)	Fortress-like stone houses (p. 140)	Watchtower house

Note. Source text: *Zhongguo Wenhua: Jianzhu*; Human translation: *Chinese Culture: Architecture*

A. Northern Chinese Architecture-Related Culture-Specific Items

In this group, the human translations show a mixed way of rendering, with some CSIs preserving culturally specific features, sometimes supplemented by brief explanations, others adopting more general, or using descriptive or functional equivalents to enhance readability, and one being omitted due to the lack of a straightforward correspondence. When compared with the ChatGPT-generated versions, these translations reveal different effects in terms of semantic accuracy, cultural retention, and reader comprehension.

Specifically, “北京四合院” is translated as “Beijing Siheyuan Building (Courtyard Houses)” through a combination of transliteration and explanation, retaining the architectural and cultural identity of the original while supporting reader comprehension. By contrast, “Beijing Courtyard House” is more immediately accessible but omits the culturally specific name “Siheyuan”, thereby weakening cultural retention and reducing specificity. “垂花门” is rendered as “the festoon gate” using a descriptive equivalent, capturing the ornamental feature of the source expression. Although “festoon” may not be readily familiar to all readers, the translation still evokes decoration and preserves more of the underlying meaning. ChatGPT-4’s “Dripping Flower Gate”, while more literal at the surface level, misrepresents the image conveyed by “垂花”, resulting in an odd and potentially misleading rendering. In this case, the human translation better achieves semantic accuracy, despite some limitation in readability. “庄窠” is omitted in the human translation, indicating the difficulty of finding a suitable counterpart, given its dialectal, historical, and context-bound nature. This leads to a clear loss of meaning and offers little support for reader understanding. The ChatGPT-generated version, which leaves the CSI “Zhuangke” through transliteration, does not improve interpretability and proves difficult for the reader to understand. From the perspective of functional equivalence, both approaches remain inadequate, suggesting that culturally opaque terms of this kind cannot be effectively conveyed without additional clarification. “天窑” is presented by means of through-translation as “a ‘sky cave’”, keeping the metaphorical image of the original expression and showing that the translation is culturally marked rather than a generic dwelling type. In comparison, ChatGPT-4’s “open-air cave” is more easily understood but tends to normalize this CSI and weaken the associations carried by “sky”. The human translation thus shows stronger cultural retention, but is harder for readers unfamiliar with such language to understand. “蒙古包” is expressed as “Mongolian tents”, a more generalized translation that reflects the use of a functional equivalent to enhance interpretability. While straightforward and accessible, this choice slightly reduces semantic precision, as “蒙古包” denotes a specific traditional structure rather than tents more broadly. ChatGPT-4’s “Mongolian yurt” is more precise in both ethnographic and architectural respects. In this instance, the human translation prioritizes ease of understanding at the expense of specificity.

Overall, the human translations in this group show a range of different renderings, and such variation leads to differing degrees of functional equivalence. Across these five examples, the human translations reflect a clear tendency to balance semantic accuracy, cultural retention, and reader comprehension, broadly consistent with Nida's theory, in which the key issue for translation is not only whether the lexical meaning is conveyed, but also whether the target reader can understand the original term while retaining an adequate sense of the cultural specificity involved. The main strength of the human translations lies in their relatively more stable ability to maintain this balance, particularly in comparison with the ChatGPT-generated versions. A notable limitation is that some translations remain semantically incomplete or insufficiently transparent to the target reader, while the latter often achieve greater immediate readability, though this sometimes involves simplifying, generalizing, or misrepresenting culturally specific meanings. From this perspective, the human translations are generally more effective in preserving both meaning and cultural nuance, even when this may reduce accessibility for non-Chinese readers.

B. Southern Chinese Architecture-Related Culture-Specific Items

The human translations in this group tend to strike a balance between making meanings explicit and retaining certain cultural features, though the degree of accuracy varies across CSIs.

