



## RESEARCH ARTICLE

## Translation of Cultural Specific Items in Hawking's A Brief History of Time: From the Big Bang to Black Holes

Xiaoping Zhang <sup>1\*</sup>, Hazlina Abdul Halim <sup>1</sup>, Ang Lay Hoon <sup>1</sup><sup>1</sup>Department of Foreign Languages, Faculty of Modern Languages and Communication, Universiti Putra Malaysia, Selangor, Malaysia**ARTICLE INFO**

Received: Nov 12, 2024

Accepted: Jan 24, 2025

**Keywords**

translation strategies

Stephen Hawking

Peter Newmark

**\*Corresponding Author:**

gs61468@student.upm.edu.my

**ABSTRACT**

Cultures influence people's living styles, living habits and thinking methods that shape their perception of the world and their values on the world and their lives. Each culture has its special items in transmitting its insights and values. Thus, different cultural practitioners count on their special items in their communication and cooperation with others. However, it is not easy to acquire and apply them in those practices, let alone translate them. Newmark (2010) noted that culture is one of the greatest obstacles in translation practices. Thus, translating those cultural specific items (CSIs) has become one of the most important concerns among translators who have undertaken the major tasks to employ an appropriate strategy to achieve this aim. As a step for this aim, this paper will identify cultural specific items (CSIs) in Stephen Hawking's science work A Brief History of Time: From the Big Bang to Black Hole (1988) translated into Chinese by Wu Zhongchao and Xu Mingxian (2007) and explore the appropriate strategy for the translation of the CSIs over there. This study will categorize them according to the comparison between the original version of this work and its Chinese translation and explore feasible translation strategies for this cultural translation based on Newmark's translation model. It is found from the analytical findings of this study that this model is suitable for the translation of the cultural specific items in this book. This will provide a new preference for the better Chinese translations of the CSIs in his other works.

### 1. INTRODUCTION

At the end of 20th century there has witnessed a Cultural Turn in the field of translation studies pertaining to the combination of cultural studies and translation studies. This cultural turn refers to the translation studies beyond the studies of the language itself in translation processes and translation practices. Especially, it emphasizes much on the influence and constraints of the original cultural elements in source language texts in the complete or partial process of specific translation on the production of their target language texts as well as the impact of translation practices on the culture transmitted in the translation of source language texts and the production of their target language texts. According to the studies of Nida (1998), the authentic relationship between language and culture is that "language and culture cannot exist without each other, for languages not only represent the elements of culture, they also serve to model culture (p.29)." Due to this interactive correlation between language and culture, translation studies expand its own researching scope from the translation of pure language information in source language texts to their profound cultural implications into their corresponding target language texts. In this case, the relevant studies on cultural specific items (CSIs) would expand the research scope of translation studies and adapt themselves to the developmental inclination of the cultural turn in translation studies to enable

target language readers to have a complete understanding of their source language texts much more profoundly. Historically, Aixelá (1996) is the first scholar to propose the term cultural specific items (CSIs) in the developmental history of translation studies. Aixelá (1996) elaborates that those that culture-specific items are “ those textually actualized items whose functions and connotations in a source text involve a translation problem in their transference to a target text, whenever this problem is a product of the non- existence of the referred item or of its different inter-textual status in the cultural system of the reader of the target text (p. 53 ).”

This has much to do with the increasing inevitability and indispensability of the translation practices and translation studies inseparable from the increasing use of English language in the production of 98.05% literatures around the world. Thus, it can be seen that English language has dominated almost all literatures of the world. According to Shapin (2015), English has already become the universal language in the world; almost 90% of the scientific literatures including research papers are written in English. Generally, those English scientific literatures have to be translated from English into other target languages to enable their target language scientists to have a good or even better understanding of the original insights can values carried in those source language texts. Hartmann and Mittelstrass (2000) emphasized that “science and culture are not opposite . More precisely, the essence of science is culture. Attempting to sever the connection between science and culture itself is a phenomenon of a decivilizing that is an expression of lack of culture (p.1).”

The emphasis on the role of culture in science as indicated above suggests that science and culture are deeply intertwined, and separating them intentionally would be detrimental to both. As a result, it is much wiser to connect them rather than disconnect them due to the unavoidable intersection between them at present and in the future. To reach this aim, it is much better for them to have a good understanding of the CSIs, their impact on the sufficient understanding of the cultural implications in those scientific literature and the great importance to translate those scientific source language texts into correlative target language texts. What matters much more is that that translating those CSIs exactly requires a thorough understanding of the cultural contexts in which they exist from more than one fold. Just as the way science is embedded in culture, it is also the same for the culture in science as their intertwinement whether organically or not will give rise to an increasing number of linguistic and cultural nuances.

To a great extent, this has brought translators a variety of known or unknown challenges in translating those scientific literature into their target languages because this involves not only the translation of those source languages into their target languages but also the source cultures into their target cultures. In this case, those translators have to be fully aware of the cultural contexts of those scientific literatures and the genuine implications conveyed in the practical production of those source language texts. Kastberg (2007) stressed academically and amiably “the importance of prioritizing cultural competence in technical translation. (p.104)” In line with this emphasis on the developmental priority to the cultural competence of translators in translating those technical texts, their cultural competence in translating those literatures are composed of their competence to translate the terminologies, references and concepts deeply rooted in the culture of those literatures that have been made the source language texts of their translation actions. In this sense, the adequate development of this kind of cultural competence will enable those translators to interpret and convey the profound and essential implications of CSIs accurately in the production of their target language texts. Therefore, the great importance for the acquisition and application of this competence in their translation activities, for without this kind of cultural competence, those ingenious nuances to be unfolded in their translation practices will be lost or misinterpreted.

To expound the translation of cultural specific items in *A Brief History of Time: From the Big Bang to Black Hole* (1988), this paper will probe those issues in a popular science book to deepen the understanding of the translation process of Wu Zhongchao and Xu Mingxian in their translating this scientific work. As one of the most influential works produced by the most outstanding theoretical physicist and the greatest contemporary scientist after Albert Einstein, it was figured out in the studies of McKie (2007) that this book was a bestseller and sold for more than 25 million copies. It was identified later in the studies of Hawking and Mlodinow (2007) that this book appeared on the bestseller list for 237 consecutive weeks and become an admirable spectacle in the entire history of international publication. Due to the rather strong passion to share with Chinese scientists the

scientific and cultural insights in this book, Zhongchao and Xu Mingxian (2007) translated it into Chinese and published with Hunan Science and Technology press in the same year.

