



On the Chinese Translation of *How to Avoid a Climate Disaster* from the Perspective of Functional Equivalence Theory

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Abstract: *How to Avoid a Climate Disaster* is a popular science work on environmental protection that focuses on climate issues. This book is closely related to the theme of climate change and provides a series of guidelines for governments, enterprises and individuals to achieve the goal of “zero carbon”, which is of great significance to the global joint governance of climate issues. As a result, *How to Avoid a Climate Disaster* has been translated into Chinese, Spanish, German and many other languages. Based on Nida’s functional equivalence theory, this thesis analyses the Chinese translation of *How to Avoid a Climate Disaster* from the perspectives of lexical level, syntactic level, text level and stylistic level and finds out how the translator successfully achieve functional equivalence. Through case studies, this thesis concludes that translators should pay more attention to the dynamic equivalence between source language and target language in order to accurately and naturally convey the source language information to readers, rather than pursuing the rigid equivalence between source language and target language. This thesis hopes to enrich the research results on the translation of popular science works on environmental protection by studying the Chinese translation of *How to Avoid a Climate Disaster*.

Keywords: *How to Avoid a Climate Disaster*; translation study; functional equivalence theory

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1. Introduction

How to Avoid a Climate Disaster is an environmental book written by Bill Gates. This book is an in-depth

analysis of the need and urgency of carbon neutrality. It mainly talks about the most serious problem that human beings face today—climate change and puts forward series of advice for different social subjects to solve the problem. He pointed out that excessive greenhouse gas emissions are the root cause of extreme weather events on Earth in recent years. According to Bill Gates (2021: 24), to stop global warming and avoid the worst effects of climate change, humanity needs to stop releasing greenhouse gases into the atmosphere and reach zero emissions. The only way to avoid catastrophic weather extremes is to change the way we use energy and achieve zero carbon emissions (Wen Feifei, 2021). This book gives a clear description of the challenges humanity faces by listing the major areas of carbon emissions as a proportion of total emissions. It also puts forward the technical tools and breakthroughs human beings can use and provides a set of feasible action guidelines accordingly. However, achieving zero emissions will not be simple or easy to do, but if we follow the plan he sets out here, it is a goal firmly within our reach. Therefore, this book is a guideline of human beings to achieve zero emission. *How to Avoid a Climate Disaster* was published in February, 2021. Since its publication, the book has topped Amazon's global warming ecology bestseller list. The book has been recommended by Times Weekly, Knopf and others. The language of this book is logical and the wording is rigorous. Although the book involves a lot of highly professional content, the author explains the professional content clearly in simple and understandable language.

In order to fully implement the Guidelines of the State Council in February 2021 on accelerating the establishment and improvement of a green, low-carbon and circular economic development system, this book was translated into Chinese by Chen Zhaoqiang and published in April, 2021. The translator, Chen Zhaoqiang, graduated from Minzu University of China with a bachelor of arts degree. He has worked as a translator for government agencies and various newspapers, such as China Daily and Investment Times. He has translated more than 30 works. Many of his works are closely related to current affairs and pay attention to the country's economic development. It is due to his working experience that his translated works are closely related to the current politics and pay attention to the national economy. The purpose of his translations is to serve the national policy and popularize the correct social values of the current society for readers. The Chinese translation of this book has been vigorously promoted by many news media as soon as it was published. Shanghai Observatory News once posted an article to tell people the severity of the climate problem by analyzing the carbon emission-related data in the book, and calls on people to take action. *How to Avoid a Climate Disaster* is also listed as one of the most recommended books to read in 2021 by CITIC Press Group. Climate change is a topic of global concern, and this book is in line with China's carbon emission peak and carbon neutral goal, so this book has an important impact on human beings. Whether in the original English version or the translated Chinese version, the book has been published and sold well both at home and abroad, drawing wide attention to the issues mentioned in the book. However, there is no research on this book so far and also no research on the translation of this book. It is under such background that the present research is conducted. It adopts the functional equivalence theory to analyze how the translator abides by the theory in the translation of the book *How to Avoid a Climate Disaster*.

The purpose of the thesis is to assess the Chinese translation of *How to Avoid a Climate Disaster* from the perspective of functional equivalence theory. Attempts are made to find out how the translator achieves functional equivalence successfully through translation.

