Translation of Accuracy-Based Hedges in Popular Science Writings—A Case Study of *Guns, Germs, and Steel*

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Abstract

Works of popular science share one common feature with academic writings: they are both characteristic of the use of hedges. However, the norm of hedging diverges in different cultures, so the translation of hedging devices poses a challenge to translators. As a classic work of popular science, *Guns, Germs and Steel* has been translated and published in Taiwan and the mainland of China respectively. Based on Hyland's theory and Prince et al.'s classification, this paper explores the translating strategies of accuracy-based hedges in the two translations of the book. Then, it summarizes the differences and similarities between the two translations. To be specific, there are both similarities and differences on version basis, while differences dominate on the basis of individual hedges. Next, the paper discusses the influencing factors behind the above-mentioned tendencies. The similarity in translating strategies across the versions is mainly ascribed to two factors: the requirement of faithfulness and the translator's effort-allocating. Coincidence in translating each kind of accuracy-based hedges is shaped by certain category's semantic features or interpersonal meaning. On the other hand, the overall different choices of whether to be equivalent can be explained by three factors: norms of hedging across cultures, different linguistic and translating practice across the Straits, and the translators' expectations. The differences in the level of each word can be attributed to the professional background of the translators and their trade-off between faithfulness and smoothness. With effort put into this work, the researcher hopes to fill a niche in the concerned fields, as well as point out useful practices.

Keywords

Hedges, Popular Science, Translation Studies

1. Introduction

1.1. Purpose and Significances

The introduction of popular science writings is a significant part in the past 40 years' fourth wave of large-scale translation. However, relevant studies have fallen behind practice, resulting in some undesirable translations possibly (Xu & Guo, 2012). That's the reason why this research started.

Popular science texts and academic discourse are both characteristic of the extensive use of hedges. However, the mechanism of hedges varies from one culture to another, which poses a challenge to translators. So, how will they negotiate between different mechanisms? Is there any similarity or difference? And what factors leading to them? To answer these questions, this study pores over two versions of the "Guns" to explore the translation of hedges. Then, some driving factors are discussed. Finally, this paper suggests how translation of hedges influences the quality of a whole version. In doing so, this research hopes to inspire future practice in the concerned field.

1.2. Status Quo of the Translation of Popular Science Writings

At present, domestic interest in the translation of popular science can be categorized into three aspects: the characteristics of the genre, the translating methods and some features of translated texts.

For example, Guo (2007a) argues that popular science writings usually have characteristics of literature and science rolled into one, with a view to popularizing and entertaining. Leng (2017), having delved into two Chinese translations of *Scientific American*, finds that transediting helps to realize six purposes of communication, including opening dialogue, popularizing, and gate keeping.

Focusing on concrete strategies, scholars suggest that communicative translation, adaptation and paraphrase are ideal for popular science (Guo, 2007b; Xie, 2020). Ji et al. (2021) indicate that, to realize pragmatic interaction between authors and readers, translation techniques of conversion and amplification are frequently deployed in discourses of science popularization. Zhao (2013) puts forth that flexible translation can play its due role as fuzzy rhetoric devices are different in the two languages. In the mentioned literature, researchers educe their conclusions from different perspectives, theories, or textual features. However, they have reached a consensus: it is desirable for translators to keep close to readers, and to the norm of target language. That is beneficial to the purpose of science popularization.

As regards the features of the translated texts, Guo and Zhou (2019), through a corpus-based research, discover that the translated texts from Taiwan bear more resemblance to conventional Chinese in terms of the differentiation between positive and negative prosodies.

To sum up, researchers mostly explore certain strategies or methods, while comparison between versions on one feature is still absent. In addition, as early as in 2002, China's authority has introduced regulations to encourage the popu-

larization of social science knowledge. However, the above-mentioned researches are bound by one ingrained but obsolete assumption: the so-called popular science only disseminates knowledge of hard science. The "Guns" has two Chinese versions. It blends biology, anthropology, geography, linguistics, history, and other multidisciplinary knowledge. In this sense, the classic work is an ideal material for this research.

2. Method and Theory

2.1. Literature Review on Hedges

So far, there has been no consensus on how to define and classify hedges. Scholars mostly agree that the term made its debut when Lakoff (1973) referred it to as "words whose meaning implicitly involves fuzziness-words whose job is to make things fuzzier or less fuzzy". In most cases, researches on hedges belong to the Second Language Acquisition (SLA) field; how to translate them receives inadequate attention.

In SLA studies, dissertations and academic journals are typical materials, where hedges are examined as a subcategory of stance markers. Hu & Cao (2011) discuss the use of those words in abstracts of English and Chinese academic writings, while Liu and Chen (2020) do so in masters' theses written by Chinese and American students. Despite different materials, they coincide in one point: Chinese authors tend to underuse hedges but overuse boosters, probably due to cultural differences. Further, it is a common conclusion that native speakers of Chinese use less hedges than those of English. Although researchers have speculated a lot about reasons behind that, it is undeniable that inherent divergences in linguistic mechanisms can be the first cause.

As for translation and contrastive studies, Jiang and Tao (2007) conduct a study on the discussion part of medical papers, and find that although overall frequencies are significantly different, there are still similarities in distribution of categories. Wu and Zhang (2020), through a corpus-based study, find that literal translation has been employed with the highest frequency in translating hedges; semantic features of different hedges are accountable for the differences of strategies adopted. Wang and Li (2015), with interpretation of China's press conferences as their materials, regard risk-avoiding as an important factor in choosing interpreting strategy for hedges. Peterlin & Moe (2016) explore trainee translators' translation of hedges in news discourses through tasks and interviews. According to them, several factors can affect translators' choice of strategy: the pragmatic competence, the discourse position and form of hedging devices, as well as intentional interventions. Kranich (2011), having compared hedges in English and German original texts of popular science writings, and English translations of German ones, implies that more hedges are used in texts written in English, and those in German translations are of medium frequency.

To sum up, existing studies have not paid adequate attention to the E-C translation of hedges in popular science writings. That is the niche this paper

wrestle to fill.

2.2. Theory

Hyland and Prince et al. have contributed a lot to the classification and definition of hedges. Given the materials and topic of this paper, their theories are adopted.

2.2.1. Ken Hyland: A Model of Interaction in Academic Discourses

Focusing on academic discourse, Hyland develops a model of interaction. Stances constitute a way of winning positive evaluation (Hyland, 2005b), whereby authors express their voices and establish authority (Jiang, 2017). And hedges, as one main element of stance markers, can indicate that the author withhold complete commitment to a proposition, therefore allowing information to be presented as an opinion rather than an accredited fact (Hyland, 2005a). Hyland further divides hedges into content- and reader-oriented ones. The former negotiates the differences between authorial representation and objective truth, while the latter can strike up relations with readers, ensuring the argument recognized by them. Content-oriented hedges can fall into accuracy-based ones, which are used to distinguish reality from authorial inference, and writer-based ones, which enable writers to refer to speculative possibilities while alluding to doubt (Hyland, 1996). Finally, accuracy-based hedges can be further distinguished according to whether they involve a qualification of predicating intensity (attribute hedges) or writer's confidence (reliability hedges). For Hyland's model, see Figure 1.

