

ARTICLE

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

Xiaoping Zhang ^{*}, Hazlina Abdul Halim , Lay Hoon Ang 

Department of Foreign Languages, Faculty of Modern Languages and Communication, Universiti Putra Malaysia, Serdang 43400, Malaysia

ABSTRACT

Cultures influence people's way of life, for instance, living style, thinking method, or perception of the world and values. Each culture has its special items in transmitting its insights and values. Similarly, different cultures have their own features in communication and expression. Newmark (2010) noted that culture is one of the greatest obstacles to translation; thus, the translation of cultural issues is one of the most important concerns among translators, with the major task for translators being to employ an appropriate strategy in translating culture-specific items (CSIs). To a translator, the important thing is not only the translation skills, but also the cultural connotation. This study determines culture-specific items (CSIs) from English *A Brief History of Time* (1988) by Stephen Hawking to the Chinese version *Shíjiān Jiǎnshǐ* (时间简史) translated by Wu Zhongchao and Xu Mingxian (2010). On the grounds of Newmark's (2010) model, this research categorizes culture-specific items (CSIs) and examines cultural translation procedures. The findings present that a number of culture-specific items (CSIs) are found, and Newmark's (2010) model is suitable for the translation of culture-specific items (CSIs) in Hawking's translated popular science work. This study highlights that translation is not an isolated activity; it interacts and binds to culture. This research provides new and valuable insights into a better understanding of the translation of culture-specific items (CSIs) in popular science work and expands the field of translation studies.

Keywords: Culture-Specific Items (CSIs); Translation Strategies; Newmark (2010); Popular Science Work

*CORRESPONDING AUTHOR:

Xiaoping Zhang, Department of Foreign Languages, Faculty of Modern Languages and Communication, Universiti Putra Malaysia, Serdang 43400, Malaysia; Email: 1476711868@qq.com

ARTICLE INFO

Received: 28 June 2025 | Revised: 3 July 2025 | Accepted: 22 July 2025 | Published Online: 28 September 2025
DOI: <https://doi.org/10.30564/fls.v7i10.10781>

CITATION

Zhang, X., Halim, H.A., Ang, L.H., 2025. Translation of Culture-Specific Items in Hawking's *A Brief History of Time*: From the Big Bang to Black Holes. *Forum for Linguistic Studies*. 7(10): 746 – 756. DOI: <https://doi.org/10.30564/fls.v7i10.10781>

COPYRIGHT

Copyright © 2025 by the author(s). Published by Bilingual Publishing Group. This is an open access article under the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License (<https://creativecommons.org/licenses/by-nc/4.0/>).

1. Introduction

The end of 20th century has witnessed Cultural Turn, which is the combination of culture and translation study. Cultural Turn refers to translation beyond the language itself, and it especially emphasizes the influence and constraints of the target language and original cultural elements in the process of translation, as well as the impact of translation on culture. According to Nida (1993), the relationship between language and culture is that “language and culture cannot exist without each other, and languages not only represent elements of culture, they also serve to model culture”^[1]. Ultimately, the translation study expands the scope from the pure language level to cultural level. From this perspective, relevant studies on culture-specific items (CSIs) would expand the scope of translation studies and develop “Cultural Turn” in translation study. Aixelá (1996) is the first scholar to propose the term culture-specific items (CSIs), which considers 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”^[2].

Nowadays, English is the universal language in the world, hence almost 90% of scientific papers are written in English^[3]. The science works are generally translated from English to other languages. Hartmann and Mittelstrass (2002) emphasized that “science and culture are not opposite”^[4]. 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. “This suggests that science and culture are deeply intertwined, and separating them would be detrimental to both. As such, translating CSIs requires an understanding of cultural contexts in which these items exist. Just as science is embedded in culture, it is also the same for linguistic and cultural nuances. Thus, a translator must be aware of these contexts to convey the true meaning of the source text. Kastberg (2007) stressed on “the importance of prioritizing cultural competence in technical translation”^[5].

Technical texts include terminologies, references and concepts that are deeply rooted in the culture of the source language. Therefore, cultural competence enables translators to accurately interpret and convey the meaning of CSIs.

Without cultural competence, these nuances can be lost or misinterpreted.

