



Application of Computer Technology in Translation Teaching

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Abstract. The form of English passive structure has a significant influence on its Chinese translation. Based on the self-built BTI corpus, this paper selects the previous data on the standard translation characteristics of English passive structure based on big data statistics as the reference, uses the method of variable analysis, and investigates ten Chinese versions of marked passive structures in students' English translations from the perspective of comparative statistics. Data comparison shows a significant difference between the translation features shown in the BTI corpus and the standard translation features reflected in the reference data. Compared with the reference data, the proportion of long and short passives translated into active and agent theme structures decreased significantly. After receiving the theoretical explanation and training of translation skills, students pursue applying various translation skills on purpose while ignoring the most common and basic translation skills. For another, the deviation between the translation form features in the BTI corpus and the translation standard features reflected by the reference data shows the decline in the quality of students' translation. The results help teach reflection and enlightenment to translation teaching with the aid of computer technology in the future.

Keywords: Passive Structure translation · Translation Teaching · Self-Built Corpus · Computer Technology

1 Introduction

The difference between active and passive forms of expression mainly depends on language characteristics. From the perspective of linguistic morphology, English is a hypotaxis language with many morphological changes, especially verbs, so English passive expression is dominant. Meanwhile, Chinese, as a parataxis language, has almost no morphological changes, and the verb itself does not have the mark of the passive voice. Hence, the expression of the passive meaning in Chinese lacks morphological marks and is implicit. In the course of translation instruction, the translation skills of active and passive sentences draw significant attention. In the past two decades, with the deepening of corpus translation studies, the importance of corpus in translation teaching has gradually emerged. The rise of corpus linguistics has severe implications for any discipline in which language plays a significant role [1]. Corpus-based translation

instruction research and computer technology break through some limitations of traditional translation teaching and at the same time, improve the translator's quality of learners so that they can better cope with the actual translation work. In this paper, a multivariate quantitative analysis of passive structures in students' translation works from English to Chinese is made based on the sub-database of students' translation in the self-built BTI corpus to investigate students' mastery of specific translation skills.

1.1 Research Status of Corpus-Based Translation Teaching

With the help of CiteSpace analysis tools, we analyzed foreign translation teaching research pieces of literature over the past 40 years in the two SSCI sub-databases, Translation Studies Documentation Database and Web of Science. We summarized the hot spots and trends of foreign translation teaching research. According to the data analysis of this research, before 1990, foreign research in the field of translation teaching developed slowly and was in its initial stage. Afterward, the research of translation teaching entered a pioneering period, and the research achievements have been increasing continuously. After 2000, information and communication technology developed fast, and the research in this field surged and peaked from 2008 to 2010, officially entering the development period. In recent years, translation teaching research has increasingly highlighted the informationization characteristics of translation, and translation teaching under the background of teaching technology has become a hot topic.

Zhao Mi and Wang Linhai (2020) [12] took CNKI research papers related to translation teaching from 2000 to 2019 as the database. They used the CiteSpace visualization function to conduct a knowledge graph analysis on domestic research on translation teaching. By analyzing the retrieval data of CNKI core journals, CSSCI, and professional translation journals, it found that most of the research on translation teaching in China started after 2000 and soon entered a period of vigorous development. In terms of translation teaching research hot spot, "corpus" is pouring into sixth place in the field of translation teaching in the last decade keywords. It serves to show its research heat. However, as a result, corpus translation in China started late, the applications of corpus to translation teaching in the field of research are still in their early stage of development, and corpus construction of translation teaching for translation major is also in its infancy. Most of the translation teaching corpora established in various universities for translation teaching are relatively small in quantity, scale, and application scope. The construction of a teaching platform based on corpus for teaching evaluation, textbook construction, and other applications is insufficient, and the academic community needs to invest more energy.