For the research significance, because there is no translation research on *How to Avoid a Climate Disaster*,



and there are few translation theoretical studies on environmental science works, this thesis aims to enrich the translation theoretical studies of environmental science works from the perspective of functional equivalence theory. At the same time, this thesis also provides reference for the translation practice of environmental science works. The translation of environmental science works can not only enhance people's awareness of environmental protection, but also contribute to solving the global climate problem. Therefore, the significance of this study is to arouse translators' attention to the translation of environmental science works and provide some reference value for the translation practice of environmental science works in the future.

2. Functional Equivalence Theory

Functional equivalence theory first appeared in the book *From One Language to Another*. This theory was proposed by American linguist Eugene A. Nida in 1969. In order to identify the standard for the conversion of source language and target language, Nida proposed the famous "dynamic equivalence" translation theory, that is, "functional equivalence", which means translation does not seek rigid correspondence on the surface of words, but to achieve functional equivalence between the two languages. In this theory, he pointed out that "translation is to reproduce the information of the source language from semantics to style in the most appropriate, natural and equivalent language" (Guo Jianzhong, 2000: 65).

From Nida's point of view, in order to make the translation more natural, the translator needs to fully consider the source language, the given language environment and the readers of target text. In the book *The Theory and Practice of Translation*, Nida proposes the following translation steps:

(1) analysis, in which the surface structure (i. e., the message as given in language A) is analyzed in terms of (a) the grammatical relationships and (b) the meanings of the words and combinations of words, (2) transfer, in which the analyzed material is transferred in the mind of the translator from language A to language B, and (3) restructuring, in which the transferred material is restructured in order to make the final message fully acceptable in the receptor language (Nida & Taber, 1982: 33).

These three steps were regarded by Nida as the translation process of functional equivalence theory. By using these three steps, readers can understand the meaning and basic structure of the original text accurately. In practice, these three steps can be combined with the four levels of functional equivalence to achieve the equivalence of source text and target text.

Nida's definition of translation indicates that translation is not only lexical equivalence, but also semantic, text and stylistic equivalence, and that translation conveys both superficial lexical information and deep cultural information. The functional equivalence includes four levels: lexical, syntactic, text and stylistic level. In these four levels, Nida and Taber (1982: 12) believes that "Translation consists in reproducing in the receptor language the closest natural equivalence of the source language, first in terms of meaning and secondly in terms of the style".

2.1 Lexical level

Lexical level is the fundamental equivalence of Nida's theory, which means the meaning of a word should

be found the corresponding meaning in target language (Han Xiaoshuang, 2016: 85). Lexical equivalence in English and Chinese includes five corresponding situations: word equivalence, multi-word synonym, polysemy, meaning interlacing and non-corresponding words, among which the complete equivalence of words is mainly proper nouns and terms. Although there are no words with exact equivalence between source language and target language, languages can use different forms to express the same meaning.

2.2 Syntactic level

Syntax is the part of grammar that mainly studies the components of sentences and their order. Syntactic level means the translator should not only know whether the target language has such a sentence structure, but also how often it is used. In order to achieve functional equivalence in syntactic level, it is necessary to clarify sentence structure, especially the order and combination of clauses. Because there is no such thing as a subordinate clause in Chinese, the logic between each Chinese sentence is linked by its inherent meaning, not by the relative pronouns in English.

2.3 Text level

Text level means in discourse analysis, the translator should not only analyze the language itself, but also look at how the language reflects its meaning and function in a specific context. It includes three parts—passage level, scene level and culture level. Passage level mainly refers to the determination of the meaning of words on the basis of context analysis. In this way the semantic translation is determined. Scene level refers to the specific people and things involved in communication, including communication channels, the mutual relationship between participants and psychological emotions. Cultural level refers to the social and cultural background, historical and cultural tradition and social psychology of language use. Due to the different historical development process, geographical location and social development stage of different ethnic groups in the same period, their values, customs and religious beliefs are very different. Nida (1993: 110) once said, “For truly successful translating, biculturalism is even more important than bilingualism, since words only have meanings in terms of the cultures in which they function.”

2.4 Stylistic level

Different styles of translation works have their own unique linguistic features. Stylistic level means only by mastering the characteristics of both source language and target language and skillfully using both languages can the translator create a translation work that truly reflects the style of the source language. However, due to language limitations and cultural differences, it is sometimes difficult to completely reproduce the style of the original text, and translation activities also involve the translator’s own translation style, so the translator can only express the style characteristics of the original text to the maximum extent on the basis of understanding the content, and restrict his own style to a small range (Sun Chen, 2012: 37).