To expound the translation of culture-specific items, this paper probes this issue in a popular science book, *A Brief History of Time* by Stephen Hawking (1988)^[6], the most outstanding theoretical physicist and the greatest contemporary scientist after Albert Einstein. *A Brief History of Time* is a bestseller and is sold for more than 25 million copies^[7]. This book appeared on the bestseller list for 237 consecutive weeks and become an admirable spectacle in the entire history of international publishing^[8]. Subsequently, it was translated into Chinese by Wu Zhongchao & Xu Mingxian (2010)^[9] and was published by the Hunan Science and Technology.

As far as culture-specific items is concerned, Newmark (2010)^[10] proposed a model of CSIs involving classification and cultural translation procedure. Following Newmark’s model, this paper discusses detailed categories of CSIs which can be found in *A Brief History of Time*. This study will also analyze the detailed translation procedure of CSIs. Although Newmark’s CSIs model is often used to enlighten the translation study of literature, this paper extends the framework into popular science work.

2. Literature Review

2.1. Culture-Specific Items (CSIs)

Given the importance of culture in translation, it is crucial to explain the concept of culture and what cultural elements that can be encountered in translated texts. Some scholars have expressed their definitions and thoughts on culture. Larson (1984)^[11] defines culture as “a complex of beliefs, attitudes, values, and rules which a group of people share”. In addition, Aixelá (1996) pointed out that cultural asymmetry between two linguistic communities is necessarily reflected in the discourses of their members^[2], with the potential opacity and inaccessibility this may involve in the target culture system. On the other hand, Newmark mentioned that culture as the greatest obstacle to translation, at least to the achievement of an accurate and decent translation^[10].

Recently, scholars have shifted their focus towards the issues of translation on culture, and translators are searching for a better way to translate CSIs and convey the cultural

meaning accurately. On the concept of CSIs, Baker (1992) places culture specific items as the most common problems in translation^[12]. Furthermore, Aixelá (1996) defines culture-specific items (CSIs) 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 inter-textual status in the cultural system of the reader of the target text”^[2]. This means that cultural specific items are based on cultural diversity.

2.2. Culture-Specific Items (CSIs) in Translation Studies

Scholars take great advancement in translating culture-specific items in literature. Alla (2015) notes that the translation of children’s literature Harry Potter can be a daunting task because of the novels’ style, themes, fantasy elements which intertwined with reality and linguistic taboos^[13]. The researcher investigates CSIs, by highlighting, the descriptive and metaphorical role of the proper nouns in these novels. On the other hand, Shi (2013) emphasizes on the sanitization strategies which were employed both in mainland and Taiwan version in children’s literature. By comparing the mainland and Taiwan version of Harry Potter, Shi finds that sanitization strategy was employed more frequently in mainland version than Taiwan version and that Taiwan translators enjoy much freedom by conveying CSIs content^[14]. Similarly, Mussche and Willems (2010)^[15] focused on Arabic translation of Harry Potter. The researcher analyzes the bewildering range of names and the food names based on Hermans’ (1988)^[16] ways of transferring proper names and Kujamäki’s (2004) procedures for food^[17]. The effect of neutralisation strategy was illustrated by the researchers.

Another form of literature, which is the science fiction is particular for its knowledge which is directly related to science, but the writing style is mixed with the future imagining. Kalliomäki (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”^[18]. Tekalp and Tarakcioğlu (2019) conducted a study on The Hunger Games trilogy^[19]. They examined the translation of allusive proper names and fictive CSIs in science fiction, which is based on Baker’s (2011)^[20] category and Vinay and Dar-

belnet’s (1995)^[21] translation procedure. The conclusion is that foreignization, which is based on Venuti (2004) is the tendency of the translator choice^[22]. In the same vein, Jalaly and Pishkar (2014) concentration a lot on the treatment of CSIs in Persian translation and confirms the superior strategy in translating English in to Persian of CSIs in science fiction is foreignization^[23]. The findings come from the analysis of Journey to the center of the earth and Around the world in 80 days based on Espindola and Vasconcellos’ (2006)^[24] category and translation strategy of Molina and Albir (2002)^[25]. The study of Jalaly and Pishkar (2014) provides guidelines for the people who will engage in translating CSIs in Persian translation^[23].