Specifically, "stone archways" for "石牌坊" adopts a functional equivalent and is direct and highly accessible. In terms of semantic accuracy, it conveys the material and general form of the structure, though it does not fully capture the ceremonial or commemorative function often associated with "牌坊". Since ChatGPT-4 gives the same version, there is no difference in translation effect here. From the perspective of functional equivalence, the human translation succeeds mainly in reader comprehension, but its cultural retention is relatively limited because the cultural element is not preserved. "Hanging rooms" for "吊脚楼" is a descriptive equivalent based on the surface image of the source expression, reflecting an attempt to reproduce the visual impression of the original structure. However, semantically it is less accurate, because "吊脚楼" refers to a stilt-supported building rather than simply a suspended room. Compared with ChatGPT-4's "Stilt house", the translation retains some imagery but has weaker semantic precision and may confuse readers. In this case, the human translation indicates that preserving literal meaning does not necessarily produce functional equivalence if the target reader cannot have an accurate understanding of the original. "The Wufeng (Five Phoenixes) earthen houses" for "五凤楼" shows a highly layered rendering. It preserves the CSI through transliteration, adds a gloss for the symbolic meaning, and is further supplemented by additional descriptive detail. With regard to semantic accuracy, the human translation is more informative than ChatGPT-4's "Wufeng Lou", which offers only a transliteration. It also performs better in reader comprehension, because the explanatory additions help non-Chinese readers grasp both the cultural image and the architectural nature involved. This is a strong example of functional equivalence achieved through triplets. "Cuo" for "厝" relies entirely on transliteration. This rendering keeps the original linguistic form and thus demonstrates a relatively high degree of cultural preservation, but it provides almost no immediate semantic content for readers unfamiliar with Minnan culture. By contrast, ChatGPT-generated version, although somewhat lengthy, is more helpful for understanding because it includes cultural and regional explanation. In this example, the human translation places greater emphasis on cultural retention over reader comprehension, but functional equivalence remains incomplete without some explanatory support. "Fortress-like stone houses" for 碉房 is a descriptive equivalent that highlights the stone-built appearance and gives readers an immediate visual impression. This translation is not entirely precise, however, since "碉房" in the Tibetan context is not primarily associated with defense, but rather with adaptation to the climate and environmental conditions of the Qinghai-Tibet Plateau. It is more natural and somewhat easier to understand than ChatGPT-4's "Watchtower house", but both tend to weaken the environmental and regional connotations embedded in the original expression. Despite this, the human translation is more accessible to target readers, with cultural retention only partially achieved.

Taken together, the human translations tend to favour non-literal rendering when architecture-related CSIs are likely to be opaque to target readers, but they also preserve source-cultural elements in some cases through transliteration. Their main strength lies in making these CSIs easier to understand without being fully domesticated. Their weakness is uneven semantic accuracy, as some translations are informative and balanced, while others remain either too vague or too dependent on the source-language form. They more often seek a balance between cultural retention and reader comprehension, compared with the ChatGPT-generated versions, which is closer to the goal of functional equivalence.

Based on these results, the translation of architecture-related CSIs requires a careful balance between semantic accuracy, cultural retention and reader comprehension. The human translations demonstrate greater flexibility, preserving culturally specific features in some cases while adopting clearer expressions in others. By contrast, the ChatGPT-generated versions vary in quality, as some translations are concise and effective, while others rely on simplified or form-based transfer that fails to fully convey the original meaning. These findings suggest that AI-assisted translation has clear potential in dealing with these CSIs. It can provide efficient and often useful initial renderings, particularly where the cultural dimension is less prominent or where readability is a priority. At the same time, its value lies not only in generating output, but also in serving as a supportive resource for handling such culture-related elements.

V. DISCUSSION

A. Challenges in Translating Architecture-Related Culture-Specific Items

The findings above indicate a relatively flexible handling by the translator. This suggests that the translation of architecture-related CSIs is shaped by several interrelated factors. First, deeply rooted in local history, material culture, regional practices, and collective memory, such CSIs refer not only to physical architectural forms, but also to ways of life, social hierarchy, religious beliefs, aesthetic values, and regional identity. Accordingly, the translator is dealing not only with lexical transfer, but with culturally embedded meanings that arise from the interaction between language and its broader context. This helps explain why the human translations tend to show greater flexibility rather than following a single fixed way. A second challenge comes from the nature of architecture-related CSIs themselves. Those related to traditional dwellings and local building forms are often highly specific, but the target language does not always offer established equivalents. Even when a roughly similar expression is available, it may still fail to convey the historical associations, symbolic meanings, or regional distinctiveness of the original. In many cases, such CSIs denote not only a type of building, but also a way of living in and using space influenced by local environment, social custom, and long-term cultural practice. Their meanings are therefore both material and symbolic, which makes straightforward translation particularly difficult. For this reason, the translator often has to balance semantic accuracy, cultural retention, and reader comprehension, and the human translations examined reflect this tension, with some retaining more source-culture features while others rely on more explicit explanation or use clearer, more familiar expressions. This apparent inconsistency should not simply be seen as a weakness, but rather reflects the fact that such CSIs cannot easily be translated in the same way. This point becomes more evident when the architecture-related CSIs in this study, all drawn from popular science texts, are treated as independent units and analyzed in isolation. What matters at this stage is not merely why these CSIs are hard to translate, but how this issue is reflected in the divergences among human translations, especially in how human translators pursue a satisfactory rendering while deciding how far the source culture should be retained without making the translation unnecessarily difficult for readers. This can be clearly found in the human translations discussed above, whose differences are better understood not simply as a lack of coherence, but as the result of efforts to remain semantically accurate, retain culturally specific features, and also keep the translation accessible to non-specialist readers. In other words, the flexibility shown in the human translations is better taken not as mere variation in translation choices, but as a practical response to the challenge of balancing semantic accuracy, cultural retention, and reader comprehension in the translation of CSIs. From this perspective, such tendency shows how translators respond differently to different kinds of cultural information, even when each CSI is considered independently rather than in its full textual context.