Hyland's model, with scrupulous defined category, is specifically designed for academic discourse, and therefore is an ideal theory for this study. However, what Hyland discusses is mainly interaction, rather than the semantics and pragmatics of hedges. That is insufficient for translation studies. Therefore, this paper is going to adopt the classification proposed by Prince et al. as a supplement.
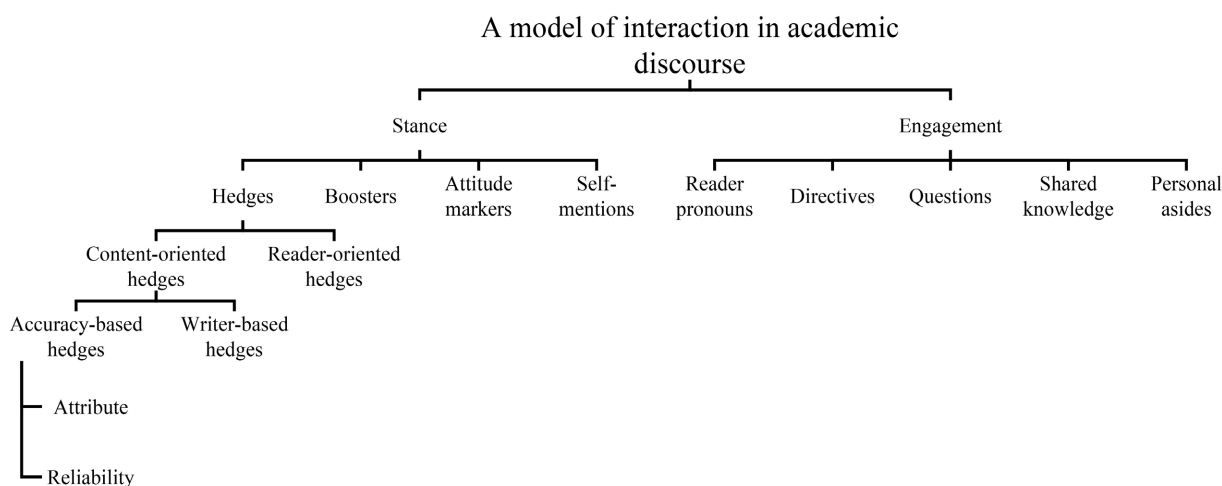

Figure 1. Classification of key resources of academic interaction (adapted from Hyland, 1996: pp. 251-281; Hyland, 2005b: pp. 173-192).

Besides, among all hedges, accuracy-based ones are used most frequently in written translation (Pan & Sheng, 2021), hence this paper's focus.

2.2.2. Ellen F. Prince et al.: Classification of Hedges

While Hyland focuses on academic discourse, Prince and her colleagues study lexical hedging devices in medical discourse. According to them, hedges can be divided into approximators and shields, the distinction being their pragmatic functions. The former can change the truth value of the proposition, and can be divided into adaptors and rounders. Adaptors embrace plausibility shields and attribution shields, whose difference lies in whether the purpose of mitigation is achieved by quoting a third party's view (Prince, Frader, & Bosk, 1982). See **Figure 2** (Dong, 2003).

2.2.3. Classification of Accuracy-Based Hedges in This Research

If you have a comparison between the two foregoing theories, it is obvious that the concept of "attribute" is close to that of "approximator", and "reliability" approximates to "plausibility shield". That makes the fusion of them possible.

Given the purpose of the research and the object involved, Hyland's model is largely adopted. Nevertheless, framework proposed by Prince et al. is going to work as a supplement. Meanwhile, to examine frequencies and distributions in detail, a subcategory—approximators of frequency (AOF) (Zhang, 2021)—is appended to the classification here. Therefore, for the classification of accuracy-based hedges in this research, see **Figure 3**.

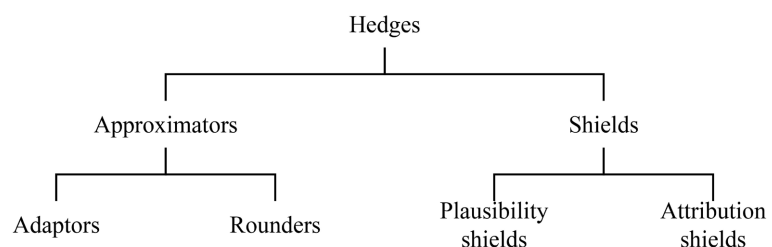For functions and typical resources of each category, see **Table 1**.

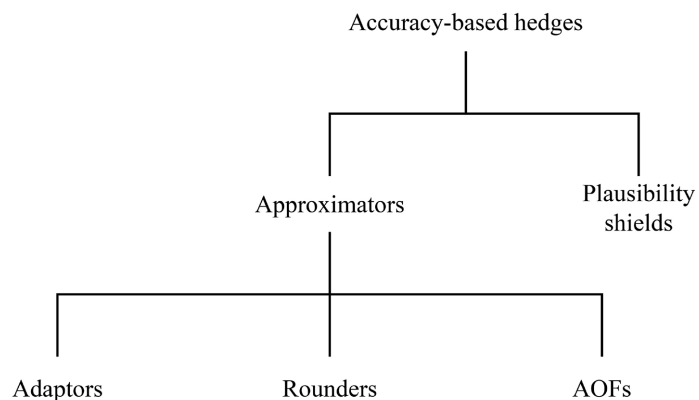**Figure 2.** Prince and her colleagues' classification of hedges.

Figure 3. Classification of accuracy-based hedges in this research.

Table 1. Functions and typical resources of each category.

Category	Sub-category	Function	Examples
Approximator	Rounder	Revise the truth value from range	about, mainly, at least
	Adaptor	Revise the truth value from extent	almost, essentially, relatively
	AOF	Revise the truth value from frequency	generally, in some cases
Shield	Plausibility shield	Indicate writer's confidence in certainty	possibly, probably

2.3. Method

Hyland has made a list of hedges (Hyland, 2005a), which encompasses common resources of lexical hedging devices. Based on that list, this paper will conduct an exhaustive search for accuracy-based hedges in the "Guns" (See Table 2).

After that, the author will identify translating strategies used in each relevant sentence. After referring to some relevant studies (Pan & Sheng, 2021; Peterlin & Moe, 2016), this paper summarizes five strategies that translators mainly adopt: direct transfer (DT), indirect transfer (IT), modified, omitted, and paraphrase. For definition and example of each strategy, see Table 3.

By using direct or indirect transfer, the corresponding item is derived from the original hedge. So they can be described as "equivalent choice". The latter 3 strategies do not entail a corresponding item, or, the item is not derived from the ST. So they can be described as "non-equivalent choice".

Next, reorganize the searched sentences, and observe similarities and differences at two levels: the translations as a whole and each category of accuracy-based hedges. Finally, some examples are presented to discuss factors affecting the translation of accuracy-based hedges.

3. Translation of Accuracy-Based Hedges in the Two Versions of *Guns, Germs, and Steel*

3.1. Distribution and Frequency in the Two Versions

Observed as a whole, the number of common accuracy-based hedges in the book is 803. For data of translating strategies, see Figure 4.

According to statistics, the two versions' similarities on strategies can boil down as follows:

1) Direct transfer is the most used strategy in both versions;

2) Omitting is the most employed non-equivalent choice in both versions;

3) Indirect transfer, modifying, and paraphrase account for a small proportion in both versions.

4) In both versions, the frequency of strategies used in descending order is direct transfer > omitting > indirect transfer ≥ modifying > paraphrase.

Table 2. Hedges examined in the present study.

about	formally	perhaps
almost	frequent	plausible
apparent	frequently	possible
apparently	generally	possibly
approximate	in general	presumably
around	in most cases↵	probable
at least	in some cases	probably
basically	largely	relatively
comparatively	likely	sometimes
conceivably	mainly	somewhat
essentially	mostly	typically
fairly	often	usually

Table 3. Definition and example of each strategy.