In addition to the field of literature, food also contains a lot of CSIs which scholars focus on. Garzone (2017) notes that food is both the daily needs for people’s health and reflects values, culture, identities, ethnicities and religions, as well as functions as a system of communication^[26]. There are some scholars who focused their researches on this theme. Farkhan et al.(2020) exemplified the food related CSIs in subtitle of a cooking show by utilizing discourse analysis^[27]. Based on Pedersen’s (2011)^[28] translation strategy, Farkhan et al.(2020) find the non-existence of the source culture food-stuff in the target culture does affect the use of strategies and the choice of strategies is not determined by one sole factor^[27]. The study concentrates on Chinese-English menu is conducted by Tang and Malini (2021)^[29]. By employing the classification and translation strategy of Newmark (2010)^[10], the researchers prove that large percentage of CSIs on the total dish names and the frequently used strategies are transference and descriptive equivalence.

Conversely, little attention has been devoted to the translation of CSIs in popular science works. It is partly due to its long-neglected position in science works. Nevertheless, Karimnia (2015) investigates linguistic manifestation of culture in scientific-technical texts from the following aspects: terminological concepts, language form, syntax, pragmatics and text structure^[30]. After analyzing these data, the researcher reveals that scientific and technical texts are not culture free and the language uses possess distinctive cultural features. Moreover, other researchers began to shift their attention on cultural translation issues surrounding CSIs in popular science work^[31], architecture term^[32], and traditional Chinese material^[33].

On popular science work, Blažytė and Liubinienė (2016) focus on the common expressions denoting CSIs in Martin Lindstrom's book *Brand Sense: build powerful brands through touch, taste, smell, sight, and sound*^[31]. Based on the categorization of Davies and (2003) the analysis of translation strategy, the study reveals the translator's inconsistency in using strategies to treat homogeneous cultural references and the translation need to be improved^[34]. On architecture terminology, the study compared the quality and frequency of strategies used on translator and the writer's works by utilizing Van Doorslaer's (2007) framework. His findings show both translator and writer are successful in finding appropriate equivalents for source language in target language^[35]. Similarly, Wang (2021) researches on English translation of traditional Chinese handicraft material CSIs. By comparing the Chinese and English version of *Tian Gong Kai Wu* (1637), Wang finds that the CSIs of Chinese handicraft material in *Tian Gong Kai Wu* (1637) has outstanding humanistic characteristics^[33]. Based on Newmark's (2001) semantic and communicative translation theory^[36], the researcher analyzes the translation methods of the CSIs by adopting E-tu Zen, Li Ch'iao-ping and Wang Yijing et al. Wang (2001) points out that the different methods employed by translators are based on the degree of cultural loaded of the CSIs^[33].

Despite the scholarly contributions of the above and the researches on the translation of science work, there remain some gaps for research specifically relating to translation of the CSIs in popular science works. The current study aim to analyze the translation procedures used and explore how they are employed in translating the CSIs in Hawking's popular

science work: *A Brief History of Time*^[6].

3. Methodology

The current research mainly focuses on translation of CSIs in Hawking's popular science work: *A Brief History of Time*^[6]. To deal with the problems on translation of CSIs, the theoretical framework is based on the model of Newmark about CSIs^[10].

3.1. Data Collection

Sandelowski (2000) notes that data collection in qualitative approach which includes two aspects: observations of targeted event and the examination of documents and artifacts^[36]. Moreover, Ary et al. (2010) indicate that samples in qualitative research are considered representative rather than random^[37]. Thus, this study selects samples about the topic guided by the research issues. The data were extracted from the English popular science book *A Brief History of Time* by Hawking (1988)^[6] and its Chinese translated version *Shijian Jiǎnshǐ* (时间简史) by Wu & Xu (2010)^[9]. Based on Aiexla's (1996) definition of CSIs, the samples were selected purposively, and the current study classified these samples into six categories by using Newmark's (2010) categorization of CSIs^[10].

Newmark presented his first classification of CSIs in 1988, and the final version of these categorization was in 2010^[10]. This study applied the final version for data collection in English source text. The categorization of CSIs by Newmark (2010)^[10] is shown in **Table 1**.

Table 1. Categorization of culture-specific items.

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

3.2. Data Analysis

Data analysis is a mechanism for reducing and organizing data to produce findings that require interpretation by the researcher^[38]. The data in the source text were compared with the target text to identify the translation strategies employed

by the translator Wu & Xu^[9]. In this process, the researcher focuses on the language habits and spiritual style between two different cultures. Then, classification of CSIs based on Newmark's model^[10] will be applied on six aspects. The analyses of selected samples were conducted to investigate the application of seven translation strategies based on New-

mark's^[10] model, namely, transference, descriptive equivalent, transonym, paraphrase, literal translation, cultural equivalent, componential analysis. These all seven translation procedures

were classified into two parts: basic translation procedures and marginal translation procedures. **Table 2** shows the translation procedures of CSIs with brief definition by Newmark^[10,39].