The findings also help explain why ChatGPT-generated versions often appear less consistent than human translations in dealing with architecture-related CSIs. This is mainly because translating such CSIs involves more than lexical correspondence. It also requires the ability to recognise culturally embedded meanings, distinguish literal sense from actual referent, and make interpretive judgments when no direct equivalent is available. When a CSI is relatively transparent or has an established counterpart in the target language, ChatGPT can sometimes produce concise and acceptable translations. But when those CSIs are more strongly tied to local culture or historical context, their outputs become less reliable, tending to overgeneralise, remain too close to the literal form of the original expression, or stay at the level of formal conversion without fully conveying the cultural meaning involved. A further reason for this difference lies in the asymmetry between the source and target cultures. Human translators are generally better able to judge when direct transfer will not work and when some degree of adjustment or explanation is needed. By contrast, AI-generated versions may seem fluent even when the underlying interpretation is still incomplete, and this is most clearly seen in the translation of architecture-related CSIs with strong ethnic and cultural associations, where a seemingly simple CSI may in fact refer to something highly specific, closely connected with local geography, social custom, and historical practice. In this sense, fluency alone does not ensure precision, since a translation may read naturally to target readers while still failing to convey the intended meaning with sufficient semantic and cultural accuracy. At the same time, the comparison should not be reduced to a contrast between the strengths of human translation and the weaknesses of AI-generated translation. Rather, the findings suggest that what matters most is the nature of CSIs themselves. This view is also supported by previous research on the translation of CSIs. Beyond Aixelá's (1996) influential discussion, studies across different language pairs and text types, particularly in literary works and film subtitles, have likewise shown that such translation involves more than lexical form alone, because the meaning to be conveyed is often rooted in culture (Bila & Kačmárová, 2018; Zeghar & Benlakdar, 2022). Once CSIs are considered in isolation, the limits of direct equivalence become more visible, and translation depends more heavily on cultural knowledge and interpretive judgment. Human translators respond through selective adjustment, whereas ChatGPT is less steady because it does not always tell the difference between what reads smoothly and what is actually appropriate. Seen this way, comparing human and ChatGPT-generated translations in this respect therefore offers useful insight into both the strengths and the shortcomings of current AI translation. More importantly, this makes clear that CSI translation is not simply a matter of finding a fixed match, but of mediating meaning between different cultural backgrounds. From this perspective, the differences found in both human and AI translations are not accidental, but arise from the inherent complexity of culture-bound elements whose meanings extend beyond lexical level alone. This in turn highlights the value of human-

AI collaboration in translation (Shahgaldiyev et al., 2025; Zhang et al., 2024), with AI contributing initial renderings and possible alternatives, while human translators take responsibility for cultural sensitivity and final decisions.

B. Implications for AI-Assisted Translation of Architecture-Related Culture-Specific Items

The findings suggest that AI-assisted translation has real potential for handling architecture-related CSIs, but it is more useful as support than as a stand-alone solution. One clear implication is that AI can be particularly helpful in producing an initial translation. When a CSI is relatively transparent, or when a more accessible rendering is required, AI-generated output can quickly provide reasonable translation options. Its contribution lies not only in improving efficiency, but also in giving translators more possible ways to express meaning at an early stage of the process. At the same time, the findings also show that the value of AI-assisted translation depends largely on how it is used. When CSIs need more careful interpretation, selective explanation, or greater sensitivity to cultural meaning, AI tends to perform less reliably. This means that AI is more effective as a tool for human judgment than as an automatic replacement for the translator (Abu-Rayyash, 2023; Qian & Kong, 2024). In actual use, its main value lies in generating alternatives, broadening the available options for expression, and helping translators compare different versions in terms of semantic accuracy, cultural retention, and reader comprehension. For this reason, AI assistance works best when human translators review and refine the output rather than take it as a final solution. Additionally, the findings indicate that AI is better used as part of a process when translating such CSIs. Instead of expecting AI to generate a correct equivalent in a single attempt, it may be more productive to design prompts so that different translations can be explored (Aldosari & Altuwairesh, 2025; Jiao et al., 2024; Moreno García & Mangiron, 2024). More specific guidance on style, explanation, or translation priorities is also more likely to improve the results. The key point is not simply whether AI can produce a right answer at once, but whether it can contribute to a translation process that allows greater control and reflection.