3. The Analysis of the Translation of *How to Avoid a Climate Disaster* under Functional Equivalence Theory

This part will mainly analyze the translation of *How to Avoid a Climate Disaster* from four levels of

functional equivalence theory.

3.1 Analysis of the translation of *How to Avoid a Climate Disaster* at lexical level

How to Avoid a Climate Disaster is a popular science work, which contains many terms. At lexical level, translating these words correctly is crucial for the readers to understand the whole book.

3.1.1 Equivalence of terminologies

How to Avoid a Climate Disaster analyzes the challenges and technological breakthroughs needed to solve zero emissions from the main areas of carbon emissions such as electricity, manufacturing, agriculture and transportation, so it covers a wide range of terminologies. The following table lists some of them.

Terminologies			
Classification	About carbon emission	About nuclear power	About units
Examples	equivalent 當量	nuclear fusion 核聚變	megawatt 兆瓦
	decarburization 脫碳	nuclear fission 核裂變	kilowatt-hour 千瓦時
		

Table 1. Part of translation of terminologies in *How to Avoid a Climate Disaster*

In the examples above, words like “nuclear fusion”, “nuclear fission” and “decarburization” only have one translation version in dictionaries, so they can be directly used by the translator. Words like “megawatt” and “kilowatt-hour” are international units. Their usage and unit conversion are unified internationally, so translators can achieve lexical equivalence by consulting dictionaries or related materials. However, the word “equivalent” has many meanings in dictionaries, and the word is often used in daily life that is usually translated as “對等的, 相等的”. But it can also be translated as “當量” when it comes to carbon emissions. If the translator does not use dictionaries or other tools in terminology translation, it is likely to cause mistranslation and misunderstanding of the target language readers.

In conclusion, these examples above are common terms in their professional fields and already have conventional usage. However, some words are not common in daily life, which requires the translator to have a certain vocabulary reserve and find the most appropriate equivalents through dictionaries and other tools to ensure the accuracy of translation and achieve functional equivalence at lexical level.

In addition to the above terminologies that have corresponding Chinese translation, there are also some proper nouns that cannot find the corresponding translation.

Example 1

ST: In addition to milk and OJ, here are some things that it's less expensive than, gallon for gallon: Dasani bottled water, yogurt, honey ... and the famously low-cost Charles Shaw wine you can buy at Trader Joe's grocery stores. (Gates, 2021: 182)

TT: 除了牛奶和橙汁,還有一些物品的價格比汽油貴(以加侖為單位):Dasani 牌瓶裝水、優酪乳、蜂蜜……以及連鎖食品超市 Trader Joe's 售賣的著名低價葡萄酒——Charles Shaw 葡萄酒。(Chen, 2021: 160)

In this translation, words like “Dasani bottled water”, “Charles Shaw wine” and “Trader Joe’s grocery stores” actually can be directly translated into Chinese, but these are all brand names. These brands do not exist in Chinese market. If the translator chooses literal translation or transliteration to translate these brands, the readers would feel puzzled about it and could not understand the author’s meaning. Therefore, the translator chooses to keep the brand name to achieve the lexical equivalence.

3.1.2 *Equivalence of word meanings*

Expect terminologies, another feature of the Chinese version of this book in terms of diction is that there are many four-character words, which is one of the beauty of the Chinese language. Although this book is a scientific book, the translator still processed some words into four-character words in the translation process, which made the article easy to understand and endowed the text with literariness and readability.

Example 2

ST: It was inspiring to see leaders from around the world come together to embrace climate goals as nearly every nation committed to cut its emissions. (Gates, 2021: 289)

TT: 來自世界各地的領導人爲應對氣候變化而齊聚一堂,幾乎每個國家都承諾削減碳排放,這的確是令人鼓舞的場景。(Chen, 2021: 249)

Example 3

ST: The phrase “government policy” doesn’t exactly set people’s hair on fire. But policies ... have a huge impact on how people and companies behave. (Gates, 2021: 48)

TT: “政府政策”這個詞並不會讓人產生一種火燒眉毛的緊迫感。但毋庸置疑,政策……對人類和企業的行爲有著重大影響。(Chen, 2021: 42)

In example 2, the use of “齊聚一堂” and “令人鼓舞” shows the grand scene of all countries discussing solutions to the climate problem, and reflects the joint efforts of all countries to cope with climate change. In example 3, the use of “火燒眉毛” and “毋庸置疑” shows that even though the sense of urgency is not high for people, policies are also very important. The four-character words reinforce the tone and make the context more pictorial, which accurately convey the tone of the source language. It also satisfies reader’s aesthetic requirements that determine the inevitability of literary color in popular science works. According to Wang Zhenping (2006: 38), a certain scientific knowledge and literary accomplishment are the prerequisites for a qualified translator of popular science. In these two examples, the translator not only translates word meanings accurately, but also makes the sentence literary so as to achieve the equivalence of word meanings.