Strategy	Definition	Example
Direct transfer	The translation directly transfers the form and function of its corresponding item in the ST	ST: On all the continents the habitat type known as tropical rain forest is confined to within <u>about</u> 10 degrees latitude of the equator, … TT: 在各个大陆上，被称为热带雨林型的动植物生境都在赤道以南和赤道以北<u>大约</u> 10 度之内……
Indirect transfer	The translation transfers the function of its corresponding item in the ST, but in different form	ST: By <u>around</u> 5000 years ago, pollen analyses testify to widespread deforestation of highland valleys, suggesting forest clearance for agriculture. TT: 孢粉分析的结果显示，距今<u>至少</u> 5000 年前，高地河谷中发生过大规模的伐木活动，可能是为了开垦农地。
Omitted	The translation omits both the form and function of the corresponding item, but transfers other structures in the ST	ST: However, it is uncertain when, between <u>about</u> 14,000 and 35,000 years ago, the Americas were first colonized. TT: 不过，人类什么时候开始定居美洲尚不清楚，只知道是在 3.5 万~1.4 万年前。
Modified	The hedge in the ST is translated as a non-hedge in the TT, but other structures are maintained	ST: Archaeologists exploring Madagascar have now proved that Austronesians had arrived <u>at least</u> by A.D. 800, … TT: 考古学家在马达加斯加岛的发掘，证明南岛语族<u>最晚</u>在公元 800 年已经到达了，……
Paraphrase	The translation omits both the form and function of the corresponding item, and paraphrases other structures in the ST	ST: Each murder in band and tribal societies <u>usually</u> leads to an attempted revenge killing, starting one more unending cycle of murder and counter murder that destabilizes the society. TT: 在血债血偿的恶性循环下，整个社会动荡不安，充满血腥与暴力。

These similarities can be explained from two aspects: the norm of faithfulness, and the allocation of translator's effort.

First, throughout the book, the translators never deliberately violate the norm of faithfulness. Instead, they only intervene when it is necessary or allowed. Necessary cases are those like that the sentence is not acceptably smooth when the hedge is directly transferred; allowed cases are those like that, non-equivalent
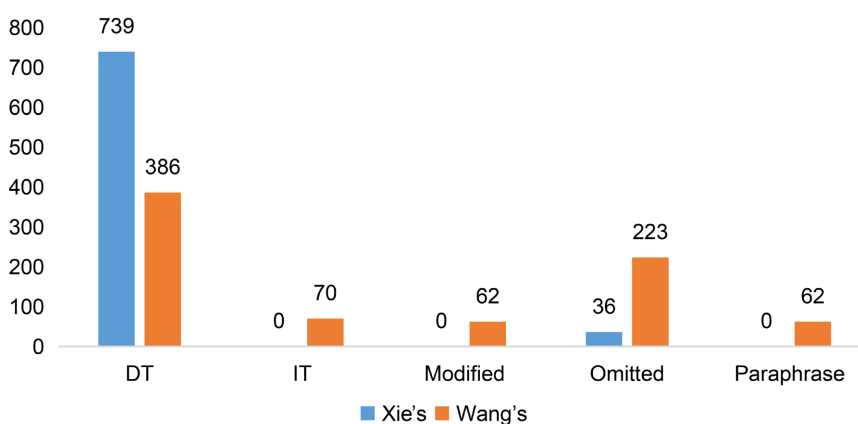
Figure 4. Translating strategies of accuracy-based hedges in the two versions.

choice will not undermine the sentence's smoothness, and that there is room for the translator's own predilection. Of course, whether it is necessary or allowed varies from person to person. And that will be discussed in detail as follows. In short, from the perspective of faithfulness, it is penetrable that direct transfer is the most used strategy in both versions.

Moreover, the translation and publication of the "Guns" is mainly for profit, and the tasks commissioned by publishers usually stipulate deadlines and remuneration. On the other hand, the translators have only limited energy, and they must take into account these factors when choosing strategy that engender higher return on investment. In other words, translators usually prefer direct transfer and omitting because they are cost-effective. In doing so, they can get a higher pay per unit of time with less effort. Finally, if the cost-effective strategies induce poor effect, translators will turn to the more time-consuming strategies: indirect transfer, modifying, and paraphrase. Therefore, the priority of these strategies can be summarized as follows: direct transfer > omitting > indirect transfer ≥ modifying > paraphrase. The sequence coincides with similarity similarity 4).

Then, let's discuss differences. The differences between the translating strategies across versions are very obvious, which mainly manifest in the following aspects:

1) The direct transfer in Xie's version is almost twice that in Wang's;

2) Xie's version uses significantly fewer indirect transfer, omitting, and modifying than Wang's;

3) Xie's version does not use paraphrase, while Wang's has 62 cases of that strategy.

These differences can also be ascribed to translators' effort-allocating pattern. With two translators, Wang's version has such sufficient effort as to use time-consuming strategies more frequently.

As for equivalence or non-equivalence, differences across versions are even more noticeable (Figure 5), which is going to be discussed in 4.1.

Observed from each category, the original text has 341 rounders (R), 129 adap-

tors (A), 102 AOFs, and 212 plausibility shields (PS). In addition, "mostly" is not typical as neither rounder nor adaptor, so the related cases are classified as "other" in this study. For distribution of accuracy-based hedges in the original text, see Figure 6.

The two versions appear to adopt very different strategies in translating the same category of hedges. Statistics show that the most coincident category in translating strategy across versions is plausibility shield, where Xie's percentage is 30.7% higher than Wang's. On contrast, the most divergent one is adaptor, in which Xie's percentage is 47.3% higher than Wang's (See Table 4).
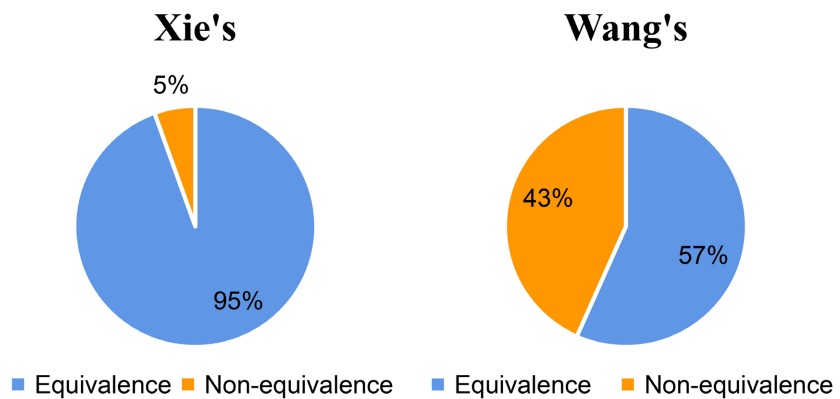
Figure 5. Frequencies of "equivalence" and "non-equivalence" between the two versions.
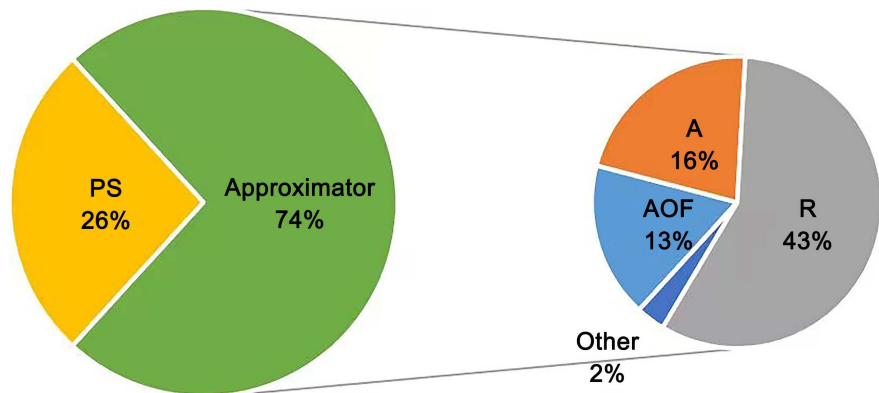
Figure 6. Distribution of accuracy-based hedges in the original text.