Table 2. Translation strategies of culture-specific items by Newmark.

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.

4. Results and Discussion

4.1. Categorization of Culture-Specific Items

Data analysis is a mechanism for reducing and organizing data to produce findings that require interpretation by the researcher^[38]. The data in the source text were compared with the target text to identify the translation strategies employed by the translator Wu & Xu^[9]. In this process, the

researcher focuses on the language habits and spiritual style between two different cultures. Then, classification of CSIs based on Newmark's model will be applied on six aspects. The analyses of selected samples were conducted to investigate the application of seven translation strategies based on Newmark's model^[10].

In this study, the total CSIs are allocated into these six categories. The following **Figure 1** shows the proportion of every category in this study.

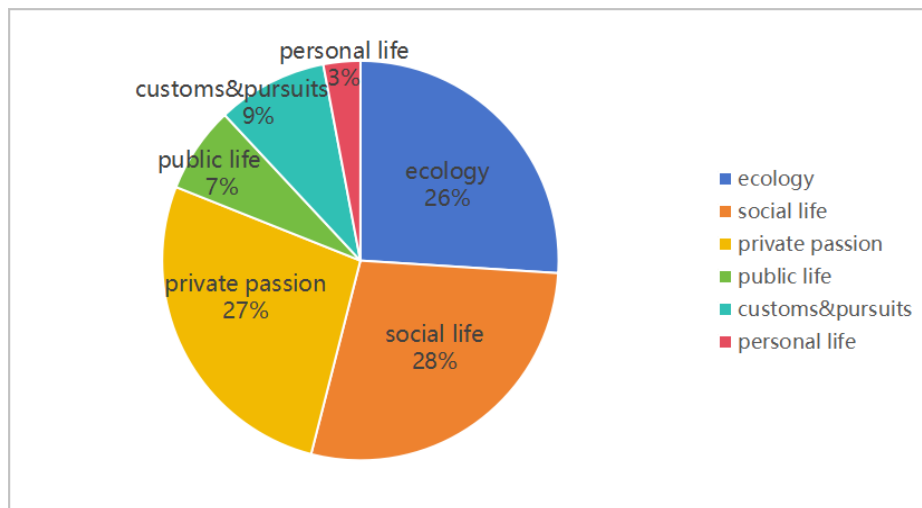


Figure 1. The proportion of the csi of each category in source text.

Figure 1 shows the percentage of each category occupied the total number of the CSIs. From this pie chart, it is found to see that CSIs on social life category has the largest proportions (28%), and by the contrast, the lowest proportion of CSIs is the category of personal life (3%). The second higher percentage is for category of private passions (27%) followed by ecology category with the percentage of 26%.

Based on Newmark's model, the following examples of each category from *A Brief History of Book* are presented in the below.

Ecology

1. One would not specify the position of the moon in terms of miles north and miles west of Piccadilly Circus and feet above sea level. (p. 27).
2. The visible stars appear spread all over the night sky, but are particularly concentrated in one band, which we call the Milky Way. (p. 42).

Public Life

1. The success of science theories, particularly Newton's theory of gravity, led the French scientist the Marquis de Laplace at the beginning of the nineteenth century to argue that the universe was completely deterministic. (p. 61).
2. One of the first indications that this belief would have to be abandoned came when calculations by the British scientist Lord Rayleigh and Sir James Jeans suggested that a hot object, or body, such as a star, must radiate energy at an infinite rate. (p. 62).

Social Life

1. Two years before, I had been diagnosed as suffering from ALS, commonly known as Lou Gehrig's disease, or motor neurone disease, and given to understand that I had only one or two more years to live. (p.58).
2. He suffered from diabetes and went into a coma when no one was around to give him an injection of insulin. (p. 195).

Personal Life

1. 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).

2. 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).

Customs and Pursuits

1. In the next chapter but one I will try to increase the order in our neck of the woods a little further by explaining how people are trying to fit together the partial theories I have described to form a complete unified theory that would cover everything in the universe. (Hawking, 1988, p. 173).
2. But Flamsteed took the case to court and, in the nick of time, won a court order preventing distribution of the stolen work. (Hawking, 1988, p. 220).

