

# Application of Screen Recording in Multimodal Study of Translation Process

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**Abstract**—The study of translation process has become a hot topic. The research tools and methods include Thinking-Aloud-Protocols (TAPs), Translog, eye tracking, and so on, each of which has its own advantages and disadvantages. In the era of information technology, screen recording, combined with the construction of a parallel corpus of text, audio and video, offers a multimodal approach to the study of translation process. In detail, this paper discusses how screen recording can be applied in the multimodal study of translation process.

**Keywords**—screen recording; multimodal study; translation process; application

## I. INTRODUCTION

The focus on the process of translation originated from James Holmes, a Dutch translator. According to Zheng Bingham, the empirical study of translation process in the West has undergone several stages: exploration (1982-1989), development (1990-1999) and maturity (2000-2006) [1]. The empirical study of translation process by Chinese scholars is later than that by western scholars, which is mainly macroscopic, such as the discussion of methodology, the summary of translation process research, the analysis of microscopic variables and so on. Overall, this study is attracting the attention of Chinese scholars, but the results are relatively few.

What influences the empirical study of translation process most are the tools and methodology. At present, the approaches employed are mostly experimental research and dynamic description, including Thinking-Aloud-Protocols (TAPs) [2] and Translog [3]. In recent years, some scholars have used eye tracking [4] and other neuroscience technologies to study the translation process. However, the popular research method is still TAPs combined with Translog, plus the translation evaluation analysis. As Translog can not display Chinese, it's not very useful for Chinese scholars in the study of English-Chinese translation [1]. Moreover, the keyboard record can not show the whole process of translation. These drawbacks affect the development of translation process studies in China.

We believe that it will be the trend of translation process research to shift the focus of translation studies from text-based (for TAPs, voice transcription is needed) to multimodal (including text, audio and video) by using screen recording in combination with a parallel corpus of text, audio and video.

Unlike the traditional TAPs, the screen recording method is employed through daily classroom exercises. Students do the translation exercise through Snowman CAT, which allows bilingual texts to be exported. The exported texts are easy to be transformed to formats that can be searched through corpus tools, such as ParaConc. While translating, students are required to record the computer screen by using a screen recording tool called EV, which, like WebEx, shows the timeline of recording. Through the timeline of which students keep record in the translated text, a link can be established between the recorded video and the translated text. Recorded feedback in audio is later done in the form of homework. In this way, compared with TAPs, the multimodal bilingual corpus can be constructed more conveniently. With the translated texts, linked videos, and audio feedback all incorporated into the multimodal corpus, the observation of students' translation process can be done in a more comprehensive, objective, truthful and deep way. As the experimental conditions are easy to meet and the operation is simple, the multimodal study of translation process can be carried out on a larger scale.

## II. OPERATION OF SCREEN RECORDING

### A. Screen Recording

There are many screen recording tools, including the famous Camtasia, but few are suitable for the multimodal corpus construction purpose. Most of these tools either don't display the timeline while recording or are quite complicated or troublesome to operate.

Out of many screen recording tools, WebEx is a very good choice, which is almost perfect except that its format needs to be transformed to MP4 in order to be played online or by mainstream players.

EV screen recording tool is our choice in that it's easy to operate with the timeline displaying function, and more importantly, its format is MP4 by default.

The steps to record the screen using EV is quite simple, and it only takes students a few minutes to learn how to use it. What should be paid attention to is that the tool uses microphone by default. If the computer has no microphone, students are supposed to set the recording mode to be without microphone.



Fig. 1 EV Screen Recording Tool

### B. Taking down the Timeline during Translation Process

The timeline of the screen recording needs to be taken down manually. Students get the timeline from EV and take it down in the inputting area of Snowman CAT when they begin to translate a sentence. When they finish the translation of the sentence, they do the same. In this way, timeline information corresponding to the recorded video is obtained and makes it easy to link the translated text with the video through retrieval. The timeline input format is as follows:

< 00: 00 > < 00: 00 >

The first < > is for the input of the time when translation of a sentence starts, while the second one for the end time of a sentence translation. Minutes are input before ":" while seconds after it.

### C. Post-processing of Recorded Video

After video recording, post-processing is supported, such as inserting text and audio into the video.

There are mainly two types of text insertion. One is the teacher's feedback of the translation of the students; the other is students' feedback to teacher's questions concerning specific translations. Students can respond to these questions by inserting text into the video.

The translations of the students can be evaluated by the teacher through inserting a piece of feedback audio, while the students can also provide feedback by responding through audio.

Through the above operations, multimodal data are collected for the construction of the parallel corpus.

## III. THE APPLICATION OF SCREEN RECORDING IN THE MULTIMODAL STUDY OF TRANSLATION PROCESS

### A. Multimodal Bilingual Corpus Retrieval Tool

The retrieval of multimodal bilingual corpus requires the function of linking the text with the corresponding video through the timeline. At present, the common retrieval tools of bilingual corpus, such as ParaConc, do not provide this function. Thus we designed a web-based tool for the retrieval of the multimodal bilingual corpus. It is written in PHP, with functions such as keyword retrieval, regular expression retrieval, playing the video segment, and so on. Through this

tool, we can search the parallel corpus, click on the timeline and get directed to the corresponding video segment. The construction of an online retrieval platform is complicated. Such tools or platforms mean a lot to the multimodal study of translation process. It is hoped that future development of corpus retrieval tools takes the multimodal retrieval function into consideration. Research and development in this regard are worthy of discussion and attention.

For the time being, it is advisable to use ELAN to link the translated texts with videos. For more information about ELAN, some discussions can be referred to [5, 6, 7, 8].