Table 4. Frequency of equivalent/non-equivalent choice in translating accuracy-based hedges in the two versions.

Category	Examples	Proportion of equivalent choice in Xie's	Proportion of equivalent choice in Wang's
Adaptor	about, mainly, at least	94.4%	57.5%
Rounder	almost, essentially, relatively	93.0%	45.7%
AOF	generally, in some cases	94.1%	50.0%
Plausibility shield	possibly, probably	95.3%	64.6%

However, different translators seem to coincide in strategy of the same category. The proportion of equivalence in Xie's, in descending order, is: plausibility shield > rounder > AOF > adaptor. The sequence is the same in Wang's. This similarity can be attributed to the semantic features or interpersonal meaning of each category, as discussed in 4.2.

3.2. Distribution and Frequency of Each Category across Versions

3.2.1. Rounder

Among the 341 sentences containing rounders, "around" accounts for 153, "about" for 77, and "at least" for 73. They account for nearly 90% in this category. Besides, there are 20 sentences about "mainly", 10 about "approximate" and 8 about "largely". See Table 5. The numerical/non-numerical distinction can explain that: "around", "about", and "at least" can modify both numbers and non-numbers; whereas, in most cases, "mainly", "approximate", and "largely" can not modify numbers (Wu & Yang, 2021). Nevertheless, the translators' strategies seem not to be significantly related to this division, with 54.5% of the numerical rounders translated equivalently in both versions, and 55.3% of non-numerical ones translated so.

Noticeably, "about" and "around" are strongly similar in terms of meaning and usage. Nevertheless, "about" is mainly used in informal genres, and "around" in formal ones (Wu & Yang, 2021). But in the original text, sentences containing these two hedges show merely such a distinction, which implies that language of popular science writings are of medium formality. However, "about" and "around" are translated very differently across versions: about 56.2% "around" are equivalently translated in both versions; the number is 10.7% higher than "around". The difference is worth discussing considering the similarity of these two words.

A closer look at the original text shows that the author tends to collocate "about" with smaller, more exact numbers and around with larger, more ambiguous numbers. For the latter case, the figure itself is floating. And the difference in linguistic mechanisms removes the mandatory of the explicit hedging device. So it depends more on the translator whether to transfer the hedge into TT. See below for more discussion.

Table 5. Translation of rounders in the two versions.

Hedge	Frequency	both are equivalent	Xie's is equivalent, while Wang's is not
around	153	56.2%	37.9%
about	77	45.5%	46.8%
at least	73	60.3%	37.0%
mainly	20	60.0%	35.0%
approximate	10	70.0%	30.0%
largely	8	25.0%	62.5%

3.2.2. Adaptor

Among 129 sentences containing adaptors, "almost" accounts for 42, "relatively" for 19, "somewhat" for 14, "essentially" for 8. Put together, the five hedges account for about 90% of the category. The frequency of other words is too low to discuss, hence are dismissed here. See Table 6.

As mentioned, observed as a whole, equivalent choices account for a higher proportion in both versions. Therefore, when it comes to each hedge, the case that the relevant sentences are more equivalently translated in both versions is consistent with the overall pattern. In this sense, the opposite situation should be discussed. Among all adaptors, "almost" and "relatively" concur with the overall pattern. For discussion of the other three hedges, see 4.3.2.

3.2.3. AOF

As Table 7 shows, among 102 sentences containing AOF, the frequency of "frequent" and "in most cases" are too low to further exploration, hence are excluded from discussion here. Other AOFs fall into 3 types: high-, mid-, and low-frequency.

Table 6. Translation of adaptors in the two versions.

Hedge	Frequency	both are equivalent	Xie's is equivalent, while Wang's is not
almost	42	50.0%	40.5%
apparently	35	40.0%	54.3%
relatively	19	57.9%	36.8%
somewhat	14	35.7%	50.0%
essentially	8	25.0%	75.0%
apparent	5	20.0%	80.0%
basically	4	75.0%	25.0%
comparatively	1	0.0%	100.0%
fairly	1	0.0%	100.0%

Table 7. Translation of rounders in the two versions.

Hedge	Frequency	both are equivalent	Xie's is equivalent, while Wang's is not
often	44	50.0%	40.9%
usually	17	41.2%	47.1%
generally	8	25.0%	75.0%
sometimes	7	28.6%	71.4%
in general	6	33.3%	66.7%
frequently	6	83.3%	16.7%
typically	6	100.0%	0.0%
in some cases	4	0.0%	100.0%
frequent	2	50.0%	50.0%
in most cases	2	100.0%	0.0%

High-frequency AOFs include "usually", "generally", "in general" and "typically". "Typical" has only a few related sentences, which are all equivalently translated in the two versions. However, as for other hedges of this type, it is more common that Xie's is equivalent, while Wang's is not. Different hedging norms across cultures lead to that (see 4.1.2).

Mid-frequency AOFs embrace "often" and "frequently", whose cases consistent with the overall pattern prevail.

Low-frequency ones encompass "sometimes" and "in some cases". The total number of relevant corpus has only 11 sentences. Limited to that, this study will not discuss the low-frequency ones.

3.2.4. Plausibility Shield

As Table 8 shows, among 212 sentences containing plausibility shields, "possible" accounts for 38, "possibly" for 38, "perhaps" for 36, "likely" for 34. Put together, the five hedges account for about 93% of the category. The frequency of other words is too low to discuss, hence are left aside here.

According to the mentioned assumption, "probably", "possibly", "perhaps" concur with the overall pattern, while "possible" and "likely", as local cases, need exploration. This study hold that the discrepancy within plausibility shields has something to do with their semantic and grammatical features: the former group is composed of 3 adverbs with relatively fixed meaning, which, in most cases, can only be used as adverbials. So they are easy to be transferred into translation. On contrast, the latter group comprises 2 adjectives with flexible meaning. They can be used as predicative or attribute, which makes them difficult to transfer. Choosing not to transfer them, however, has little bearing on the smoothness of the translation. Under the circumstances, how to translate the hedges hinges on the translator. See Example 1.

Table 8. Translation of plausibility shields in the two versions.

Hedge	Frequency	both are equivalent	Xie's is equivalent, while Wang's is not
probably	52	78.8%	19.2%
possible	38	47.4%	50.0%
possibly	38	65.8%	34.2%
perhaps	36	77.8%	11.1%
likely	34	35.3%	52.9%
presumably	10	60.0%	40.0%
formally	1	0.0%	100.0%
plausible	1	0.0%	100.0%
probable	1	0.0%	100.0%
conceivably	1	100.0%	0.0%

(1) Decision making by the entire adult population is still <u>possible</u> in New Guinea villages small enough that news and information quickly spread to everyone, …

Xie: 由全体成年人来决策，在新几内亚的一些村庄里仍然是<u>可能</u>的，但这些村庄都很小，消息和通知可以迅速传达到每一个人，…… **(Direct transfer)**

Wang: 在新几内亚的一些村落，决策仍由全体成年人一起做出，因为村子小，消息和信息很容易流通，…… **(Omitted)**

3.3. Summary: Similarities and Differences

Chapter 3 examines the translation of accuracy-based hedges in the two versions from two perspectives: each version as a whole and each category of hedges. And it turns out that both similarities and differences exist. Similarities are mainly reflected in translating strategies across versions and the proportion of equivalence of each category, which boil down to the following two points:

1) In both versions, the sequence of frequency of translating strategies is concurrent;

2) In both versions, the sequence of the proportion of equivalence of each category is also concurrent.