Private Passions

1. It was adopted by the Christian church as the picture of the universe that was in accordance with Scripture for it had the great advantage that it left lots of room outside the sphere of fixed stars for heaven and hell. (Hawking, 1988, p. 4).
2. It is a bit like the well-known horde of monkeys hammering away on typewriters-most of what they write will be garbage, but very occasionally by pure chance they will type out one of Shakespeare's sonnets. (Hawking, 1988, p. 140).

4.2. Translation Strategies of Culture-Specific Items

As stated before, Newmark (2010)^[10] divided cultural translation strategies into two parts: basic translation strategy and marginal translation strategy. For the basic part, Newmark illustrates five specific strategies including transference, transonym, cultural equivalent, descriptive equivalent and componential analysis. For the marginal part, Newmark also put forward five specific strategies: literal translation, synonymy, modulation, paraphrase and footnotes^[10].

4.2.1. Transference

From **Example 1**, ping-pong also known as table tennis is a kind of racket sport. The ping-pong originated from Victorian England and at first was played by the upper-class. The sport name ping-pong is an onomatopoeia word that comes from the sound when the plastic ball was struck on the table. The word ping-pong was often used in the informal occasion; otherwise, table tennis was used in formal occasion. In the

beginning of the 20th century, this sport began to flourish in Europe and Asia. Now, ping-pong sport has become Chinese national sport. In this example, the translators Wu&Xu (2010)^[9] use a similar onomatopoeia word 乒乓 (pīng pāng) to translate ping-pong word in Chinese. In actual fact, both English word ping-pong and table tennis can be translated into 乒乓球 (pīng pāng qiú), with no difference in Chinese expression and tone.

Example 1:

ST	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) ^[6] .
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, 2010, p. 28) ^[9] .

4.2.2. Descriptive Equivalent

In **Example 2**, tram is a type of urban public transportation that is usually driven by electric motors and relies on fixed tramway tracks. This word tram is mainly used in England, while trolley and streetcar is mainly used in Canada and United States. This public transportation originates in Europe in the early nineteenth century. The earliest tram in

China appeared in Beijing in the Qing Dynasty. The Chinese version Wu&Xu^[9] translated 有轨电车 by applying descriptive equivalent strategy in order to presents power and mode of operation. 有轨 (yǒu guǐ) in Chinese means on track, 电车 (diàn chē) means electric power, therefore 有轨电车 (yǒu guǐ diàn chē) in Chinese refers to a transportation that runs on track is driven by electric power.

Example 2:

ST	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) ^[6] .
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, 2010, p. 28) ^[9] .

In the same paragraph, descriptive equivalent strategy is used for the noun “mile”. Mile is a unit of length which is used in the United Kingdom and its former colonies and Commonwealth countries. The Chinese 英里 (yīng lǐ) descriptively indicates the range of application of this unit. One mile is equivalent to 1609.344 meters. In this example, it is suggested to add a bracket to explain the length of this unit, which will allow them to identify the speed of tram clearly and is beneficial to target readers' comprehension of the source text. Thus, the suggested translation in Chinese 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. (A bus which is on track with electricity on it moving eastward at a speed of 30 miles (1 mile = 1609.3 meters per hour).

4.2.3. Cultural Equivalent

In this **Example 3**, the word metaphysics was originated from ancient Greek philosopher Aristotle. All Aristotle's work was classified by a Greek philosopher Andronicus into two categories: the study of physical things and the study of non-physical things. The works of the former category were compiled together and named “Physics” and the latter one placed at the end of Physics with the name of “Metaphysics”. That is to say the original meaning of the word metaphysics is “non-physical issues”. By contrast, in Chinese, this term is called 形而上学/形而上 (the problems cannot be answered directly through perception) that comes from Yi Jing: “形而上者谓之道 (dao), 形而下者谓之器 (qi)”. In this Chinese sentence, 道 (dao) means non-physical and

mental thing, while 器 (qi) means physical things and material. The meaning of this sentence is similar to Andronicus'

classification. Thus, it is easy to Chinese readers to get the meaning by using this Chinese term to translate metaphysics.

Example 3:

ST	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) [6].
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, 2010, p. 13) [9].