It was not an accident for them to translate this work but based on his connection and communication with its author. As shown in the researching experiences of those translators, Wu went to Cambridge University for further studies and learned a lot from Hawking. As a matter of fact, he kept in touch with Hawking for many years. Hence, there is no doubt that he is the Chinese translator who is familiar with Hawking. In this sense, she has a profound understanding of Hawking's scientific studies. Besides his collaboration with Xu Mingxian in the translation of this book, he also translated solely Hawking's other popular science books due to his stoppage with Xu who was opposed to Hawking's scientific insights. Above all, Wu has never doubted those because of his profound understanding of Hawking and his works.

To explore the feasibility for the translation and transmission of the cultural implications of this book into Chinese, this paper will try to approach Newmarkan theoretical insights into cultural specific items (CSIs). As far as cultural specific items were concerned, it was well-known that Newmark (2010) proposed a model for the translation of CSIs despite its failure to be applied into translating scientific works extensively. On the ground of the high relevance between the translation of the cultural implications in this book and the elaboration in Newmarkan model in terms of the classification and translation of those cultural implications, this paper will make a discussion about specific categories of CSIs found in this book and analyze the translation procedure of CSIs to find out the strategies used in translating this book. Of course, it is known that this model is often used to enlighten translators in terms of their translation of literary works but seldom in the translation of scientific works. Driven by the strong curiosity about the scarcity of this application and the creativity for this exploration, the author will extend the framework of this model in this paper to explore the feasibility to translate the CSIs in popular science work as did in translating this book.

### **Cultural Specific Items (CSIs)**

Given the great importance to manifest and highlight the cultural implications in translation activities and translation experiences, it is quite crucial for the researchers to explain the concept of cultural specific items (CSIs) and the cultural elements encompasses in translating those texts. In the conceptual explorations and explorations of those implications, efforts have been made among scholars to provide their definitions and elaborations on the concept of culture.

First and foremost, Larson (1984) defined it as "a complex of beliefs, attitudes, values, and rules which a group of people share (p.431)." 12 years later, Aixelá (1996) pointed it clearly out that cultural asymmetry between two linguistic communities is necessarily reflected in the discourses of their members; with the potential opacity and inaccessibility this may involve in the target culture system (p.54). Based on profounder meditation on the genuine essence of this concept, Newmark (2001) mentioned that culture as the greatest obstacle in translation, at least in the process of the achievement of an accurate and decent translation (p.172).

Recently, scholars have shifted their researching focus from the issues of translating language to those of translating culture. Of course, translators are striving for this in their translation activities. To be specific, they are also trying to search for a better way to translate the CSIs in literary texts and articulate their cultural implications accurately and adequately. In the light of the practical importance of the concepts of CSIs, Baker (1992) places culture specific items as the commonest problem in translation practices (p.21). Inspired by the emphasis on this great importance, Aixelá (1996) defined culture specific items as "those textually actualized items whose functions and connotations in a source text involve a translation problem in their transference to a target text, whenever this problem is a product of the non-existence of the referred item or of its different intertextual status in the cultural system of the reader of the target text (p.58)." According to this definite elaboration, it can be seen that cultural specific items are based on the cultural diversity embedded in the production of source language texts and it is translators' great challenges and crucial missions to transmit their profound implications into their target languages in the process of producing their target language texts. It is also the case for the translation of the CSIs in Hawking's book as mentioned above.

### Cultural Specific Items (CSIs) in Translation Studies

Translation studies scholars have made great advancement having a good understanding of the profound conceptual implications of cultural specific items (CSIs) according to their critical examination and exploration of the CSIs in the translation of literary works. Alla (2015) noted that the translation of children's literature Harry Potter could be a daunting task because the styles, themes, fantastic elements of the novels were intertwined with the social reality and the linguistic taboos of their epochal contexts (p.1). On the one hand, some of them try to investigate the CSIs in this novel to highlight the descriptive and metaphorical role of its proper nouns in manifesting the rather rich and profound cultural implications of these novels. On the other hand, Shi (2013) emphasized much on the sanitization strategies employed translating this children literary work in mainland and Taiwan. On the comparison between the translation version of Harry Potter produced in the mainland and that in Taiwan, Shi (2013) definitely found that the sanitization strategy was employed much more frequently in mainland than in Taiwan. With a rather good look taken at the reason of this difference, it could be found that Taiwan translators enjoy much freedom in their actual manifestation of the profound implications of the CSIs in this novel in comparison with mainland translators' losses of the indispensable freedom they are supposed to enable themselves to have a quintessential implications of this novel in their translation practices. Similarly, Mussche and Willems (2010) focused on Arabic translation of this novel Harry Potter. To be specific, this has to be based on Hermans' (1988) ways of transferring those proper names and Kujamäki's (2004) procedures for those food names. Despite their inadequate awareness of the CSIs over there and the translation of them in producing their target language texts, they have analyzed the strong bewilderment in translating its characters' names and food names. Anyway, it has to be noted that they have illustrated the effect of neutralization strategy in translating it into Arabic language.

Unlike literary texts, there is another form of texts to be taken into consider cautiously and creatively in translation studies, namely, the scientific texts. In a literary sense, it is called science fiction because its contents and themes are directly related to science. Moreover, its writing style is highly mixed with the imaginations about the future of human beings. Kalliomaki (2007) defined "science fiction as a combination of science and literary translation and a science fiction is a work of imagination that falls into the category of literary texts with the characteristics of a scientific text." Tekalp and Tarakcioğlu (2019) conducted a study of translating the CSIs in this science fiction *The Hunger Games Trilogy*. They examined the specific translation of the allusive proper names and fictive CSIs systematically in this science fiction according to Baker's (2011) category and Vinay's and Darbelnet's (1995) translation procedure. According to their analytical exploration, it turns out to be evident that the conclusion they have drawn from those analyses is that according to Venuti (2004), foreignization is in a position to be considered as the tendency of the translator' choice in their translation actions. In the same vein, Jalaly and Pishkar (2012) concentrated on the cultural treatment of the CSIs in its Persian translations. They also confirmed that the superior strategy in translating the CSIs in science fiction from English into Persian is foreignization. In line with the research background of their studies, it is supposed to be noted evidently that their findings primarily come from the respective analysis of those two science fictions including *Journey to the Center of the Earth* (2007) and *Around the World in 80 Days* (2008). In reference to their relevance to translation studies, it is not difficult for readers and researchers to know that their researches of those two science fictions are based on Espindola's and Vasconcellos' (2006) category and Molina's and Albir's (2002) translation strategy. To be brief, Jalaly's and Pishkar's (2012) studies of the translation procedures in translation CSIs provide guidelines for Persian translators in their translating CSIs and producing their respective target language texts.