Differences are:

1) Each version taken as a whole, 95% of hedges in Xie's are translated equivalently, while the number in Wang's is only 57%;

2) The two versions also diverge noticeably on translating the same category of hedges.

3.1 provides a detailed explanation of the reason behind similarity 1), and the rest will be elucidated in 4.

4. Factors Affecting the Translation of Accuracy-Based Hedges in the Two Versions of *Guns, Germs, and Steel*

4.1. Factors Leading to Differences across Versions

4.1.1. Different Hedging Norms across Cultures

Hedging norms varies from culture to culture. Hyland (1994) argues that the degree of fuzziness and concession in academic writings depends on culture. Vold (2006) also alleges that the argumentative strategies can reflect cultural differences.

As mentioned in 2.1.2, most researchers have confirmed that Chinese-native speakers use fewer hedges when writing in English than English-native ones. Linguistic and cultural differences between the two languages may be the origin of that. Pan (2017) summarizes that English prefers prudential assumption, while Chinese prefers authoritative assertion. Besides, the latter language dislikes the practice of deliberately making things fuzzy to shun potential objections. Liu and Chen (2020) demonstrate that Chinese authors use fewer hedges and express their views more clearcut, while English authors tend to use more hedges

to avoid being too arbitrary. Lian has brilliantly stated: "The philosophical background of the Chinese language is the enlightenment of Confucianism, Taoism, and Buddhism. So, intuitive comprehension is emphasized. Chinese is used to "getting the idea and forgetting the words", instead of being bound to the formal structure. That's the reason why the language so ambiguous...that expression and comprehension usually depend on context, understanding and common knowledge." (Lian, 2010)

Via translation, model code can be copied into basic code (Qin & Si, 2015). Arguably, thus, the translation does not equate to ST. Instead, it has some features of ST and TT rolled into one. Kranich (2011) compares the use of hedges in English Texts, English-German translations, and German Original Texts, and corroborates that the frequency of those in tranlations is in-between. So it is reasonable that the translation of hedges in the "Guns" must be influenced by hedging norms of both English and Chinese. Which norm does translator tilt to? That may be concerned with different linguistic and translating practice across the Straits.

4.1.2. Different Linguistic and Translating Practice across the Straits

Compared with Chinese used in the mainland, its Taiwan variant bears more resemblance to the conventional Chinese. For instance, traditionally 被-sentence is used for negative prosody; 获-sentence is used for positive and neutral prosody; 遭-sentence is widely used (Diao, 1998, 2013, 2012a, 2012b). And the Taiwan variant is closer to these indicators. All these studies prove the difference between Chinese used in Taiwan and mainland communities, i.e., the former has retained more components and expressions of classic Chinese.

Naturally, different linguistic practice can result in different translating norms. Guo and Zhou (2019), through a parallel corpus of English-Chinese popular science works, examine the semantic prosody of 被 passives in translated Chinese (the mainland and Taiwan). They find that the translated texts from Taiwan are closer to the conventional Chinese in terms of the differentiation between positive and negative prosodies. This paper, comparing versions of Taiwan and the mainland as well, postulates that Wang's translation is more affected by the hedging norm of Chinese.

4.1.1 has reviewed some conspicuous differences between fuzzy mechanisms of English and Chinese: considerable studies have concluded that hedging in Chinese is more implicit and relies less on lexical means; compared to English, Chinese prefers authoritative assertions and dislikes equivocation. That suggests that Wang's version transfers fewer hedges from the original text, which coincide with statistics in this research (see **Figure 5**). The following part is going to discuss through cases and examples.

(2) The world holds only about 148 species of large wild mammalian terrestrial herbivores or omnivores,
Xie: 世界上只有大约 148 种大型野生哺乳类陆生食草动物或杂食动

物…… (Direct transfer)

Wang: 全世界只有<u>约</u> 148 种大型陆栖食草性或杂食哺乳动物…… (Direct transfer)

(3) Chapter 1 provides a whirlwind tour of human evolution and history, extending from our divergence from apes, <u>around</u> 7 million years ago…

Xie: 第一章提供了一次关于人类进化和历史的旋风式的旅行，从<u>大约</u> 700 万年前我们刚从类人猿分化出来时开始，…… (Direct transfer)

Wang: 第 1 章带领读者对人类演化和人类历史做一趟旋风之旅，起点是 700 万年前，那时人类与猿类刚刚分化，…… (Omitted)

As mentioned, Diamond appears to collocate "about" with smaller numbers, and "around" with larger ones. Despite homogeneity of meaning and usage, these two rounders are translated very differently: Nearly 56.2% "around" are transferred, 10.7% higher than that of "about".

That can be attributed to different hedging norms across cultures to certain extent. When working on the original text, translators are swaying between both languages' norms. Generally speaking, Chinese is more elective in the usage hedges, but it still depends. This paper argues that Wang's, with more inclination to Chinese's hedging norm, tends to modify smaller and more exact numbers with hedges. In Example 2, what the hedge modifies is "148", a relatively small and precise number. Xie's being more influenced by English's norm, "about" is directly transferred as "大约". On the contrary, Wang's being more inclined to Chinese's practice, "about" is still transferred, probably because Chinese tends to add hedges before precise, small numbers. On the other hand, "7 million" is a large number. In (3), Xie's still directly transfers the hedges, while Wang's omits it. Wang's choice seemingly departs from the original text, but it does not breach the rule of faithfulness. For Chinese, hefty numbers are intrinsically floating, whose range depends on readers' understanding. For example, native speakers of Chinese tend not to agree that "7 million years ago" means exactly 7,000,000 years ago, so it is not mandatory to transfer the fuzzy device of the ST.

(4) Thus, there is no <u>generally</u> accepted answer to Yali's question.

Xie: 因此，对于耶利的问题不存在可以<u>普遍</u>接受的答案。 (Direct transfer)

Wang: 综上，如何解答亚力的问题，目前尚无<u>共识</u>。(Omitted)

(5) However, this "hydraulic theory" of state formation is subject to the same objections leveled against social contract theories <u>in general</u>.

Xie: 然而，这种关于国家形成的"水利理论"遭到了<u>一般</u>契约理论所遭到的同样的反对。(Direct transfer)

Wang: 这种"水利理论"和上面社会契约论犯的错误大同小异。 (Paraphrase)

(6) Cheetahs <u>usually</u> refuse to carry out that elaborate courtship ritual inside a cage.

Xie: 关在笼子里的猎豹<u>通常</u>拒绝按照那种精心策划的求爱程式办事。**(Direct transfer)**

Wang: 在兽栏中，猎豹拒绝表演这样复杂的追求戏码。**(Omitted)**

What is also mentioned is that, for high-frequency AOFs, the case that Xie translates equivalently while Wang does not prevails. That can also be ascribed to different hedging norms. By the ambiguity of Chinese, we mean that the language is flexible in word order and supple in grammatical rules, and thus its understanding relies heavily on context. However, English relies more on lexical hedging device. In other words, for Chinese, if a proposition holds with high frequency and the semantic center is not frequency itself, then the use of AOF is not mandatory. That can explain why Wang's prefer non-equivalence, while Xie's prefer the opposite. See (4)-(6).