1.2 About the Self-built BTI Corpus

Translation technology is an essential support for creating school-based characteristics and promoting the professional development of translators. Translation technology includes essential tools and related technologies of information technology, computer-aided translation technology, the assisted translation process, and information-assisted technology in translation studies, among which information-assisted technology includes corpus technology. Corpus technology combined with data mining technology and text

analysis technology can be used in various fields of corpus research. In recent years, with the deepening of corpus linguistics and descriptive translation studies, corpus technology and research methods have been gradually applied in translation, and the advantages of the corpus in translation teaching have gradually emerged. From the current research results of corpus-based translation teaching, most studies only discuss the application of corpus in some aspects of translation teaching from the theoretical level. Although the existing corpus for translation studies can be applied to translation teaching to a certain extent, these corpora are specially designed for specific fields of translation studies. They are not closely integrated with the teaching content of translation courses, let alone conform to the teaching characteristics of each school. In order to deepen the development of undergraduate translation majors in our college, optimize the BTI cultivation environment and conditions, and further build the MTI academic sites, the implementation of the construction of translation corpus has become an urgent need for the development of our translation major.

This study applies corpus technology and research methods to develop undergraduate translation teaching in the new era. It aims to establish a dedicated English-Chinese bilingual parallel corpus for translation teaching in our university, divided into two sub-databases (English-Chinese parallel corpus for classic works and English-Chinese parallel corpus for students' translated works). An English-Chinese parallel corpus is a large number of bilingual corpora that automatically renders the related data. It provides students to learn translation strategies and skills, to master the critical tool of bilingual translation, and our professional translation teachers in teaching design, evaluation, and related teaching research to provide essential credentials and auxiliary functions. The principles of authenticity, information points, and diversity are adopted in the collection of the corpus of students' translated works. The corpus was collected from the translation practice tasks completed by 320 students from 9 classes of Grade 2018 undergraduate English majors and undergraduate translation majors in the on-campus practice course "Translation Workshop," and the texts included were all examples of students' translation. Each student has translated two texts, one from English to Chinese and the other from Chinese to English. The translation corpus covers nine categories: tourism, economy and trade, culture and art, learning and education, ecological and environmental protection, energy and mineral resources, scientific and technological development, and health and government documents. The source text comes from the practical exercises of the course, and each text has some unique translation skills, such as four-character structure, proper cultural nouns, and compound sentence structure.

1.3 Corpus-Based Passive Structure Research

Passive sentences are preferred to use in English and active sentences in Chinese. The interconversion between passive and active sentences is very frequent in translation. It has always been a difficult point in translation practice and a hot spot in translation research. In recent years, some corpus-based translation studies have begun to regard the passive voice as a significant feature of language evolution and have observed and analyzed the differences in the use of passive structures between translated Chinese and source Chinese from the perspective of data [10, 11]. The above studies only measured the frequency of passive structures in the translation and did not quantify the source language

form of passive structures. Hu and Tao (2013) [3] used CECIC Corpora to investigate the grammatical features of 890 Chinese sentences translated as “be-passive” and found that nine basic Chinese syntactic structures in conference interpretation texts can be translated into passive structures in English. Liu and Wang (2020) extended the above research by using the English-Chinese parallel corpus of BFSU to investigate about 5000 examples of passive structures translated into Chinese in scientific and technological styles and found and summarized different pairs of passive structures translated into Chinese. Later, from the perspective of big data, they further systematically discussed the linguistic features of the original English language’s passive structure, the relationship between the original English language, and the relationship between the passive structure of the original English language and the form of Chinese pair translation, and the causes of translation conversion patterns. Also, other corpus-based studies focus on the collocations of lexical items and syntactic patterns [2, 6, 7].

2 The Research Design and Data Analysis

Because of the common characteristics of passive structures in translation discovered in other scholars’ previous studies, this study uses a self-built corpus of student translations to investigate the same dimension. It aims to investigate whether the undergraduate students majoring in English and translation at our university can present the same degree of common characteristics in translation to evaluate the quality of their translation.

2.1 Research Object

Passive sentences in English can be divided into structural and meaningful passive sentences. A structural passive is one marked by the passive voice of the verb in its structural form (“be + v-ed”), e.g., Those pyramids were built around 400 A.D. Notional passive sentences are those which do not use the passive voice of a verb. Still, they contain a passive meaning, e.g., The stone touches smooth. English generally uses syntactic structures with passive marks to express passive meaning, which can categorize into two forms: “be + passive participle” and “get-passive participle.” Notional passive sentences have no explicit syntactic structure mark, which is not convenient for corpus search and statistics. At the same time, the “get-passive participle” form in the structural passive sentences is rarely used and has no statistical significance, and the two forms are different in meaning. Given this, to ensure the research results’ reliability, the research object is limited to the “be + passive participle” form of the structural passive sentence. It makes a statistical analysis of the Chinese version of “be + passive participle” from two aspects of structural form and syntactic form by using the student translation sub-database of the BTI unique corpus built by our university.