3.2 *Analysis of the translation of How to Avoid a Climate Disaster at syntactic level*

From the perspective of functional equivalence theory, the translation should conform to the expression and writing habits of the target language, so that the target language readers can accept the translation more easily, so as to achieve syntactic equivalence.

3.2.1 *Equivalence of sentence structure*

The book contains many long and complex sentences. Its main purpose is to educate readers about carbon



emissions, without being subjective. The translator needs to use some translation methods such as amplification, recasting and division to process the long sentences and achieve the equivalence of sentence structure (Qiang & Duan, 2021: 82). In these ways, the translated Chinese can be more consistent with Chinese language expression habits, thus making the logic of the article clear and understandable.

Example 4

ST: There's no scenario in which we keep adding carbon to the atmosphere and the world stops getting hotter, and the hotter it gets, the harder it will be for humans to survive, much less thrive. (Gates, 2021: 1)

TT: 我們持續不斷地向大氣中排放碳, 這個世界卻不再變熱——這種情況根本不可能出現。地球溫度越高, 人類的生存越艱難, 因而很難再談人類的繁榮發展。(Chen, 2021: 3)

In this translation, to make the sentence logic clearer, the translator adopted the method of division and adjusted the sentence order. The first sentence of the source text is a complex compound sentence. The translator breaks this long sentence into three concise short sentences “我們……, 世界卻……, 這種情況……”, and used the dash as a connector to make the logical relationship. For the comparative structure in the second sentence, the translator basically maintained its parallel framework, but specifically replaced the general subject “it” with “地球溫度”. Then the translator transformed the implicit progressive relationship “much less thrive” into an explicit causal relationship “因而很難再談”, thus making the entire complex sentence not only maintain the logical force of the original text but also have a more coherent internal structure that conforms to the narrative rhythm and cognitive sequence of Chinese language.

Example 5

ST: The reason the world emits so much greenhouse gas is that—as long as you ignore the long-term damage they do—our current energy technologies are by and large the cheapest ones available. (Gates, 2021: 65)

TT: 全球之所以會排放如此多的溫室氣體, 原因就在於現有的能源技術基本上是最便宜的, 當然前提是忽略它們造成的長期損害。(Chen, 2021: 59)

In this example, there is a predicative clause and an interjection. In order to make the sentence more coherent, the translator first translated the main clause and the predicative clause, transforming the sentence structure “the reason ... is that” into “之所以……原因在於”, to make the sentence more fluent and complete in structure. Then the translator translated the interjection “as long as you ignore the long-term damage they do” at the end according to the meaning of the sentence. The translator realized the equivalence of sentence structure by analyzing the sentence components and selecting appropriate conjunctions.

3.2.2 *Equivalence of logic*

Logic is an important factor in fluency. English sentences are tightly structured and have strong logic between sentences, while Chinese sentences are loosely structured and need logical connectives to reflect the logic between sentences. Therefore, the translator should add some logical connectives to make sentences more logical and achieve the equivalence of logic.

Example 6

ST: That would require building new transmission lines, a costly and time-consuming task—especially if it involves crossing national borders—and the more power lines we install, the more the price of power goes up ... And many countries don't want to rely on other countries for their electricity supply. (Gates, 2021: 124)

TT: 這需要架設新的輸電線路——一項成本高昂且極耗時間的工作,特別是當它涉及跨越國界的時候。而且,我們架設的輸電線路越多,電力的價格就越高……另外,在電力供應方面,很多國家也不想依賴其他國家。(Chen, 2021: 81)

The main point of this passage is that the development of green power requires the transmission of renewable resources to various countries, which requires the erection of transmission lines, but this work is difficult to realize. In source language, there are three “and”. The first “and” serves to connect two adjectives, which finds its equivalence in the translation with a corresponding word “且”, while the following two “and” are used to connect sentences. This part will focus on the translation of the latter two “and”. The second “and” connects two sentences in a progressive relationship. It echoes “costly” in the previous sentence, indicating that building new transmission lines is not only time-consuming but also incurring high costs, so the translator chose “而且” as the conjunction. The last “and” connects a single sentence, which is a supplementary condition of the previous sentence. It implies that despite the conditions to build transmission lines across national borders, many countries are reluctant to do so. Therefore, the translator chose the conjunction “另外” to indicate the additional condition. The translator translated these “and” into three different connectives to make the passage logical.