4.1.3. Translators' Expectations: The Characteristics of the Translation

In addition to linguistic and translating practices across the Straits, the translators' own tendencies can also have an impact on their translations, which makes them showing different characteristics.

Using the same original version, both versions are not abbreviated. However, from the prologue to the Chapter 19, Xie's has about 272,900 words, while Wang's has only 239,267 words, which means a discrepancy of more than 30,000 words. Besides, from the preface to Chapter 19, Xie's has 5191 periods, 7 exclamation marks, 25 question marks, 9001 commas, 214 semicolons, and 368 colons, so the average syntagma length is around 18.4 Chinese characters. Wang's, with 5157 periods, 28 exclamation marks, 390 question marks, 10,550 commas, 218 semicolons, and 387 colons, has an average syntagma length of 14.3 Chinese characters. To sum up, Xie's, with longer sentences and sinuous expression, requires higher comprehension ability of readers; Wang's, with shorter sentences and concise expression, is more in line with the style of popular science.

That difference also manifests in the translation of hedges. See examples as follows.

(7) China has been Chinese, <u>almost</u> from the beginnings of its recorded history. **(adaptor)**

Xie: 中国一直就是中国人的，<u>几乎</u>从它的有文字记载的历史的早期阶段就是中国人的了。**(Direct transfer)**

Wang: 中国早就是中国人的了，有史以来就是如此。**(Omitted)**

(8) <u>At least</u> for a while, though, as long as the patient is still alive, the cholera bacterium profits from being massively broadcast into the water supplies of its next victims. **(Rounder)**

Xie: 然而，<u>至少</u>在一段时间里，只要这病人仍然活着，霍乱菌就会由于大量传播进下一个受害者的饮用水源而得到好处。**(Direct transfer)**

Wang: 但在病患还活着时，霍乱弧菌则大量进入水源，企图感染下一个受害者。**(Omitted)**

(9) and the New World society <u>generally</u> considered the most advanced in art, astronomy, and other respects was the Classic Maya society of the tropical Yucatan and Guatemala in the first millennium A.D. **(AOF)**

Xie: 而<u>通常</u>被认为在艺术、天文学和其他方面最先进的新大陆社会是在公元第一个一千年中位于热带的尤卡坦半岛和危地马拉的历史上有名的玛雅社会。**(Direct transfer)**

Wang: 新大陆在艺术、天文学和其他方面最为先进的，则是公元第一个千年内在热带的尤卡坦、危地马拉兴起的古典玛雅社会。**(Omitted)**

(10) All humans <u>presumably</u> did so too, until improved technology for extracting food allowed some hunter-gatherers to settle in permanent dwellings in some resource-rich areas. **(Plausibility shield)**

Xie: 所有人类<u>大概</u>也都是如此，直到经过改进的觅食技术使得某些狩猎采集族群在某些资源丰富的地区的永久性住所定居下来。**(Direct transfer)**

Wang: <u>本来</u>所有的人类也是如此，直到获得食物的技术进步后，资源丰富之处才开始出现定居形态的族群。**(Omitted)**

The above examples reflect one of the main differences across versions. When translating, translators, with their own intents, have different expectations on their translations, which entails different translating strategies for hedges.

4.2. Factors Leading to Similarities across Versions

4.2.1. Semantic Features

The main function of accuracy-based hedges is to distinguish the author's inferential assertion from objective facts, and each subcategory has different semantic features, which to some extent leads to a certain convergence in the ratio of equivalence/non-equivalence across versions. See as follows for concrete examples.

Rounders can be divided into numerical and non-numerical ones. The former type is mainly collocated with numbers (example 11), and latter type is used to modify concepts (example 12). The authors use rounders mainly for objective reasons where exact values are not available or where the precise boundaries of the concept cannot be defined. In addition, rounders, with fixed meanings, are more suitable for the strategy of direct transfer. However, when the linguistic mechanism negates the obligation of hedging, it is up to the translator whether to transfer the hedge (see 4.1.2).

(11) In addition, the Chathams are relatively small and remote islands, capable of supporting a total population of only <u>about</u> 2000 hunter-gatherers. **(Rounder)**

Xie: 此外，查塔姆群岛都是一些比较小、比较偏远的岛屿，能够养活的总人口只有 2000 个<u>左右</u>的以狩猎采集为生的人。**(Direct transfer)**

Wang: 此外，查塔姆群岛相当小，而且偏远，可以维持总数<u>约</u> 2000 的狩猎－采集者的生计。**(Direct transfer)**

(12) Polynesian food production depended <u>mainly</u> on agriculture,

Xie: 波利尼西亚人的食物生产<u>主要</u>依靠农业，**(Direct transfer)**

Wang: 波利尼西亚人的食物生产<u>主要</u>靠农业，**(Direct transfer)**

On the other hand, the use of adaptors is mainly driven by subjective intentions, for example, the author intends to avoid arbitrariness. So adaptors usually have variable meaning, leaving room for translator's intervention. See (13) and (14).

(13) This conclusion is supported by genetic relationships between modern Australians, New Guineans, and Asians, and by the survival today of a few populations of <u>somewhat</u> similar physical appearance in the Philippines, Malay Peninsula, and Andaman Islands off Myanmar. **(Adaptor)**

Xie: 作为这一结论佐证的，有现代澳大利亚人、新几内亚人和亚洲人之间在遗传学上的关系，还有在今天的菲律宾、马来半岛和缅甸外海的安达曼群岛还残存的几个具有类似体貌特征的群体。**(Omitted)**

Wang: 现代的遗传学研究可以证实这个推论：现代澳大利亚人、新几内亚人和亚洲人有亲缘关系，现在菲律宾、马来半岛以及安达曼群岛都还有一些族群，他们和澳大利亚、新几内亚土著有相似的体质特征。**(Omitted)**

(14) Those categories of cultural differences within Polynesia are <u>essentially</u> the same categories that emerged everywhere else in the world.

Xie: 波利尼西亚内部的这种种文化差异，<u>基本</u>上也就是世界上其他每一个地方所出现的那些差异。**(Direct transfer)**

Wang: 前述波利尼西亚社会文化差异的几种类别，也适用于世界其他地区的文化差异。**(Omitted)**

AOFs, with the semantic features of both rounders and adaptors rolled into one, is used out of objective (Example 15) or subjective (Example 16) reasons. Accordingly, as regards AOFs, the proportion of equivalence is in-between.

(15) The oldest Java "man" fossils—of course, they may actually have belonged to a Java woman—have <u>usually</u> been assumed to date from about a million years ago.

Xie: 年代最久远的爪哇"人"化石——当然，它们实际上可能是爪哇女人的化石——其年代<u>通常</u>被认为约 100 万年前。**(Direct transfer)**

Wang: 过去学者推断，最古老的爪哇人化石(Homoerectus)的年代在约 100 万年前，……**(Omitted)**

(16) That concentration of luxury goods <u>often</u> makes it possible to recognize chiefdoms archaeologically,

Xie: 这种奢侈品的集中，使得在考古中能够认出酋长的身份，**(Omitted)**

Wang: 这种奢侈品的集中可以帮助考古学家识别出酋邦——某些坟墓(墓主是酋长)……**(Omitted)**

The above discussion offers a reasonable explanation for such a phenomenon: in both versions, the proportion of equivalence, in descending order, is: round-

er > AOF > adaptor. Semantic features of each category are a main factor thereof. Rounders, with relatively fixed meaning, is mainly used for objective facts, hence more equivalently translated. While adaptors, whose meanings are more flexible, are usually employed due to subjective intentions. Therefore adaptors are often not transferred. The finding coincides with other scholars' conclusion (Wu & Zhang, 2020). Meanwhile, AOF combining semantic features of these two approximators, its proportion of equivalence is in-between. Why, then, are plausibility shields translated with the highest percentage of equivalence in both versions?