In addition to the field of translating the CSIs literary texts, the food dealt with in science books also contains a lot of CSIs which needs scholars to pay enough academic attention to and to focus more on in their analytical practices. Garzone (2017) noted that food was both the daily needs for the maintenance of the health of human beings and the continuation of their lives. In this sense, what were reflected in their translation criticism were not just the nutritious values of food, but also its cultural nourishment in terms of the values, culture, identities, ethnicities and religions as well as functions in it. In effects, it was those nourishments that act as quite crucial cultural components in the formation, transformation and reformation of the system of their cultural communication. To be

true, there are the translation studies scholars in the field of their focused researches on the CSIs in those science fictions to particularize the distinctive cultural qualities of those science fictions in contrast with those in literary texts. Farkhan et al (2020) exemplified their scholarships on the CSIs related to food in reference to their analyses of the subtitles in a cooking show indebted to their application of the theoretical insights of discourse analysis into their analytical practices. Based on the valuable theoretical enlightenments acquired from Pedersen's (2007 & 2017) translation strategy, Farkhan et al (2020) found that the non-existence of the source cultural foodstuff in the target culture in their translation studies did affect the use of strategies and the choice of their translation strategies. What was revealed clearly in their studies encompassed that point that the true existence of those cultural foodstuffs in source language texts was not the only factor that could determine their strategic selection in translating those CSIs in food. Tang and Malini (2021) concentrated their studies on the CSIs in the food listed on Chinese-English menu to clarify the cultural implications carried in this food. By employing the classification and translation strategy of CSIs in the studies of Newmark (2010), they tried to prove in their studies that the translation of a large number of the CSIs on the list of total dish names had to follow appropriate translation strategies in their translation processes. The translation strategies most frequently-used in their studies were transference and descriptive equivalence.

However much as has been done to the translation of the CSIs in literary texts, it can't change the fact that little academic attention has been paid to the translation of CSIs in popular science works. This is partly because the translation of science works has been marginalized or even neglected as a result of the academic dominance of the former and the dominant interest of translation studies scholars and translators in it. It was not until about 10 years ago that Karimnia (2015) investigated the linguistic manifestation of the cultural implications in scientific-technical texts in terms of terminological concepts, language form, syntax, pragmatics and text structure. After the analyses of the cultural information acquirable from those texts, the researcher revealed that cultural information was not exempt from the studies of those scientific and technical texts and the language used in producing those texts are characterized with distinctive cultural features. This study turned out to be an intellectual reminder for translation studies scholars and even translators. From then on, they began to shift their academic attention from linguistic translation and literary translation to cultural translation including their unconscious and unintentional continuous exploration of the issues pertaining to the CSIs in translating popular science work (Blažytė & Liubinienė, 2016), architecture term (Bagheridoust & Mahabad, 2016), and traditional Chinese material (Wang, 2021).

On the subject of transmitting the cultural implications popular science works into their corresponding target language texts, Blažytė and Liubinienė's (2016) focus on the exploration of translating the common expressions used to denote the CSIs in Martin Lindstrom's book *Brand Sense: Build Powerful Brands through Touch, Taste, Smell, Sight and Sound* (2005). Based on the categorization of Davies (2003) and the specific analysis of translation strategy, it was revealed in this study that the translator's inconsistency in using strategies to treat homogeneous cultural references and the translation need to be met in their translation criticism had to be improved timely according to the academic pace to be kept in with the overall international developmental inclination of translation studies. On the standpoint of the translation of the architecture terminology in those works, the comparison between the quality and frequency of the translation strategies used in translators' translating practices to highlight the cultural implications in the writer's original popular science works was made by referring to Van Doorslaer's (2007) framework. His findings indicated that both the translator and writer of this book were successful in finding appropriate cultural equivalents between the translation of the former's source language text and the production of the latter's target language text. In a similar sense, Wang (2021) researched on the English translation of the cultural information carried in traditional Chinese handicraft materials in spite of the failure to referring this rich information definitely from the perspective of CSIs. In the comparison made between the Chinese version and English version of *Tian Gong Kai Wu* (1637), Wang found that this book was characterized with the rich outstanding humanistic implications notwithstanding the inadequate awareness of the objective and essential existence of the CSIs in those Chinese handicraft materials and the great necessity to translate them in the production of its target language texts in English. Based on Newmark's model regarding the semantic and communicative translation theory proposed for the translation of the CSIs in source language texts, the translation methods of the CSIs

in the studies of E-tu Zen (1996), Li Ch'iao-ping (1980), Wang Yijing (2011) et al were analyzed and summarized in this study respectively. Wang (2021) pointed out that the different methods employed by translators in producing their source language texts were primarily based on the degree of the CSIs carried in the cultural-loaded words.

Despite the scholarly contributions made and mentioned above in the translation of the CSIs in either literary works or science fictions, the methodological and strategic gaps remained unfilled incompletely in the specific, special and systematic exploration of the translation of the CSIs in popular science works. Thus, this study will aim to analyze the translation methods and strategies used to explore the Chinese translation of the CSIs in Hawking's popular science work *A Brief History of Time: From the Big Bang to Black Hole* (1988) according to the practical translation procedures in producing its target language texts in Chinese.

## THEORETICAL FRAMEWORK

On the ground of the issues to be addressed in the manifestation of the implications in translating popular science works, the current study will mainly be exemplified in the translation of the CSIs in Hawking's popular science work: *A Brief History of Time: From the Big Bang to Black Hole* (1988). To deal with the unaddressed problems in the translation of the CSIs in this work, this study will base its theoretical framework on the theoretical model proposed in the studies of Newmark (2010) pertaining to the practical classification and application of the CSIs in translation process.

### The Categorization of Cultural Specific Items (CSIs)

Newmark presented his first classification of CSIs in 1988 and the final one in 2010. According to the cultural issues this popular science work is culturally characterized with, this study will apply the latter into the data collection and data analyses of this study from the English source language text in reference to what was demonstrated in Table 1 (p. 174-177).