Example 7

ST: A megawatt is a million watts, and a watt is a joule per second. For our purposes, it doesn't matter what a joule is, other than a bit of energy. Just remember that a watt is a bit of energy per second. (Gates, 2021: 82)

TT: 1 兆瓦等於 100 萬瓦特,而 1 瓦特等於 1 焦耳每秒。就我們的目的而言,知不知道焦耳無關緊要,記得它是個能量單位就行了——就是一點點的能量。(Chen, 2021: 75)

These sentences are explaining the relationship among the three units: megawatt, watt and joule. Firstly, the unit conversion between megawatt and watt is explained, and the unit joule is mentioned but its specific definition is not emphasized. It is stressed that remembering the relationship between watts and energy is important. In the translation, the translator accurately translated the first sentence, maintaining a clear logical correspondence. Then the translator adopted the method of combined translation in the last two sentences, combining the two key points: “the specific definition of joule is not important” and “watt is related to the concept of energy” together. This approach helps readers quickly understand the main idea of the sentences.

3.3 Analysis of the translation of *How to Avoid a Climate Disaster* at text level

At text level, the translator adjusted the translation method from the passage level and scene level to achieve



functional equivalence.

3.3.1 *Equivalence of passage*

Different contexts have different translations. Sometimes, in the same context, with different contextual collocations, the translations are also different, so context has a certain restrictive effect on translation. This requires the translator to take into account the context of the translation and make a flexible translation, so as to achieve the equivalence of passage.

Example 8

ST: We can keep the climate bearable for everyone, help hundreds of millions of poor people make the most of their lives, and preserve the planet for generations to come. (Gates, 2021: 338)

TT: 我們可以讓氣候維持在人人都是可以承受的範圍內,我們可以幫助數億貧困人口過上更好的生活,我們可以為子孫後代保護好這個星球。(Chen, 2021: 289)

This sentence is the last sentence in the main body of the book. It mainly expresses the achievable results after achieving the zero-emission goal. In this sentence, there is a subject and three predicate verbs. If the translator were to translate this sentence literally, readers would find the sentence overly long and difficult to read. However, in this Chinese translation, the translator chose a parallel structure to translate this sentence according to the context above, repeatedly translating “We can” into “我們可以” before each predicate verbs, which strengthens the tone and clearly shows the advocacy for protecting the environment.

Example 9

ST: Those of us who have done the most to casethis problem should help the rest of the world survive it. (Gates, 2021: 258)

TT: 作為氣候變化問題的主要責任者,我們應該幫助世界上的其他人渡過危機。(Chen, 2021: 220)

This sentence is the last sentence of section 2 of chapter 9, which summarizes the previous content. In this translation, the translator supplemented the content referred to by “this” according to the context above and translates it as “氣候變化”, making the ending sentence more complete and easier for readers to understand what the specific problem mentioned in the text is.

3.3.2 *Equivalence of scene*

When people communicate, some language phenomena cannot be clearly defined through the context, and their meaning must be determined by referring to the events that occurred. Therefore, the grasp of the context directly affects the understanding of the text. Understanding the connotation of a text depends on the context, not on isolated words. In order not to affect the expressive effect of the context, the most appropriate translation of each part of the text should be the one that best fits the context. This is the scene level of functional equivalence. To achieve the equivalence of scene, the translator needs to grasp the role of the scene and faithfully convey the meaning of the source text.

Example 10

ST: There are these two young fish swimming along, and they happen to meet an older fish swimming the other way, who nods at them and says, “Morning, boys, how’s the water?” (Gates, 2021: 66)

TT: 兩條小魚在水裡遊,碰巧遇到一條迎面而來的年老的魚。那條年老的魚朝它們點了點頭,然後說:“小朋友們,早上好,水怎麼樣啊?” (Chen, 2021: 30)

How to Avoid a Climate Disaster belongs to popular science works. The full work covers various fields, and the using of words and expressions is rigorous. However, some easy-to-understand examples will also be interspersed in the rigorous discussion, which involves the conversion of scene. In the above example, the author borrows a story from Wallace’s speech to demonstrate human beings’ views on fossil fuels. In this story, the old fish says hello to the little fish in a kind tone, which is completely different from the serious expression in the rest of the book, and the translator has noticed this in dealing with this part. He changes the tone of the language to achieve the equivalence of scene.