4.2.2. Interpersonal Meaning

Among accuracy-based hedges, the category of plausibility shields is special: it can not moderate the truth value of the proposition; it indicates the writer's confidence in the truth of the proposition. In this sense, shields have stronger interpersonal meaning. Besides, this paper finds that approximators are mostly used for developing an argument, while plausibility shields are often used for putting forth a conclusion.

As per statistics, both versions tend to transfer plausibility shields into target text. Other studies also have found that the usage of plausibility shields is of little difference between English original texts and Chinese-English translations, and that English and Chinese use essentially the same way to represent uncertainty (Zhao, Dong, & Liu, 2011). So, arguably, English plausibility shields and their Chinese counterparts have a strong correspondence in terms of interpersonal meaning, which engenders translators' inclination to equivalent translation.

(17) Perhaps the biggest of these unsolved problems is to establish human history as a historical science, on a par with recognized historical sciences such as evolutionary biology, geology, and climatology.
Xie: 也许，这些未解决的问题中最大问题是确立人类史作为一门历史科学的地位，就像演化生物学、地质学和气候学这类已经得到承认的历史科学一样。(Direct transfer)
Wang: 或许尚未解决的问题中最困难的，是把人类史建构成一门历史科学，和演化生物学、地质学、气候学这样已获认可的历史科学比肩。(Direct transfer)

4.3. Factors Affecting the Translation of Each Hedge across Versions

4.3.1. The Translator's Background

The translators' background surely have a bearing on the translation of hedges. When translating, those who with relevant professional knowledge often decide by themselves whether to reduce hedges with a view of clarity. However, those who without such expertise tend to follow closely the original text, and transfer more hedges into target text.

Xie Yanguang, translator of the mainland version, worked as an English teacher in a university. And from available information, he seems not to have the

expertise which the book involves. Wang Daohuan, the first translator of the Taiwan version, has long been engaged in physical anthropology, which overlaps with the disciplinary background of Jared Diamond, the author of the "Guns". Their profession engenders different translating strategies.

(18) Axis orientations affected the rate of spread of crops and livestock, and possibly also of writing, wheels, and other inventions. **(Plausibility shield)**
Xie: 轴线走向影响了作物和牲口的传播速度，可能还影响文字、车轮和其他发明的传播速度。**(Direct transfer)**
Wang: 大陆轴线的走向关乎作物和牲畜传播的速度，也间接影响到文字、轮子等发明的传播。**(Omitted)**

In (18), the author defines his degree of certainty through "possibly", the fuzzy function being rather apparent. Xie equivalently translates it as "可能"; Wang, adopting the strategy of modifying, translates it as "间接", which removes its original function. As an expert in anthropology, Wang is likely to entertain his own understanding on some professional topic, which motivates him to translate so.

On contrast, Xie, as an English teacher in institutions of higher learning, was likely to be familiar with academic discourse. He also took part in the translation of *The Bicentennial Almanac* (1984), *The Americans* (1989), *A Theory of Justice* (1991), and *Galileo's Daughter* (2002). None of them can be reputed as popular science. It seems that Xie did not focus on and dive into work of this kind. Other than anthropologist, Wang is also a popular science writer, his most recent work being a collection of short popular science essays. He is the translator of several influential popular science books as well, including *The Third Chimpanzee* (2000) and *The Blind Watchmaker* (2002). It is evident that Wang has always been interested in the field, and he must be very familiar with the characteristics of this genre. That, of course, manifests in their translation of hedges.

(19) This cultural "package" of pottery, stone tools, and domesticates appeared around 3000 B.c. in the Philippines, around 2500 B.C. on the Indonesian islands of Celebes and North Borneo and Timor, around 2000 B.C. on Java and Sumatra, and around 1600 B.C. in the New Guinea region. **(Rounder)**
Xie: 这种包括陶器、石器和驯化动植物的"整体"文化在公元前 3000 年左右出现在菲律宾，在公元前 2500 年左右出现在印度尼西亚的西里伯斯岛、北婆罗洲和帝汶岛，在公元前 2000 年左右出现在爪哇和苏门答腊，在公元前 1600 年左右出现在新几内亚地区。**(Direct transfer)**
Wang: 这个由陶器、石器、作物和家畜组成的"文化包"约在公元前 3000 年到达菲律宾，公元前 2500 年到达印度尼西亚的苏拉威西岛、加里曼丹岛北部、帝汶岛，公元前 2000 年到达爪哇岛、苏门答腊岛，公元前 1600 年到达新几内亚。**(Direct transfer and omitted)**

For the original sentence of (19), every year is modified with "around" because the author, limited by objective conditions, is unable to define the precise

number. Therefore, the rounders are used to make things fuzzy. That reveals the "scientific" character of popular science, which is in line with the Diamond's profession. Xie directly transfers all the rounders into the target text, while Wang only transfers one of them, with the others omitted.

Xie was familiar with academic discourse, however, he seems not to comprehend the characteristics of popular science. So in his version, hedges are usually transferred to make the TT more scientific and academic. But such a translation results in lengthiness and low readability. Wang, however, having long been engaged in scientific popularization, is more cognizant of the readership. Common readers demand for readability instead of precision. Therefore, Wang only transfers one "around", reducing readers' cognitive burden while remaining as faithful as possible.

4.3.2. Trade-Off between Smoothness and Faithfulness

Corresponding items of some hedges are absent in the target language. So equivalent translation often sacrifices overall fluency and readability, while non-equivalent translation can avert such problems (See Examples 20 and 21). This view has something in common with Peterlin & Moe's conclusion: hedges with similar lexico-grammatical patterns in the target language are more likely to be retained.

The study finds that hedges of this kind are usually translated equivalently in Xie's, while non-equivalently in Wang's. Faced with trade-off between faithfulness and smoothness, Xie prioritizes the former, whereas Wang emphasizes the latter.

(20) Many radiocarbon-dated sites <u>attest</u> to human presence in Australia/New Guinea between 40,000 and 30,000 years ago (plus the inevitable <u>somewhat</u> older claims of contested validity). **(Adaptor)**
Xie: 许多用碳-14 测定的遗址证明，从 4 万年到 3 万年前(还有那照例必有的对正确性提出质疑而认为时间<u>多少</u>要早一些的主张)，人类已在澳大利亚/新几内亚出现了。**(Direct transfer)**
Wang: 许多遗址的碳 14 年代在 4 万~3 万年前(当然，也有人主张年代更早，但可靠性仍有争议)。**(Paraphrase)**

(21) The myriad factors affecting innovativeness make the historian's task paradoxically easier, by converting societal variation in innovativeness into <u>essentially</u> a random variable. **(Adaptor)**
Xie: 影响创新精神的各种各样的因素，反而使历史学家的任务变得更加容易起来，他只要把社会之间在创新精神方面的差异转换为<u>基本上</u>一种随机变量就行了。**(Direct transfer)**
Wang: 影响创新的可能因素越多，历史学家的工作反而越简单，因为社会间的创新差异可以当成随机变量来处理。**(Omitted)**

Among hedges without mature corresponding item, "apparent" is a most special one, because its senses are less related with each other. Retaining corresponding items of "apparent" often poses risk of mistranslation.