**Table 1 Categorization of Cultural Specific Items (Newmark, 2010)**

Category	Examples
Ecology	Geographical issues
Public life	Politics, governmental patterns
Social life	Economy, occupations, health or education systems
Personal life	Food, clothes, transport
Customs and pursuits	Body language, sports, idioms
Private passions	Religious, artistic, music, poetry, church, administrative, political, social organizations, poetry societies

### Translation Strategies for Cultural Specific Items

This study will take Newmark's model on CSIs as its main analytical framework to analyze the strategies used to translate CSIs in producing the target language text of this popular science book. Newmark (2010) demonstrated in his study two types of translation procedures namely basic cultural translation procedures and marginal translation procedures (p.176-178) in connection with the respective definitions by Newmark (1998 & 2010). The former includes transference, cultural equivalent, descriptive equivalent, componential analysis and transonym; while the latter synonym, literal translation, modulation, paraphrase and cultural footnotes. (as shown in table 2 )

**Table 2 Translation Strategies of Cultural Specific Items by Newmark (1998, 2010)**

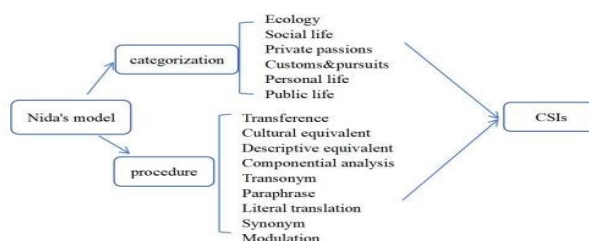
Strategy	Definition
Transference	It is a translation that the word has already been adopted into the target language.
Cultural equivalent	It is "an approximate translation where a source language cultural word is translated by a target language cultural

	word” .
Descriptive equivalent	It uses the generic term accompanied by its basic distinctive and a recursive number of supplementary components.
Componential analysis	It is defined as comparing a source language word with a word from target language which has a similar meaning, but is not an obvious one-to-one equivalent, by demonstrating first their common and then their different sense components.
Transonym	It is restricted to converting (rather than translating) single names or proper nouns from one language into another language.
Literal translation	The literal translation of common collocations, name of organizations, the components of compounds and perhaps phrases, which is also known as calque or loan translation.
Synonym	It is a near target language equivalent to a source language in a context, where a precise equivalent may not exist.
Modulation	The translators try to create the message of the source language in the target language in conformity with the current norms of the target language. In modulation the source language and the target language may be different in terms of perspective.
Paraphrase	It is normally a matter of providing supplementary cultural information.
Cultural footnotes	It is additional information in a translation. The additional information is about cultural issues.

## METHODS (FOR RESEARCH ARTICLES WITH QUESTIONNAIRE APPLICATIONS)

### Research Design

The research design of this paper refers to the conceptual framework of it and it acts as the research methodology and techniques to conduct and complete this study. Burns and Grove (2003) defined it as a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings (p.195).” In essence, this study is a non-experimental descriptive study and it employs a qualitative research design in both data collection and data analysis. Its data come from the textual data rather than its numerical data in the English and Chinese versions of the popular science book to be analyzed in this study. The research issues in this study as illustrated figure one are the complicated and profound analyses of the translation strategies used in translating the CSIs in this popular science book.



**Figure 1 Research Framework.**  
**Source: Newmark (2010)**

## Data Collection

Sandelowski (2000) noted that qualitative data collection encompasses the observations of targeted event and the examination of documents and artifacts. Moreover, Ary et al (2010) indicated that the samples in qualitative research are representative rather than random. Thus, this study will select the samples about the research issues that govern its research topic. To be specific, the data will be taken from the Chinese version and English version of this popular science book *A Brief History of Time: From the Big Bang to Black Hole* (1988). This study will purposively select six categories of the analytical samples from the two versions of this book according to the CSIs dealt with in the studies of Peter Newmark (2010).

## Data Analysis

Data analysis is a mechanism used for the reduction and organization of the data that are inclined to produce meanings to justify the findings to be required in the interpretation of the researcher (Burns & Grove 2003:479). This bears a great similarity with what will be done in this study, for the data taken from the source text will be compared with that from its target language text to identify the translation strategies employed by the two translators in producing their target language text. In this case, this will focus much more on the language habits and spiritual style between two cultures as embedded in its source language text and target language text. The classification of the CSIs in Newmarkan model (2010) will be applied into the analytical practices of this study in six folds. The respective analyses of the selected samples to be taken from the two versions of this book will be to examine feasibility for the practical application of seven translation strategies taken from Newmarkan model (2010) into the sample analysis of this study in terms of transference, descriptive equivalent, transonym, cultural equivalent, componential analysis, paraphrase and literal translation.

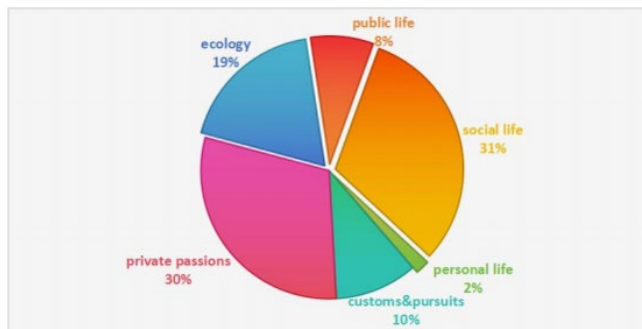
## RESULTS AND DISCUSSION

### Categorization of Cultural Specific Items

Data analysis is a mechanism frequently for reducing and organizing data to produce findings that require interpretation by the researcher (Burns & Grove 2003:479). The data taken from the source language text i.e. Hawking's popular science book will be compared comprehensively and profoundly with that taken from the target language text produced in China by those two Chinese translators Wu Zhongchao and Xu Mingxian to identify the specific and special translation strategies employed in the production of their translated texts in 2007. In this comparative process, the analyses will focus on the language habits and spiritual style between two different cultures. Then, the classification of the CSIs according to Newmarkan model (2010) will be applied into the specific analytical process and run through the entire analytical procedures in seven folds. The analyses of the selected samples will be made to examine the practical possibility for the specific application of those seven translation strategies. This will be exemplified specifically in the examination of the following 7 primary translation strategies including transference, descriptive equivalent, transonym, cultural equivalent, componential analysis, paraphrase and literal translation in view of what has been proposed in Newmarkan model.