### B. Utilization of Multimodal Bilingual Corpus Retrieval

Through the retrieval of the multimodal parallel corpus, we can look deeper at students' translation process. For example, in an English-Chinese exercise, which is taken from William Faulkner's *Bear*, there is a sentence which reads: "It loomed and towered in his dreams before he even saw the unaxed woods where it left its crooked print, shaggy, tremendous, red-eyed, not malevolent but just big, too big for the dogs which tried to **bay** it, for the horses which tried to ride it down, for the men and the bullets they fired into it; too big for the very country which was its constricting scope."

In this sentence, the word "bay" is easy to be misunderstood and rendered incorrectly into Chinese. Most of the 25 students that took the exercise considered its meaning to be "bark", while only two got its correct meaning of "bring to bay".

The video segments corresponding to the translations of this sentence, however, helped discover different causes for the wrong translation and the same reason for the correct translation.

Of the students who translated incorrectly, some did it without thinking; some looked the word up online, but missed the definition appropriate in the translation context. As for the two that got the translation right, they have something in common: pondering over the word "bay" and then checking it online by looking up dictionaries and reading the definitions meticulously.

Without the linking between the translated text and the corresponding video segment, such chances for an in-depth observation of translation process would be hard to have.

### C. Utilization of the Videos by Students

For translation training, it's a good method to help students enhance their translation ability by encouraging them to learn from each other. But how? The screen recording videos are the answer. The videos of more experienced translators are role models for students to learn from in terms of good translation habits, translation procedures, online search skills, critical thinking, and so on, while videos of poor-quality translations provide students with something they must guard against.

Problems students meet in the process of translation can be taken as typical cases, the handling of which can be done through watching relevant video segments. Thus students become more and more capable of trouble-shooting in the process of translation.

Through the utilization of the videos, students are also more eager to become more professional in translation so as to be or not to be watched.

#### IV. FINDINGS

Through the application of screen recording in the multimodal study of students' translation process, we have made some findings which are as follows.

##### A. Translation Mode

In the age of AI and big data, almost all professional translators in the language service industry, more or less, make use of neural machine translation (NMT, also called AI translation). Through the videos, it's easy to find out about the students' translation mode. For them, however, the picture is a little different. Some students adopt the human-machine interactive translation mode. They favor post-editing more than pure human translation. Some students employ human translation mode with the aid of CAT while staying away from AI translation. Some do human translation only. It's hard to say which method is better, as it depends on the individual situation.

The teacher is responsible for enabling the students to be aware of the importance of the translation technology and of self-training without relying on the machine. How to strike a balance between human and machine is worth pondering over and discussing. For those relying too much on machine translation, it's time to do some translation alone, while for those staying away from translation technology, it's also time to get in touch with the machine.

##### B. Online Search Skills

The Internet is never so powerful as today. The ability for students to get information during the translation process, however, needs a lot of training. Through the screen recording, it's surprising to see that students know few search skills when it comes to finding the correct translation for some difficult terms or to getting useful background knowledge about some translation project. The causes for this is that they are not capable of identifying the correct one from various translations online and that they don't have enough knowledge to come up with useful key words.

To enhance students' online search skills, the first step is to train them with the key words. The second step is to encourage them to make it a habit to search during translation process. The third step is help them learn to verify.

Through the observation of their successful online search video segments, students make satisfactory progress, a method more effective than just telling them what to do and how to do.

##### C. Translation Skill Acquisition

Translation skill acquisition requires long-term training, in which the amount of training and positive cognitive thinking are the key factors. Therefore, students are required to train independently, and increase the amount of training.

After each exercise, they are encouraged to discuss translation skills in the course forum online. The teacher and their fellow students can make comments, reply to and rate

their discussions. In this way, they get more familiar with and have a deeper understanding of the translation skills discussed.

##### D. Individual Variations

Through the screen recording, individual variations in translation process are found. Here are some typical ones.

Firstly, typos. Although some students make few typo mistakes. Some are not good at spelling and thus typos occur here and there. For some others, however, typos are not due to poor spelling ability. They make typos because they are always in a hurry to finish the translation task while not careful enough to spot the typos. And there are some others who are not proficient in typing and thus often spend time modifying typos.

Secondly, the translation procedure. Some students always begin to translate without thinking or reading the context. Compared to them, some others have a good habit of reading the original carefully first, checking the background, pondering over the sentence pattern to employ, and so on. So it's very important to familiarize students with a professional translation procedure. Strictly following the translation procedure, the students will gradually develop good translation habits, such as spending time understanding the original text before translation.

Thirdly, critical thinking. The difference between human translation and machine translation is that human translators, unlike the machine, are capable of critical thinking. Unfortunately, most of the students are not alert to logical issues during the translation process. As beginners, they tend to translate without the context in mind. For example, the Chinese expression "shushu" usually means "uncle" but sometimes it also means "brother." It depends on the context. In a Chinese-English translation exercise, a man addresses a woman "sister" as the man and the woman's husband are like brothers. Then after several sentences, the woman calls the man "shushu". With a little critical thinking, a translator is supposed to become doubtful and then check the Chinese definitions of "shushu" online. Most of the students, however, put "shushu" into "uncle" without thinking, only a few of them getting the correct meaning of "shushu" in this context. It's a typical example that tells us the cultivation of critical thinking requires constant training and practice.

#### V. CONCLUSION

Combined with corpus technology, screen recording can provide a multimodal perspective for the study of translation process, which is of practical value for the in-depth analysis of translation process. At present, the development and utilization of related tools still need to be further explored. Moreover, in the age of AI technology, it is necessary to conduct more large-scale multimodal experiments on and investigations of the process of human-machine interaction translation to better understand AI translation and provide new thoughts on machine translation post-editing.

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