Example 11

ST: Or, more likely, inching across it, during one of our daily traffic jams. (Gates, 2021: 142)

TT: …… ,當然,在每天交通阻塞時段,則是如蝸牛般行駛的汽車。(Chen, 2021: 115)

This sentence mainly states that the elevated bridge constructed with concrete can support all vehicles to pass through, even during traffic congestion. In this translation, the translator did not directly translate “inching across” into “一寸一寸移動” but instead keenly grasped the core rhetorical function carried by the word “inching” in the source text — to describe something as slow through exaggerated metaphor — and creatively transformed it into “如蝸牛般”, an image in Chinese culture that is completely equivalent in recognition. Thus, in the minds of the readers of the translation, it triggered the same feelings of helplessness and humor as those of the readers of the source text. At the same time, the translator naturally adjusted the English prepositional phrase structure “during...” into the prepositional phrase structure with the time adverbial placed at the beginning in Chinese “在……時段”, and used “當然” precisely to restore the conversational tone of “more likely”, ensuring the smooth flow of information and consistency of the style. Ultimately, through the overall recreation in terms of metaphor, sentence structure and tone, the translation enables Chinese readers to obtain a completely consistent understanding and aesthetic experience with readers of the source text, achieving the equivalence of scene.

3.4 Analysis of the translation of *How to Avoid a Climate Disaster* at stylistic level

At stylistic level, *How to Avoid a Climate Disaster* is a popular science book on environmental protection, which contains few cultural factors, so it requires accurate translation of source language information into target language. According to Guo Jianzhong (2007: 85), popular science writing is different from scientific writings and papers. Because the purpose of writing popular science works is to disseminate scientific and technological knowledge, its scientific nature is the first. It is just to publicize and popularize scientific and technological knowledge to the public in simple and easy-to-understand language. In the Chinese translation of this book, the translator mostly uses literal translation and only adjusts some expressions into Chinese habits. The full book achieves the effect of popularizing environmental issues for people and the translator also achieves the equivalence



of audience and the equivalence of writing aim from the perspective of functional equivalence theory at stylistic level.

3.4.1 *Equivalence of audience*

How to Avoid a Climate Disaster is a guidebook to zero-carbon action for governments, enterprises and individuals. It covers a wide range of audiences, and the author uses different language styles to give advice to these audiences.

Example 12

ST: They tend to skew toward safer investments that could and should be funded by the private sector.
(Gates, 2021: 299)

TT: 政府傾向於投資更安全的項目,而這些項目原本可以由私人投資者投資,也應該由私人投資者投資。(Chen, 2021: 257)

Example 13

ST: If you rent your home, you can make the changes within your control—such as replacing light bulbs—and encourage your landlord to do the rest. (Gates, 2021: 330)

TT: 如果你目前租住房子,那麼你可以在自己的控制範圍內做一些改變,比如更換白熾燈等,然後勸說房東進行其他節能減排改造。(Chen, 2021: 283)

Example 14

ST: If they want to do more, they can offer fellowships and incubation programs for entrepreneurs, invest in new technology, create business divisions that are specifically focused on low-carbon innovation, and finance new low-carbon emissions projects. (Gates, 2021: 336)

TT: 如果企業想多出一把力,那麼它們還可以為創業者提供創業基金和孵化項目,投資新技術、設立專注於低碳創新的事業部,以及為新型低排放項目提供融資支援。(Chen, 2021: 287)

These three examples are the advice that Bill Gates offered to governments, individuals and enterprises. In the source language, most of the words that represent the subject are pronouns. When translating suggestions to the governments and enterprises, the translator directly added the subject referred to by the pronoun, because the suggestions to these two subjects are highly professional and their writing style is very serious. If the pronoun is directly translated, the objectivity of the suggestions may not be conveyed in the Chinese text. However, when translating suggestions to individuals, the translator directly translated the pronoun, because the readers of this book are all independent individuals. Using the pronoun directly will make the readers feel that they are part of the zero-carbon plan, which is more in line with the purpose of this book. The translator adjusts his translation strategies for different audiences in order to achieve the equivalence of audience.