In this study, the total number of those 7 strategies exemplified in translating the 163 CSIs carried in this book is allocated into the six categories just as what to be shown in Figure 2 apparently and intuitively according to the respective proportion of each category. Each category makes up its specific percentage of the total number of the CSIs available in this book. Grounded on the data displayed in the pie chart in this figure, it is not difficult to see that the samples of the CSIs regarding the social life category in this book make up the highest proportions (31%). The percentage for the category of private passions reaches 30% and ranks the second higher among them. The percentage concerning the ecology category is 19%, ranking the third in this proportion list. In contrastive sense, those pertaining to the category of personal life make up 2%, ranking the lowest of it. (As can be seen in Figure 2).





**Figure 2 The Proportion of the CSI of Each Category in Source Text**

**Translation Strategies of Cultural Specific Items**

As stated in the classification of the strategies CSIs feasible for the translation of the cultural information and implication carried in source language text, Newmark (2010) divided the strategies regarding the translation of CSIs into two kinds: basic strategy and marginal strategy. In the case of the former, Newmark (2010) illustrated 5 specific translation strategies like transference, transonym, cultural equivalent, descriptive equivalent and componential analysis to concretize the profound and particular implications in source language texts and transmit them into target language texts appropriately and adequately in the practical and professional production of target language texts. In the light of the latter, Newmark (2010) also put forward 5 specific strategies, namely, literal translation, synonymy, modulation, paraphrase and footnotes. Eight of those 10 translation strategies in translating those CSIs will be exemplified below one after another in relation to the categorical implications of the CSIs in propounded in Newmarkan categorical model.

**Transference**

In spite of the subtitle given above, it has to be noted that the transference referred to in this study does not carry the psychological implication. In other words, this study will take its contextual meaning from the perspective of not psychology but translatology. In view of Newmarkan categorical model, it refers to the action of acquiring the acoustic qualities of the word in source language and finding its acoustic equivalents in target language and finally taking those equivalents as its translation in producing target language texts. The application of this translation strategy can be seen in Example 1 to be given below.

**Example 1:**

ST	<b>For instance, playing Ping-Pong on the tram, one would find that the ball obeyed Newton's laws just like a ball on a table by the track.(Hawking, 1988,p. 20)</b>
TT	例如，在有轨电车上打乒乓球，我们将会发现，和在铁轨旁一张台桌上的球一样，这个乒乓球依旧服从牛顿定律，因此我们无法判断究竟是火车还是地球在运动。(Hawking, tans. by Wu & Xu, 2007, p.28)
BT	For example, when playing <b>table tennis</b> on the tram, we will find that the table tennis like the ball on a table next to the railway track still obeys Newton's laws. So we cannot tell whether the train or the earth is moving.

As can be seen from E.g.1, ping-pong is also known as table tennis in source language and it refers to a kind of racket sport. Etymologically, the word ping-pong was originated from Victorian England and at first was played by the Victorian upper-class. As the name of a sport, ping-pong is an onomatopoeic word that comes from the sound produced when a plastic ball is struck on the table. However, the word ping-pong was often used in the informal occasion; while table tennis in formal occasion. At the beginning of the 20th century, this sport began to flourish in Europe and Asia. Now, ping-pong sport has already become Chinese national sport.

In line with what was indicated in this example in translating the cultural complication of this CSI in Chinese language, it can be known that the translators Wu & Xu has used a similar onomatopoeic

Chinese word 乒乓 (ping pang) to translate it into Chinese while producing their translated text. In fact, both English word ping-pong and table tennis can be translated into 乒乓球 (ping pang ball) in modern Chinese language. Moreover, there is not a single difference between them either semantic or pragmatic implications.

### Descriptive Equivalent

In Newmark model proposed for the translation of the CSIs, this translation strategy is adopted to transmit into target language the cultural implications in source language texts when they are unavailable in target language. In this case, what translators cannot but do is to give a description of them according to their essential and quintessential traits that bear similarity with those in target language.

In view of what has been exemplified in Example 2, tram is a type of urban public transportation that is usually driven by electric motors and relies on fixed tramway tracks. However, there is no similar equivalent in Chinese language before the translation of this science book. Actually speaking, this word tram is mainly used in England while trolley and streetcar in Canada and United States. Historically, this public transportation originated in Europe in the early nineteenth century. Although the earliest tram in China appeared in Beijing in the Qing Dynasty, tram failed to be built in China at that time due to the technological inadequateness. In the production of the Chinese version of this book, Wu & Xu (2007) had to address the lexical gaps between English language and Chinese language.

#### Example 2:

ST	<b>For example, if one sets aside for a moment the rotation of the earth and its orbit round the sun, one could say that the earth was at rest and that a tram on it was traveling east at thirty miles per hour or that the tram was at rest and the earth was moving west at thirty miles per hour. (Hawking, 1988,P. 27)</b>
TT	例如，如果我们暂时忽略地球的自传和它围绕太阳的公转，认为地球是静止的，而有一辆有轨电车在它上面以每小时30 英里的速度向东运动，或者我们也可以认为，有轨电车是静止的，而地球以每小时30 英里的速度向西运动。(Hawking, tans. by Wu&Xu,2007,p. 28)
BT	For example, if we ignore for a moment the rotation of the Earth and its orbit around the Sun. To think that the Earth is stationary and <b>a bus which is on track with electricity</b> moves east on at 30 miles an hour, or we could think that the trolley is stationary, but the Earth is moving west at 30 <b>English meters</b> per hour.

Based on the comparison between this word tram and the Newmark model in translating CSI in source language texts, it has been found that they have translated it into 有轨电车 (You Gui Dian Che) in Chinese. To be honest, this translation failed to be equivalent with the cultural implications in source language texts but the Newmark descriptive equivalent translation strategy has been applied in their translation process to present its essential qualities in terms of the role of the power in it and the mode of its operation. In this translation, the Chinese characters 有轨 (You Gui) refer to the track of a tram while those characters 电车 (Dian Che) the electric power needed to operate it. In accordance with the combination of those two qualities of tram, it can be concluded that the Chinese translation of tram as 有轨电车 has been imprinted on the two essential qualities of this term to the effect that the bus is operated on track and driven by electric power as shown in Example 2.