4.2.4. Componential Analysis

Example 4 illustrates the translation of the Leaning Tower of Pisa. The Leaning Tower of Pisa is the campanile or freestanding bell tower, of Pisa Cathedral which is in Italy. This tower constructed in the 12th century and it began to lean because of the soft ground. The inclination reached 5.5 degrees in 1990, and the inclination has decreased to 3.97 degrees from 1993 to 2001. It is famous for the Galileo's

experiment. In this example, due to the unique name of this tower, the translators used componential analysis strategy to put it into two parts: cultural part and common part. Pisa is the name of tower; the translators translate into 比萨 (bǐ sà) to preserve the similar pronunciation of the name. "Leaning tower" is an adjective to describe the feature of this tower which translators convert into 斜塔 (xié tǎ). The translation for the name of tower not only shows the name and also shows the feature of the tower.

Example 4:

ST	It is said that Galileo demonstrated that Aristotle's belief was false by dropping weights from the leaning tower of Pisa. (Hawking, 1988, p. 17) [6].
TT	据说, 伽利略在比萨斜塔上让重物自然下落, 并从而证明了亚里士多德的观点是错误的。(Hawking, trans. By Wu&Xu, 2010, p.22) [9].

4.2.5. Transonym

Example 5 is an transonym sample of the translation "UFO". UFO is the abbreviation of Unidentified Flying Object with its literal translation in Chinese is 不明飞行物 (the unknown flying thing). It refers to objects of unknown origin and nature which is floating and flying in the sky. In

relation to the translation of UFO, the translator Wu&Xu use transonym strategy to preserve the same English writing. To Chinese readers, UFO is familiar to them which is seen as a proper noun to signify the unknown flying object. Therefore, in Chinese translation, the use of UFO term would not be an obstacle to comprehension.

Example 5:

ST	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) [6].
TT	当然, 有些人会宣称, 目睹 UFO 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, 2010, p. 206) [9].

4.2.6. Literal Translation

"God doesn't play dice" is a quote by theoretical physicist Albert Einstein which comes from an argument regarding the specifics of Quantum Mechanics. The Copenhagen interpretation (a collection of views about the meaning of quantum mechanics which was discovered that the quantum world has many strange properties that are different from the classical macroscopic world) indicates the uncertainty principle. Einstein opposed to this idea completely and used this sentence as an argument. Einstein believed everything in the world

has its rule, whereas the laws of the world are not determined by dice, but rather the laws are objective realities and they are not subjected to the will of human. Thus, in this example, the Chinese version 骰子 (tóu zi) represents randomness and uncertainty and it is determined by the people who throw it. For Chinese readers, they know very well what 骰子 (tóu zi) represent. The literal translation strategies applying in this sentence will not obstacle the understanding. 上帝不会掷骰子 (God does not throw dice) not only restores the original meaning, but also preserves Einstein's narrative style.

Example 6:

ST	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.’ (Hawking, 1988, p. 64) ^[6] .
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, 2010, p. 73) ^[9] .

4.2.7. Paraphrase

From **Example 7**, spaghetti is a kind of staple food which is a famous Italian cuisine and it belongs to pasta category. It is a form of noodle, which is long, thin and solid. There are many kinds of pasta including bucatini, fusilli, fettuccine, lasagne, and macaroni. Among these various kinds of pasta, spaghetti is one of the most well-known. It becomes a symbol of Italy. In the target text, the translators Wu&Xu (2010)^[9] choose paraphrase strategy to explain

what spaghetti is. The Chinese name 意大利面 (Italian noodle) not only shows the variety of this food but also shows its place of origin. In some cases, the Chinese name 意大利面 (Italian noodle) can be abbreviated in 意面 (yi noodle) and both of them are used in daily life by Chinese people. This translation can make Chinese readers’ have more comprehensive understanding of the unfamiliar food. In this example, the source text uses spaghetti to describe the shape of astronaut when he is tore by the force.

Example 7:

ST	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) ^[6] .
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, 2010, p. 113) ^[9] .