2.2 Research Design

The data in this study obtains from BTI Corpora, a self-built corpus for translation teaching in our university. Two key characteristics of the corpus are that it involves many language pairs and that each text is accompanied by a rich set of standardized metadata

related to the source texts, the translation tasks, and the students. The total number of symbols in the Chinese-translated corpus in the student-translated subdatabase is 302,891, and the corresponding number of symbols in the English source language is 4,212. The English source language corpus divides into nine texts of different genres, and each text corresponds to an average of 35 Chinese translations. The bilingual corpus is aligned at the sentence level through morphological restoration and part-of-speech tagging. A total of 46 passive structural forms in the source English corpus were found, each passive sentence corresponds to 35 Chinese translated forms, and a total of 1610 Chinese translated forms were found. The results of big data quantitative analysis by Liu & Wang on passive translation forms of English are taken as a reference for the typical translation characteristics and compared with the data in this study [5]. In order to analyze students' translation of passive structures, it investigated whether the translation forms of passive structures are consistent with the typical features reflected by the reference objects.

2.3 Data Analysis

As previously mentioned, the BTI corpus implements parallel alignment between nine source texts and their corresponding 35 translations at the sentence level. This study extracted passive structures in nine English source texts manually. Then passive structures in English were searched, the translation forms in students' Chinese translations were extracted, and 1617 Chinese translated versions were retrieved. Further, we observed the retrieval results, excluding seven language examples with no corresponding translation or adopted meaning, and we analyzed the remaining 1610 Chinese translation forms. Then it marks all kinds of passive Chinese translation forms, and divides them into passive structure, active structure, patient theme, grammaticalization of verb-object construction, disposal construction, subjective-object structure, attributive phrase, nominal structure, analogous grammaticalization, and ellipsis form. The statistical results are shown in Table 1. By comparing with the reference data, the research finds that according to the big data statistics of "Chinese-English Parallel Corpus" by Wang and Liu (2017), there is a significant change in the proportion of the primary translation forms in the self-built BTI corpus. Among them, the proportion of syntactic passive and lexical passive paraphrases is significantly higher than the reference data. Apart from active structure, patient theme, and ellipsis form, most of the other translated versions appear more or less in a proportion higher than the reference data [8, 9].

In contrast, the frequency proportions of conversion from passive form to active structure and patient theme, these two common forms, show a significant decrease. The actual data results reflected in Table 1 are mainly inconsistent with the expected results at the study's initial stage. They do not conform to the typical characteristics of passive structure translation form reflected in the reference data. Based on the data from translation teaching practice, we know the reason why the form of paraphrasing in students' translations reflects such characteristics. That indicates that after receiving theoretical explanation and training in translation skills, students tend to use more flexible translation skills and pursue novel paraphrase forms while ignoring the most common and basic translation skills.

Table 1. Comparative statistics on the Chinese versions of English “be-passive”

Translation Form	Quantity (BTI)	Frequency (BTI)	Frequency (comparable data)	Types
Passive structure	237	14.73%	9.94%	Syntactic and lexical passivity
Active structure	496	30.78%	38.10%	General active sentences; Replacement of logical relation
Patient theme	326	20.23%	31.46%shi.....de;you.....
grammaticalization of verb-object construction	82	5.08%	3.86%	(dui)jin xing/yu yi/zuo.....
Disposal construction	110	6.83%	1.57% ba
subjective-object structure	19	1.20%	0.53% shi/ling
Attributive phrase	171	10.65%	3.17%	Center verb “de” + Patient nouns
Nominal structure	98	6.09%	3.28%	nominalization
Analogous grammaticalization	19	1.21%	1.89% de yi/huo de
Ellipsis	52	3.20%	6.20%	Ellipsis
Total	1610	100%	100%	

This study divides English passive structural forms into “long passives” and “short passives.” Long passives refer to those passive structures with an agent, and short passives are those without an agent. English uses passive structures and intends to achieve “impersonalisation” by using an obscure agent. Hence, many short passives can eliminate the author’s subjectivity, which is especially obvious in the formal style. The source texts of the BTI corpus are all standard texts. After observing the selected English passive forms, 13 cases of long and 33 cases of the short passive structure were obtained. The short passive structure was significantly more than the long passive structure, which was in line with the expectation and the reference data. The reference data selected in this study indicate that the form of passive structure in English significantly influences its Chinese translation. We also made relevant data analysis on the situation of the BTI corpus and obtained the corresponding proportion results (see Table 2). Through data observation, we found that the above effects are consistent with this study’s situation. However, compared with the reference data, it can be seen that the proportion of long and short passives translated into active structure and agent theme structure in the BTI corpus is significantly reduced. The active structure decreased from 38.1% to 30.78%, and the agent theme structure declined from 31.46% to 20.23%.