In the same paragraph as shown in Example 2, Newmark descriptive equivalent strategy is also used to translate the noun "mile" in the production of target language text. The word mile is a unit of length often used in the United Kingdom and its former colonies and Commonwealth countries. Similarly, the Chinese characters 英里 (Ying Li) in its translation is a descriptive equivalent used to indicate the range of similar length of this unit. According to English measurements, one mile is equivalent to 1609.344 meters.

In line with the strategic arrangement made in Example 2, a bracket is suggested to be added to explain the length of this unit descriptively. This is a good evidence for the application of this translation strategy in translating those CSIs in this part. It will allow target language readers to identify the speed of tram clearly and to have a good understanding of its cultural implications in the source text. Based on the comprehensive convenience of this model, it is understandable that the suggested translation in Chinese of that sentence would be 有一辆有轨电车在它上面以每小时 30 英里 (1 英里 = 1609.3 米) 的速度向东运动, meaning that a bus which is on track with electricity on it moving eastward at a speed of 30 miles per hour (1 mile = 1609.3 meters).

### Cultural Equivalent

In relation to the overall representation of the cultural essence of the CSIs in source language texts, it has been suggested in Newmark's model that a cultural equivalent needs to be created to transmit this cultural essence in target language texts in the process of producing translated texts. Remarkable evidences as essential responses to the cultural turn of translation studies are found to be available as to be presented below in Example 3 in translating this source language text.

#### Example 3

ST	<b>When most people, believed in an essentially static and unchanging universe, the question of whether or not it had a beginning was really one of metaphysics or theology. (Hawking, 1988, p. 10)</b>
TT	当时大多数人深信一个本质上静止不变的宇宙, 关于它有无开端的问题, 实在是一个形而上学或神学的问题。Hawking, tans. by Wu & Xu, 2007, p. 13)
BT	At that time, most people were convinced of an essentially static universe, and the question of whether it had a beginning was really <b>non-physical</b> or theological issue.

According to what has been demonstrated in Example 3, the word metaphysics in this example originated from the philosophical elaboration of ancient Greek philosopher Aristotle. In reference to the studies of a Greek philosopher named Andronicus, all Aristotelian works were classified into two categories including the studies of physical things and those of non-physical things. The former were compiled together and named as Physics and the latter one placed at the end of Physics with the title of Metaphysics.

In other words, the original meaning of the word metaphysics is concerned with non-physical issues. In contrast, the Chinese translation of this term has been popularly accepted as 形而上学/形而上 (Xing Er Shang Xue / Xing Er Shang), with the meaning that the problems cannot be answered directly through perception. In view of its similar cultural equivalent that comes from traditional Chinese cultural and philosophical canon titled Yi Jing or I Ching as presented below: “形而上者谓之道 (dao), 形而下者谓之器 (qi)” to the effect that physical things are insightful wisdoms while non-physical things skills or techniques. To this extent, what is carried in this Chinese statement is that 道 (dao) refers to non-physical and mental things while 器 (qi) physical and material ones. In connection with the cultural implications carried in Example 3, it can be felt that the meaning of this traditional Chinese cultural and philosophical statement bears a lot similarity to that concealed in Andronicus' classification. A good look taken at this similarity, it is easy for Chinese readers to get the meaning carried in metaphysics because it has shared with its Chinese equivalents the cultural implications instilled in the source language texts due to their appropriate and adequate transmission of those cultural implications into their target language texts in specific translation process.

### Componential Analysis

As has been suggested in Newmark's model, the complete translation of the cultural essence of the CSIs in source language texts also needs to take into account the componential construction of those source language texts. In this case, the successful discovery of a cultural equivalent in target language

texts invites a profound analysis of the rich unnoticeable and untraceable implications of the source language texts and a comparison to be made between the components of those source language texts and those of target language texts. The creative transmission or transplantation of the componential entanglements of the former into those of the latter is concretized or crystallized in the production of translated texts as shown in the figuration of the cultural essence in Example 4.

#### Example 4

ST	It is said that Galileo demonstrated that Aristotle's belief was false by dropping weights from the <b>leaning tower of Pisa</b> . (Hawking, 1988, p. 17)
TT	据说，伽利略在 <b>比萨斜塔</b> 上让重物自然下落，并从而证明了亚里士多德的观念是错误的。(Hawking, trans. By Wu & Xu, 2007, p.22)
BT	It is said that Galileo have proved Aristotle is wrong by causing a heavy thing to fall from <b>the leaning Pisa</b> tower naturally.

As illustrated in Example 4 in terms of the translation of the Leaning Tower of Pisa, the production of the translated text in the image of this popular science book is characterized with the profound meditation on the componential arrangements of source language texts and their combinative equivalents in the componential construction of their target language texts.

Historically and culturally, the Leaning Tower of Pisa is the campanile or freestanding bell tower of Pisa Cathedral in Italy. As shown in historical records, this tower was constructed in the 12th century and it began to lean because of the soft ground. It was observed that the inclination reached 5.5 degrees in 1990 and it decreased to 3.97 degrees between 1993 and 2001. It has become famous for a long time because of the Galileo's experiment.

As indicated in componential particularity of this example, the two translators of this popular science book has used componential analysis strategy to divide it into two parts: cultural part and common part according to the unique name of this tower. Since Pisa is the name of tower, they have translated it into 比萨 (Bi Sa) to preserve the similar pronunciation of the name. The leaning in this name "Leaning tower" is an adjective used to describe the visual feature of this tower. To preserve the visual vividness and grandiosity of this tower, those two translators have converted this name into 斜塔 (Xie Ta) in Chinese. In relation to the componential analysis proposed in Newmarkan model, this strategy has been used in the translation of the name of tower. This shows not only the name of this tower and also its feature.

#### Transonym

In relevance to Newmarkan elaboration on this translation strategy, it refers to the strategic transformation in acquiring and articulating the cultural essence of the CSIs in source language texts. In view of Newmarkan model, a cultural equivalent is unavailable in target language to be used to transmit the genuine cultural essence of those source language texts into their target language texts but they can transform it into similar terms in producing translated texts as long as those terms carry their structural and semantic implications. Remarkable evidences listed in Example 5 will be presented below to show the feasible application of this translation strategy in translating this popular science book.