3.4.2 *Equivalence of writing aim*

At the end of the preface, Bill Gates mentioned that three conditions are needed to solve the problem of climate change. Now the first two are already in place: ambition and goals. The third condition, a concrete plan to achieve the goal, was lacking, so he wrote this book as the ultimate condition for solving climate change. Therefore, the purpose of this book is to make people aware of the seriousness of the climate problem and to provide solutions to it.

The Chinese translation of the book also achieves this aim. The translation of popular science texts on

environmental protection aims to popularize the knowledge of environmental protection to the target readers. To achieve this goal, the translator needs to adjust his translation style and convey information accurately to readers with flexible expression, rather than reproduce the content of the source language rigidly.

Example 15

ST: To grow crops, you want tons of nitrogen—way more than you would ever find in a natural setting. Adding nitrogen is how you get corn to grow 10 feet high and produce enormous quantities of seed. (Gates, 2021: 170)

TT: 種植農作物需要大量的氮,遠超在自然環境中所能找到的氮。施加氮肥可以讓玉米長到 10 英尺高,並大幅提高玉米產量。(Chen, 2021: 147)

In this example, Bill Gates draws the readers closer by using the second person to tell people about the importance of nitrogen fertilizer for growing crops. In the translation, the translator omitted the personal pronoun in order to make the description more objective and show the intention of popularizing science. Although there is a big difference between the expressions in the source language and the target language in this example, they both teach the readers exactly the role of nitrogen fertilizer and achieve the equivalence of writing aim.

Example 16

ST: The rest ... or escapes into the air in the form of nitrous oxide—which, you may recall, has 265 times the global-warming potential of carbon dioxide. (Gates, 2021: 172)

TT: 剩餘部分……,要麼以一氧化二氮的形式逃匿到空氣中。前文提到過,一氧化二氮造成的溫室效應是二氧化碳的 265 倍。(Chen, 2021: 149)

In this translation, in order to make the Chinese expression more in line with the requirements of scientific texts, the translator did not adopt the same literal translation style as the previous text, but translated “you may recall” into “前文提到過”, which not only did not affect the content of the source text, but made the paragraph more objective and in line with the style of this book.

In conclusion, to achieve the goal of popular science, the translator adjusts his translation style according to the Chinese expression habits, and reproduces the meaning of the source language, so as to achieve functional equivalence at stylistic level.

4. Conclusion

With the functional equivalence theory as the theoretical framework, this thesis makes a detail study of the Chinese translation of *How to Avoid a Climate Disaster*. Under the guidance of four levels of functional equivalence theory, this thesis finds out how the translator Chen Zhaoqiang achieves the success of translating the source book. In order to get a satisfied work, Chen not only takes the lexical level, syntactic level, text level and stylistic level of functional equivalence theory into account, but also endows the Chinese translation with literariness and readability with his own language skills. Besides, this thesis also summarizes some methods of reproducing a successful translation of environmentalism. Firstly, when translating technical terms, the translator



needs to consult dictionaries or related materials to ensure the accuracy of the words used, correctly popularizing the relevant knowledge to the readers, while when translating some non-technical terms, the translator does not need to rely too much on the meaning in the dictionary. The translator can use the extended meaning of the words according to the context to make the sentence more consistent with the target language. Secondly, when translating personal pronouns, the subject of the actual reference can be translated according to the context and language style. Thirdly, when encountering long and difficult sentences, the translator should not be limited to the original order of the sentence, but should adjust the sentence order according to the meaning of the sentence, and add appropriate logical connectors to make the sentence more logical. Fourthly, when translating an environmental science popularization text like this book, the language used should be accurate, easy to understand and fluent. However, when encountering some narrative or advocacy language, the language style can be appropriately adjusted according to the author's writing purpose to reduce the stiffness during reading. Lastly, when applying functional equivalence theory in translation, the translator should not overly pursue a one-to-one correspondence between source language and target language. Instead, the translator should adjust the translation strategies according to the actual situation to achieve dynamic equivalence between source language and target language, so that the readers of the target text can have the same reading experience as the readers of the source text. It is hoped that more efforts will be made to enrich the environmentalism translation studies and prepare for future studies. Moreover, increasing concern should be given to translations of environmentalism including both the foreign and domestic ones.

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