5. Conclusions

Applying the Newmark model to the translation of CSIs in popular science works provides perspectives in the field of cultural translation studies. Different translators employs different strategies in translation of CSIs, Newmark’s model is one of the most important categorizations and cultural translation procedures. To conclude on the translation of CSIs found in popular science works under this study and the strategies applied by the translators, a comparative study was carried out. Through comparing the original book *A Brief History of Time*^[6] and its Chinese version, the results reveal that Newmark’s^[10] model is applicable to CSIs translation in this popular science work. Thus, this study contributes a further understanding of CSIs in the translation of popular science work. The results indicate that CSIs in the domains of social life and private passions occurred more frequently than those in other domains. The analysis of translation strategy on samples in this study, found that the translators Wu Zhongchao&Xu Mingxian (2010)^[9] employ seven of Newmark’s (2010)^[10] cultural translation procedures. The findings of this study is hoped to provide new insights of CSIs in popular science works.

Author Contributions

Conceptualization, X.Z. and H.A.H.; resources, X.Z.; data curation, X.Z.; writing—original draft preparation, X.Z.; writing—review and editing, X.Z.; supervision, H.A.H. and L.H.A.; All authors have read and agreed to the published version of the manuscript.

Funding

This work received no external funding.

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Not applicable.

Data Availability Statement

The data used in this study are available from the popular science texts in this study.

Conflicts of Interest

The authors declare no conflict of interest.

References

- [1] Nida, E.A., 1993. *Language, Culture and Translating*. Shanghai Foreign Language Education Press: Shanghai, China.
- [2] Aixelá, J.F., 1996. Culture-specific Items in translation. In: Alvarez, R., Vidal, C.A. (eds.). *Translation, Power, Subversion. Multilingual Matters*: Bristol, UK. pp. 52–78.
- [3] Shapin, S., 2015. Kuhn's Structure: a Moment in Modern Naturalism. In: Devlin, W., Bokulich, A. (eds.). *Kuhn's Structure of Scientific Revolutions-50 Years On*. Springer: Cham, Switzerland. pp. 11–21.
- [4] Hartmann, S., Mittelstraß, J., 2002. Physics is Part of Culture and the Basis of Technology. In: Scharf, R. (ed.). *Physics: Physics Research: Topics, Significance and Prospects*. Deutsche Physikalische Gesellschaft: Bonn, Germany. pp. 195–198.
- [5] Kastberg, P., 2007. Cultural Issues Facing the Technical Translator. *The Journal of Specialized Translation*. 8, 104–108.
- [6] Hawking, S., 1988. *A Brief History of Time: from the Big Bang to Black Holes*. Bantam: London, UK.
- [7] McKie, D., Munshi, D., 2007. *Reconfiguring Public Relations: Ecology, Equity and Enterprise*. Routledge: London, UK. DOI: <https://doi.org/10.4324/9780203956632>
- [8] Hawking, S., Mlodinow, L., 2008. *A Brief History of Time*. Bantam Press: London, UK.
- [9] Hawking, S., 1988. *Shí Jiān Jiǎn Shǐ (时间简史)*. Wu, Z., Xu, M. (trans.), 2010. Hunan Science & Technology Press: Changsha, China.
- [10] Newmark, P., 2010. Translation and Culture. *Meaning in Translation*. 19, 171.
- [11] Larson, M., 1984. *Meaning-Based Translation: A Guide to Cross-Language Equivalence*. University Press of America: Lanham, MD, USA.
- [12] Baker, M., 1992. In *Other Words: A Course Book on Translation*. 1st Edition. Routledge: London, UK.
- [13] Alla, A., 2015. A Comparative Analysis of Culture Specific Items in Albanian Translation of Harry Potter Novels. In *Proceedings of The 4th International Multidisciplinary Conference on Integrating Science in New Global Challenges*, Dubrovnik, Croatia, 27–29 March 2015; pp.1–6.
- [14] Shi, M., 2013. A Contrastive Study of the Sanitization Translation Strategies of Culture-Specific Items in Chinese Versions of Harry Potter [Master's Thesis]. Southwest University: Chongqing, China. pp.1–50.
- [15] 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. *Meta*. 55(3), 474–498. DOI: <https://doi.org/10.7202/045066ar>
- [16] Hermans, H.J., 1988. On the Integration of Nomothetic and Idiographic Research Methods in the Study of Personal Meaning. *Journal of Personality*. 56(4), 785–812.
- [17] Kujamäki, P., 2004. Übersetzung von Realienbezeichnungen in Literarischen Texten. In: Kittel, H., Frank, A., Greiner, N., Hermans, T., Koller, W., Lambert, J., Paul, F. (eds.). 1. Teilband: Ein internationales Handbuch zur Übersetzungsforschung. De Gruyter Mouton: Berlin, Germany. pp. 920–925.
- [18] Kalliomäki, H., 2007. *Translating Fictitious Science: A Case Studying on the Translation Process of Two Short Stories by Isaac Asimov* [Master's Thesis]. University of Jyväskylä: Jyväskylä, Finland. pp. 1–68.
- [19] Tekalp, S., Tarakcıoğlu, A.Ö., 2019. Translation of fictive Culture-Specific Items in The Hunger Games Trilogy. *RumeliDE Dil Ve Edebiyat Araştırmaları Dergisi*. 5, 285 – 296. DOI: <https://doi.org/10.29000/rumelide.606159>
- [20] Baker, M., 2011. In *Other Words: A Course Book on Translation*. 2nd Edition. Routledge: London, UK.
- [21] Vinay, J.P., Darbelnet, J., 1995. In J. C. Sager (Ed. and Trans.), *Comparative stylistics of French and English: A methodology for translation*. Benjamins Translation Library. pp. 32–35.
- [22] Venuti, L., 2004. *The Translator's Invisibility: A History of Translation*. Shanghai Foreign Language Education Press: Shanghai, China.
- [23] Jalaly, F., Pishkar, K., 2014. A Study of Domestication and Foreignization Strategies of Cultural-Specific Items in Translation of Science Fiction Literature [PhD Thesis]. Islamic Azad University: Teheran, Iran. pp. 1–107.
- [24] Espomdola, E., Vasconcellos, M.L., 2006. Two Facets in the Subtitling Process: Foreignization and/or Domestication Procedures in Unequal Cultural Encounters. *Fragmentos Revista de Língua e Literatura Estrangeiras*. 30, 43–66.
- [25] Molina, L. Hurtado Albir, A., 2002. Translation Techniques Revisited: A Dynamic and Functionalist Approach. *Meta*. 47(4), 498–512. DOI: <https://doi.org/10.7202/008033ar>
- [26] Garzone, G., 2017. Food, Culture, Language and Translation. *Journal of Multicultural Discourses*. 12(3), 214–221. DOI: <https://doi.org/10.1080/17447143.2017.1364255>
- [27] 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. *Journal of Islam and Humanities*. 4(2), 149–162. DOI: <https://doi.org/10.15408/insaniyat.v4i2.14668>
- [28] Pedersen, J., 2011. *Subtitling Norms for Television: An Exploration Focusing on Extra Linguistic Cultural*