#### Example 5

ST	<b>Of course, some people would claim that sightings of UFOs are evidence that we are being visited wither by aliens or by people from the future. (Hawking, 1988,p 182)</b>
TT	当然，有些人会宣称，目睹 <b>UFO</b> 就是要么外星人，要么来自未来的人们来访我们的证据。(Hawking, tans. by Wu & Xu, 2007, p. 206)
BT	Of course, some people will claim that <b>UFO</b> sightings are evidence that we

	are either being visited by aliens or by people from the future.
--	--

It is clear in Example 5 that transonym has been used in the production of the translated text of this popular science work by Stephan Hawking according to the analytical sample exemplified in the translation of this term UFO. According to the research and review of literatures on this issue, it is found that it is hard or even impossible for translators to find an equivalent of this term in target language. In this case, most translation strategies won't work in translating this term. Its translators have to turn to transonym by using a transferred synonym to replace it in their translated text.

On the one hand, UFO is the abbreviation of Unidentified Flying Object in source language. On the other hand, it carries the same literal implication with this Chinese phrase 不明飞行物 (Bu Ming Fei Xing Wu, meaning the unknown flying object in English). Those translators try to capture its literal translation in Chinese and maintain the structural or formulaic compatibility between this Chinese phrase and its English translation due to possibility to abbreviate also as UFO.

As a matter of fact, they have already acquired the implication of UFO that refers to objects of unknown origin and nature and its inclination of floating and flying in the sky. Related to the semantic and structural similarity between UFO and this Chinese phrase, those two translators Wu & Xu finally use transonym strategy to preserve the same English writing in their translation of UFO. In spite of their incomplete understanding of the original implication of UFO in Chinese language, this translation has made it possible for Chinese readers to be quite familiar to it and accept it as a proper noun to signify the unknown flying object.

What matters much more, the selection of this Chinese phrase as the Chinese translation of this term UFO hasn't made it become an obstacle for Chinese readers to have a good understanding of its cultural implication semantically and structurally.

### Literal Translation

In combination with the practical difficulties for translators to have a good access to the cultural essence of the CSIs in source language texts, it has been propounded in Newmark's model that a cultural equivalent under the guidance of literal translation can be created to transplant this cultural essence into target language texts they have to produce in their translation process. What is presented below in E.g. 6 are the crucial evidences available in source language text and their equivalents in target language texts.

#### Example 6

ST	<b>Nevertheless, Einstein never accepted that the universe was governed by chance; his feelings were summed up in his famous statement, 'God does not play dice.'</b> (Hawking, 1988,p. 64)
TT	即使如此，他也从不接受宇宙受偶然性控制的观点；他的情绪可以借用他著名的声明来表达：“上帝不掷骰子。”（Hawking, tans. by Wu & Xu, 2007, p.73）
BT	Even so, he never accepted the idea that the universe was governed by chance; his sentiment was best expressed in his famous statement: <b>"God does not throw dice."</b>

As exemplified in Example 6, the translation of this sentence "God doesn't play dice" is characterized with the distinctive imprints of translators' application of translating it into Chinese to show more concern for its superficial implication when it is impossible for them to get a full access to its profound implication in producing their translated text.

Originally, this sentence "God doesn't play dice" is a quote by theoretical physicist Albert Einstein illuminated from the profound rumination of an argument regarding the specifics of Quantum Mechanics. According to this argument, there are a collection of intellectual views about the meaning of quantum mechanics when it was discovered that the quantum world has many strange properties

that are different from the classical macroscopic world. This has been indicated in its Copenhagen interpretation regarding the uncertainty principle.

However, Einstein is completely opposed to this argument and used this sentence as an argument for his elaboration and justification. In fact, Einstein believed that everything in the world has its rule. According to him, the laws of the world are not determined by dice but the laws of everything in the world. Those rules are supposed to be the objective realities of the world and they are not subjected to the will of human.

Thus, it can be seen from the translation of this sentence in E.g. 6 that the Chinese version 骰子 (dice) represents randomness and uncertainty and its final inclination and location are determined not by the rules or the laws of the world but by those who throw it. For the part of Chinese readers, they know very well what 骰子 (dice) represent. The literal translation strategies applied in translating this sentence has made it much easier for them to have a good understanding of the genuine implication carried in Einsteinian argument.

On the whole, the literal translation used in translating “God does not throw dice” as “上帝不会掷骰子” in Chinese not only restores the original meaning hidden behind it but also preserves this Einsteinian argumentative and narrative style.

### Paraphrase

In the process of addressing the difficulty translators have in translating the CSIs in source language texts, it is suggested in the theoretical enlightenment of Newmark model that when a cultural equivalent is impossible to be created to transmit this cultural essence in target language texts in the production of their translated texts, they can turn to paraphrase and take it as the translation strategy for them to capture the cultural essence of the CSIs in source language texts. This has been demonstrated below according to the remarkable evidences provided in Example 7.

#### Example 7

ST	<b>This difference in the forces would stretch our astronaut out like spaghetti or tear him apart before the star had contracted to the critical radius at which the event horizon formed! (Hawking, 1988, p. 99)</b>
TT	在恒星还未收缩到临界半径而形成事件视界之前，这力的差别就足以将我们的航天员拉成像意大利面条那样，甚至将他拉断！(Hawking, tans. by Wu & Xu, 2007, p. 113)
BT	Before the star shrinks to the critical radius that forms an event horizon, the difference in force is enough to stretch our astronaut like <b>Italian noodle</b> , or even break him!

According to what has been exemplified in Example 7 in terms of the translating of the word spaghetti in source language text, it can be seen evidently that spaghetti is a kind of staple food and often known to all readers as a famous Italian cuisine. In association with the categorical elaboration in Newmark model, it is not difficult for translators to know that it is listed in the category of pasta although there are many kinds of pasta including bucatini, fusilli, fettuccine, lasagne, and macaroni. To be specific, it is a form of noodle, which is long, thin and solid. Among these various kinds of pasta, spaghetti is one of the most well-known. It becomes a cultural symbol of Italy.

In the production of the target language text according to this popular science book, those two Chinese translators Wu & Xu choose to use paraphrase as their translation strategy to explain to Chinese readers what spaghetti is. For the part of Chinese readers, the Chinese translation of spaghetti as 意大利面 (Yi Da Li Mian, meaning Italian noodle) shows them not only the variety of this food but also origin of its producing place. In some cases, Chinese readers are inclined to abbreviate this Chinese translation of 意大利面 as 意面 (Yi Mian, meaning Italian noodle). In most cases, both are used and accepted in their daily lives.