Practically speaking, AI-assisted translation may be valuable in at least three respects. First, it can speed up the preparation of initial versions. Second, it can offer alternative renderings that make different options more visible. Finally, it can help translators reflect on how translations place emphasis differently on semantic and cultural aspects. This is especially important for CSIs, because what matters is often not whether they are translatable, but what is highlighted and what is downplayed in the original meaning.

Taken as a whole, the findings suggest that AI is most valuable in this context not as a replacement for human translators, but as a support for a more flexible translation process. In the case of architecture-related CSIs, a more effective approach is one in which AI contributes speed, lexical variety, and help with initial rendering, while human translators remain responsible for semantic judgment, cultural awareness, and the final output of the translation. In this sense, AI-assisted translation is not simply a matter of efficiency, but can also offer a practical way of dealing with CSIs more carefully and more adaptively. These implications extend not only to translators, who may use AI more effectively as a tool for producing initial versions and comparing alternatives, but also to developers of LLMs, who need to improve translation performance, especially in relation to cultural meaning. They are also useful for translation teaching and training, where learners should develop both a better understanding of how prompting can be used well and a more careful attitude towards AI-generated suggestions.

VI. CONCLUSION

This study investigates the English translation of Chinese architecture-related CSIs through a comparison between human translators and ChatGPT. Taking each CSI as an independent analytical unit, it aims to clarify how culture-bound meanings are conveyed in human translations within the theory of functional equivalence in terms of semantic accuracy, cultural retention, and reader comprehension, with ChatGPT-generated versions providing a comparative reference.

The findings indicate that translators tend to handle such CSIs with some flexibility. What may appear as inconsistency is better understood as an effort to balance semantic accuracy, cultural retention, and reader comprehension. In contrast, ChatGPT is somewhat less consistent. It can produce concise and effective versions when the underlying meaning is relatively clear, but may also rely on generalised expressions or fail to capture more specific cultural features. These observations further suggest that examining these CSIs in isolation makes the challenges of translation more visible. Additionally, the study shows that AI-assisted translation can be helpful with CSIs, particularly in the preparation of draft renderings and the exploration of possible alternatives. Its value, however, lies less in replacing human translators than in supporting a more flexible translation process in which human judgement remains essential.

At the same time, the study has some obvious limitations. Since the discussion focuses on individual CSIs in isolation rather than their surrounding context, it cannot fully explain how the translations function within broader discourse. The corpus is also relatively narrow, both in size and in scope, largely confined to architecture-related CSIs. Future research may therefore expand the range of CSIs considered, incorporate contextual dimensions into the analysis, and further consider how human translators and LLMs might be brought into productive collaboration in culturally sensitive translation.

DECLARATION OF THE USE OF AI

This study focuses on comparing human and ChatGPT-generated translations. Accordingly, the presence of ChatGPT-generated translation samples in the manuscript reflects the nature of the study rather than AI-generated writing. ChatGPT-4 is used exclusively to generate research data and support comparative analysis, with full human supervision. Specifically, it is employed to directly produce the ten AI-generated translation samples presented in Table 1. All outputs are retained in their original ChatGPT-generated form and used solely for comparison.

For language improvement, the first author consults ChatGPT for suggestions, but all content is manually reviewed and rewritten to maintain academic integrity and originality. Specifically, ChatGPT-5.2 is used throughout the manuscript solely for checking basic language elements, including grammar, spelling, punctuation, and stylistic clarity. No AI tools are used to develop the research design, and all core academic content is independently completed by the first author.

The first author takes full responsibility for the content of this manuscript and ensures that the use of AI tools complies with academic and publication ethics standards.

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Yixuan Li is currently a PhD candidate at the School of Languages, Literacies and Translation, Universiti Sains Malaysia. She specializes in translation studies, focusing on cultural translation, translation technology, and interdisciplinary studies.

Mohamed Abdou Moindjie is a polyglot. He is fluent in English, French, Arabic, and Comoran. He has advanced Knowledge of Chinese, Malay, German, Russian, Spanish, and Swahili. He is currently a Senior Lecturer of Translation Studies and English Language, School of Languages, Literacies, and Translation, Universiti Sains Malaysia.

Debbita Tan Ai Lin is Associate Professor at the School of Languages, Literacies and Translation, Universiti Sains Malaysia. She is keen on interdisciplinary research and her current areas of interest include language education, media discourse, and translation difficulties. For more details: <https://ppblt.usm.my/index.php/lecturer-profile/163-debbita-tan-dr>.