Table 2. Comparative statistics on the “long-passives” and “short-passives”

Translation Form	Comparable types			
	long passives (comparable data)	long passives (BTI)	short passives (comparable data)	short passives (BTI)
Passive structure	18.2%	47 (19.8%)	8.9%	190 (13.8%)
Active structure	28.9%	67 (28.2%)	39.2%	429 (31.2%)
Patient theme	36.3%	39 (16.5%)	30.9%	287 (20.9%)
grammaticalization of verb-object construction	3.1%	11 (4.6%)	3.9%	71 (5.2%)
Disposal construction	1.3%	19 (8.0%)	1.6%	91 (6.6%)
subjective-object structure	0.6%	3 (1.3%)	0.5%	16 (1.2%)
Attributive phrase	3.8%	27 (11.4%)	3.1%	144 (10.5%)
Nominal structure	2.9%	13 (5.5%)	3.3%	85 (6.2%)
Analogous grammaticalization	4.0%	8 (3.4%)	1.6%	11 (0.8%)
Ellipsis	0.8%	3 (1.3%)	0.9%	49 (3.6%)
Total	100%	237 (100%)	100%	1373

Further analysis is made on the influence of long and short passives on the structure of the translated text. Compared with the reference data, it can be seen that the proportion of long passives translated into an active structure is 28.9% (reference data) and 28.2% (BTI data), respectively, while the proportion of short passives translated into an active structure decreases from 39.2% (reference data) to 31.2% (BTI data). The decrease in the short passives ratio mainly causes the apparent difference. The proportion of long passives translated into agent theme structure decreased from 36.3% (reference data) to 16.5% (BTI data), and the proportion of short passives translated into agent theme structure decreased from 30.9% (reference data) to 20.9% (BTI data). It can be seen that both long and short passives have significant influences on the translated form of agent theme structure. According to the above comparison results, it is indicated that some short passives in the BTI corpus, which tend to be translated into the active structure, are translated into other counter translation forms.

In contrast, some long passives and short passives, which tend to be translated into agent theme structure, are translated into other translation forms. The deviation between the features of translation forms in the BTI corpus and the standard features of the translation forms reflected by the reference data may lead to a decline in the translation quality. Therefore, in the later course of translation instruction, we should pay attention to the translation forms of long and short passives that conform to the common characteristics. It is especially true for the English passive sentences that can be optimized to be

translated into active structure and agent theme structure and to strengthen the guidance of students' translation.

3 Conclusions

Corpus approaches help to overcome limitations of individual studies, based on translation errors in a specific translation task, which may or may not be characteristic of a specific student population [4]. Based on the subdatabase of students' translations in the self-built BTI corpus, this paper uses the method of variable analysis and from the perspective of comparative statistics to investigate the ten forms of Chinese translations of marked passive structures in students English translations. Data on the common characteristics of passive structure translation based on big data statistics are selected as the reference. Firstly, the frequency of different translation forms and the reference data are compared. The results of the data and the passive structure reflected in the reference data have apparent differences in the typical characteristics of the translation forms. After that, we select the long and short passive structures to investigate the frequency of long and short passive translation forms. The data show that the form of English passive structures significantly impacts the Chinese translation. Compared with the reference data, it is found that the proportion of long and short passive sentences translated into active structure and agent theme structure in the BTI corpus is significantly reduced. According to the teaching reflections on the results of the data, for one thing, after receiving the theoretical explanation and training of translation skills, students tend to pursue applying various translation skills on purpose while ignoring the most common and basic translation skills. For another, the deviation between the translation form features in the BTI corpus and the translation standard features reflected by the reference data shows the decline of the quality of students' translation, which has certain enlightenment for translation teaching in the future.

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