In Merriam-Webster dictionary, "apparent" has 5 senses, common ones in-

cluding 1) open to view; 2) clear or manifest to the understanding; 3) appearing as actual to the eye or mind; 4) manifest to the senses or mind as real or true on the basis of evidence that may or may not be factually valid. The first two senses do not involve the judgment of the truth value. But 4), a typical hedge, is used to indicate that something is "plausible but not true", and can largely reduce the truth value. There is no established corresponding item of "apparent/apparently" in the target language, so to transfer it, the translator must understand whether the hedge affects the truth value through the context. However, it is because of the absence of similar lexico-grammatical form that the word is difficult for non-English-native translators to understand, which poses risk of mistranslation if they choose to transfer.

> (22) The gorilla line <u>apparently</u> split off slightly before the split between the chimp and the human lines.
> **Xie:** 大猩猩这一支的分化<u>显然</u>稍早于黑猩猩与人类之间的分化。**(Direct transfer)**
> **Wang:** 从演化的时期来看，大猩猩这一支分化得稍微早一些。**(Omitted)**

From the original sentence and context of (22), it is difficult to tell what does "apparently" mean exactly. In Xie's, the hedges is directly transferred as "显然"; In Wang's, it is omitted. Wang's choice can be deemed as the translator's self-protection: the hedge, if omitted in the TT, will not be a noticeable mistranslation; if the "apparently" is transferred as the wrong sense, the translator will violate the rule of faithfulness, which also exposes his incompetence.

> (23) 10,000 years ago, that unconscious selection for nonshattering wheat and barley stalks was <u>apparently</u> the first major human "improvement" in any plant.
> **Xie:** 1 万多年前，这种对不脱落的小麦和大麦麦秆的无意识的选择，<u>显然</u>是人类对植物的第一个重大的"改良"。**(Direct transfer)**
> **Wang:** 1 万多年前，农民无意识地选择了麦秆不会脱落的小麦和大麦，这<u>可能</u>是人类"改良"植物的第一步。**(Indirect transfer)**

In (23), both translators choose to transfer the "apparently", but their understandings diverge. In Xie's, it is translated as a booster, while in Wang's, as a hedge, it is indirectly transferred as "可能".

The above discussion implies that Xie's translation is rather mechanical to some extent: though he means to keep highly faithful to the ST, too many hedges without mature corresponding items are transferred, which makes the translation awkward to read, let alone the possibility of mistranslation. In contrast, Wang flexibly uses non-equivalent translation, ensuring more smoothness and readability.

4.4. Summary: Factors Affecting the Similarities and Differences in the Translation of Accuracy-Based Hedges in the Two Versions

Through examples, Chapter 4 elucidates factors which can affect the translation

of accuracy-based hedges in the "Guns".

First, at the level of each version as a whole, three factors lead to different strategies across versions: hedging norms across cultures, translating and linguistic practice as well as translators' expectations of their versions. These factors are not insular; the relation of them is from general to specific, from abstract to concrete. That is to say, the general, abstract differences in culture and practice will ultimately be reflected in the specific, concrete translators and their translations. Chinese rarely has preference for explicit hedging device. And its Taiwan variant inherits more characteristics traditional Chinese, so Wang's version tends to translate hedges from the ST in a non-equivalent manner.

On the other hand, the semantic features and interpersonal meanings of each category lead to the similarities across versions. Plausibility shields, with siginificant interpersonal meaning, are often used to introduce conclusions. That function corresponds to their Chinese counterparts. Therefore, the proportion of equivalence in both versions is relatively high. The second factor is semantic feature. The use of rounders is largely driven by objective motives. AOFs have features of rounders and adaptors rolled into one. And adaptors are mainly used out of subjective reasons. Therefore, their proportion of equivalence in both versions constitutes a descending order.

Finally, there are two important factors in translating each hedge: the translator's background and his trade-off between faithfulness and smoothness. Translators with relevant professional background and affinity for popular science tend to show their presence. Moreover, translators who give priority to smoothness often use non-equivalent translation more frequently.

5. Conclusion

5.1. Findings

Using two Chinese translations of *Guns, Germ, and Steel* as material, this study develops a classification of accuracy-based hedges on the basis of Hyland's and Prince et al.'s theory. Then, relevant sentences in ST and TT are collected for an exhaustive analysis.

According to statistics, similarities, in the two versions, mainly dwell in the tendency of translating strategies adopted, and the proportion of equivalence of each category. And differences manifest in the tendency of equivalence in each version, and the translation of each hedge.

Chapters 3 and 4 discuss reasons behind them. The similarity in tendency of translating strategies across version can be ascribed to the rule of faithfulness and translators' effort allocation. The similarity in the proportion of equivalence of each category is due to the semantic features and interpersonal meaning of each category. Three interlocking factors contribute to the differences in each translation as a whole (whether equivalent choice prevails): hedging norms across cultures, linguistic and translating norms across the Straits, and the translators' manipulation of their own translations. The difference in the translation of each

hedge can be attributed to translators' background and their trade-off between faithfulness and smoothness.

5.2. Significance

This study, making innovation based on the contributions of previous authors, has theoretical significance. Moreover, it can also provide guidance for translation practice.

At the theoretical level, this paper bridges some niches in both translation of popular science and study of hedges. As mentioned, domestic scholars mainly focus on the translation of writings about the popularization of basic science. Works like the "Guns" are ignored. Moreover, the existing studies have hardly conducted comparison between translations. On the other hand, the existing studies on hedges mainly belong to the field of SLA. Little attention is paid to the translation of hedges. In short, the innovation of this study is mainly embodied by its object and method.

At the practical level, this paper summarizes some similarities and differences between the two translations in terms of hedges, and explains some driving factors behind them. That can help publishers select ideal translators suitable for their needs. In reality, Xie's has been widely criticized for its translation. This study elucidates, to a certain extent, why Xie's has incurred negative comments: so many hedges are mechanically translated with equivalent choice that deviates from the linguistic practice of Chinese. Therefore, his translation is inept in the audience-centered meaning of communication. If analyzed logically, Xie's translation "is not wrong because human beings have commonality in basic logical thinking"; yet we should try to reject inauthentic Chinese (Ye, 2008). That quotation sheds light on one point for translation of popular science: on the one hand, the latest works should be candidates of introduction so as to help the modernization of China. On the other, their translations need to be more idiomatic to avoid problems like excessive Europeanization and mechanical equivalence. The purpose behind this is twofold: first, to make the translation more easily acceptable to readers, and furthermore, to build a breakwater of language, which can prevent poor quality translations from crowding out the living space of standardized Chinese.

5.3. Limitations and Suggestions

This study is confined to some limitations due to the authors' inadequate competence:

1) The classification of hedges and the identification of translating strategies are rather subjective;

2) The scope is limited to hedging devices in lexical forms;

3) The study rests on two translations of the same work, and thus is impotent in discussing the overall situation of popular science translation;

4) The frequency of some hedges is too low to explore the pattern further.

To wrestle with the first limitation, the author believes that if it is allowed, two researchers can work simultaneously to negotiate when there is conflict of views. In addition, this paper also provides possible directions for future research. For example, in response to the second limitation, topics like tense, concessive and conditional clause can be included into discussion. As for the third and fourth limitations, scholars can bring to light more research-worthy works of popular science. Or, parallel corpora of this kind can be established for further exploration.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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