Indebted to the appropriate application of this translation strategy into the translation of this food, this translation enables Chinese readers to have a much more comprehensive understanding of the unfamiliar food. The good impact of this translation strategy on the practical understandability of this paraphrased translation shown in this example has been further justified in the source text when spaghetti is used to describe the shape of astronaut due to its structural unintelligibility.

## CONCLUSION

Based on the comprehensive analyses of the data taken from the Chinese version and English versions of this popular science book titled *A Brief History of Time: From the Big Bang to Black Hole* (1988) and the theoretical illuminations carried in the application and translation of the seven categories of the CSIs proposed in Newmarkan model, it can be seen that the Chinese translation of the CSIs in this popular science work has provided a new researching perspective in the field of cultural translation studies. Although different translators employ different strategies in their translation of those CSIs, Newmarkan model has turned out to be one of the most important categorizations and cultural translation procedures.

In the comparison made between the original version and the translated version of this book, it has been indicated in the analytical results that although the translation of the CSIs in the domains of social life and private passions occurred more frequently than those in other fields, the comparative analysis of the translation strategies used in translating the analytical samples chosen in this study has shown that the employment of the seven translation strategies postulated in Newmarkan model has provided a strong reference for the translation of the CSIs in popular science books because those two translators Wu Zhongchao & Xu Mingxian have benefited a lot from their application of those translation strategies throughout their cultural translation procedures.

Of course, it has also been revealed in the results that Newmarkan model turns out to be quite applicable for the translation of the CSIs in this popular science work. To sum up, the Chinese translation of the CSIs found in this popular science text has shown a strong possibility for the practical and professional application of the translation strategies into translators' translation practices according to the feasible instructions of Newmarkan model in translating CSIs and the illuminations acquirable from it.

To this extent, this study will contribute a lot to the achievement of a further understanding of the importance of using the translation strategies propounded in Newmarkan model to translate the CSIs in this popular science work and the rest of those works. In a word, it is hoped that the findings of this study will provide much more new insights for the better translation of the CSIs in popular science works in the future translation practices and translation activities.

## REFERENCES

- Alla, A.(2015). *A comparative analysis of culture specific items in Albanian translation of Harry Potter novels*. The 4<sup>th</sup> International Multidisciplinary Conference on Integrating Science in New Global Challenges, Dubrovnik, Croatia.
- Aixelá, J.F. (1996). Culture-specific items in translation. In R. Alvarez, and C. A. Vidal (Eds.), *Translation, power, subversion*(pp.52-78). Multilingual Matters.
- Ary, D., Jacobs, L. C., & Sorensen, C. K.(2010). *Introduction to Research in Education* (eighth edition).Cengage Learning.
- Baker, M. (1992). *In Other Words: A Course Book on Translation*. London: Routledge.
- Bagheridoust, E., & Mahabad, Z.M. (2017). Translation of Culture Specific Items:A Case Study of Persian Architecture Terminology. *International Journal of Applied Linguistics and English Literature*, 6, 46-55. 10.7575/aiac.ijalel.v.6n.2p.46
- Burns,N., & Grove,S.(2003). *Understanding Nursing Research 3rd edition*. WB Saunders Company.
- Blažytė,D., & Liubinienė,V.(2016). *Culture-Specific Items (CSI) and their Translation Strategies in Martin Lindstrom's Brand Sense*. <https://doi.org/10.5755/j01.sal.0.29.16661>
- Mussche, E., & Willems, K.(2010). *Fred or farīd, bacon or bayḍun ('egg')? Proper Names and Cultural-specific Items in the Arabic Translation of Harry Potter*. <https://doi.org/10.7202/045066ar>
- Farkhan, M., &Naimah,L.U., & Suriadi,M.A.(2020). *Translation Strategies of Food-Related Culture*

*Specific Items in Indonesian Subtitle of Netflix Series The Final Table*. 10.

15408/insaniyat.v4i2.14668

- Garzone , G.(2017). Food,culture, language and translation. *Journal of Multicultural Discourses*, 12(3),214-221. <https://doi.org/10.1080/17447143.2017.1364255>
- Jalaly ,F., & Pishkar,K.(2012).*A Study of Domestication and Foreignization Strategies of Cultural-Specific Items in Translation of Science Fiction Literature*.  
<https://doi.org/10.13140/RG.2.2.14936.78080>.
- Kalliomaki, H.(2007).*Translating Fictitious Science: A Case Studying on the Translation Process of Two Short Stories by Isaac Asimov*(Master's thesis). Toukokuu: University of Jyvaskyla.
- Karimnia, A. (2015).Investigating Translation of Cultural Elements in Scientific-Technical Texts. *Journal of Applied Linguistics and Language Research*, 2, 28-38.
- Larson, M.(1984).*Meaning-Based Translation: A Guide to Cross-Language Equivalence*. University Press of America.
- Mills, A. J., Durepos, G., & Wiebe, E. (2010).*Encyclopedia of Case Study research*. SAGE.
- Pedersen, J.(2011).*Subtitling Norms for Television: An exploration focussing on extra linguistic cultural*. John Benjamins Publishing.
- Sandelowski, M. (2000). Focus on Research Methods. Whatever Happened to Qualitative Description? *Research in Nursing & Health*,23, 334-340.[https://doi.org/10.1002/1098-240X\(200008\)23:4<334::AID-NUR9>3.0.CO;2-G](https://doi.org/10.1002/1098-240X(200008)23:4<334::AID-NUR9>3.0.CO;2-G)
- Tekalp, S.,& Tarakcioğlu, A. Ö.(2019). Translation of fictive culture-specific items in The Hunger Games trilogy. *RumeliDE Dil Ve Edebiyat Araştırmaları Dergisi*,285-296.<https://doi.org/10.29000/rumelide.606159>
- Wang, Q.(2021).*A Study of the English Translation of Traditional Chinese Material Culture-Specific Items in Tian Gong Kai Wu*.(Master's thesis).Dalian Maritime University
- Yingmin, T.,&Malini, N. L. N. S. (2021). Translation strategies applied in culinary culture-specific items. *The International Journal of Language and Cultural(TIJOLAC)*, 3(2), 18–28. Retrieved from <https://www.growingscholar.org/journal/index.php/TIJOLAC/article/view/128>