References. John Benjamins Publishing: Philadelphia, PA, USA.

- [29] 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. DOI: <https://doi.org/10.5281/zenodo.5100959>
- [30] Karimnia, A., 2015. Investigating Translation of Cultural Elements in Scientific-Technical Texts. *Journal of Applied Linguistics and Language Research*. 2(6), 28–38.
- [31] Blažytė, D., Liubinienė, V., 2016. Culture-Specific Items (CSIs) and their Translation Strategies in Martin Lindstrom's Brand Sense. *Kalbastudijos/Studies about Languages*. 29, 42–57. DOI: <https://doi.org/10.5755/j01.sal.0.29.16661>
- [32] 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(2), 46–55. DOI: <https://doi.org/10.7575/aiac.ijalel.v.6n.2p.46>
- [33] Wang, Q.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: Dalian, China. pp. 1–45.
- [34] Davies, A., 2003. The Native Speaker: Myth and Reality (*Bilingual Education and Bilingualism*: 38). *Multilingual Matters*: Clevedon, UK.
- [35] Van Doorslaer, L., 2007. Risking conceptual maps: Mapping as a keywords-related tool underlying the online Translation Studies Bibliography. *Target International Journal of Translation Studies*. 19(2), 217–233. DOI: <https://doi.org/10.1075/bct.20.03doo>
- [36] Sandelowski, M., 2000. Focus on Research Methods. Whatever Happened to Qualitative Description? *Research in Nursing & Health*. 23(4), 334–340. DOI: [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)
- [37] Ary, D., Jacobs, L.C., Sorensen, C.K., 2010. *Introduction to Research in Education* (Eighth Edition). Wadsworth Cengage Learning: Belmont, CA, USA.
- [38] Burns, N., Grove, S., 2003. *Understanding Nursing Research: Building an Evidence-Based Practice* (3rd Edition). Saunders: St Louis, MO, USA.
- [39] Newmark, P., 1988. *A Textbook of Translation*. Prentice Hall: New York, NY, USA.