Eye-Tracking Processes and Styles in Sight Translation

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Reviewed by OBED EBENEZER .S

James S. Holmes, in "The name and nature of translation studies" (1972), the foundational paper that laid down the possibilities of Translation Studies as a separate academic discipline, characterised Translation Studies (TS) as Pure and Applied TS, of which Pure TS was further categorized into theoretical and descriptive translation studies. He then classified Descriptive translation studies (DTS) into three kinds: product-oriented, function-oriented and process-oriented DTS, in which, process-oriented DTS "concerns itself with the process or act of translation itself" (2001:177). As a systematic area of enquiry, the study of the process of translation or "translation process research" (TPR) began with rational approaches based on linguistic and psychological theories, such as Bell's (1991) translation model describing how the activity of translation takes place. With advances in medical technology and Information Technology (IT) in the 21st C, techniques such as screen-recording, key-logging, eye-tracking, Electro Encephalography (EEG), and functional Magnetic Resonance Imaging (fMRI) began to be applied in TPR to understand the different cognitive processes that occur during the activity of translating. Eye-tracking, which involves the recording and analysis of the movements of the eyes during different activities, has seen many takers in TPR. Typically, this method is applied to study computer-aided translation (CAT), where the translator looks at the screen on which the source text (ST) is displayed on one part, and the rest of the space is used to display the target text (TT) as the translator produces it. As both the ST and the TT are displayed on the

same screen, it becomes easier to track and record the movements of the eyes.

In this book, Wenchao Su applies the technique of eye-tracking to investigate the process of sight translation between Chinese and English, wherein a written text in the SL is translated orally into the TL. Sight translation involves a shift between the textual and the oral, from written to verbal, combining the aspects of both translations in their textual form, and interpretation. *Eye-Tracking Processes and Styles in Sight Translation* is the publication of Su's doctoral dissertation undertaken at the University of Macau, in book form. It can be a useful resource for researchers aiming to undertake studies that employ eye-tracking as a tool. This book is also a part of the series titled *New Frontiers in Translation Studies* that has been pushing the boundaries of interdisciplinarity in TS and has brought out 32 research-based volumes from 2015 onwards, such as *Researching Cognitive Processes of Translation* (2018), *Eco-Translatology* (2020), *Cognitive Processing Routes in Consecutive Interpreting* (2021) and *Advances in Cognitive Translation Studies* (2021).

Eye-Tracking Processes and Styles in Sight Translation is structured like a thesis, with five chapters in addition to the introduction and conclusion. The "Introduction", lays down the organization of the volume, outlining the purpose and aims of the study, and a brief overview of the reasons for the choice of the topic, and its significance. Some of the major issues and questions that this research seeks to address are: the differences in eye-movements in the different stages of sight-translation, differences between the eye-movement patterns of novice and professional translators, and responses to translation problems, in addition to examining local styles (at the lexical level) and global styles (common across the whole text).

Chapter 2, titled "Issues and Approaches to CTIS", discusses some of the methodologies such as "psycholinguistic, behavioural, corpus-based, and neurological approaches" (9) that have been used in cognitive translation and interpreting studies (CTIS) to understand the cognitive processes that take place during the activity of translation and interpretation, and especially those that have implications on sight translation. Psycholinguistic approaches have commonly used think-aloud protocols (TAPs) and key-logging to shed light on translation strategies and translation problems; behavioural methods show how novice translators approach and solve translation problems as compared to professional translators; corpus analyses highlight the patterns and processing routes of the translator, and neurological approaches reveal the activations of various regions in the brain during translation. The present study employs the behavioural approach as the behaviour/movement of the eyes during sight translation is what is being examined here.

"Translation Style in Sight Translation", the third chapter, takes up style, not as the linguistic or stylistic features of the text, but rather, considers it as the behavioural patterns of translators. The author begins with a discussion of the features of sight translation, and how it differs from the interpretation and written translation. Written translation can be read and revised at a convenient pace, whereas sight translation is a one-time action under possible time constraints. With respect to interpretation, however, the ST is available for a second (or more) reading enabling greater comprehension, lesser memory load, and higher flexibility of time in sight translation. There are two types of sight translation: unrehearsed sight translation, where the translation occurs impromptu, as soon as the text is given; and rehearsed/prepared sight translation, where text can be read, notes prepared and draft translations be created. Similarly, style too can be categorized as global and local,

based on the approach towards the text. In addition, the behavioural patterns of professionals as compared to novice translators also differ. Global behaviour refers to how the text is approached in its entirety. Drawing from previous studies on written translation, Su asserts that behavioural patterns vary during the different phases of translation, such as the preparatory phase, the reading phase and the actual translation phase. The coordination style, that is, the organization from reading to speaking, from comprehension to production of speech is also investigated. In simultaneous interpretation (SI), this had been studied with respect to the Ear-Voice Span, that is, the time-gap between hearing and the production of the interpretation. In written translation, coordination had been studied with respect to the Eye-Key Span (EKS), that is, the time-gap between reading and the production (typing) of the translation. Combining these two methodologies, coordination in sight translation can be analysed with respect to the Eye-Voice Span (EVS), which is the time lag between reading and the production of the oral translation. EVS measurements can reveal behavioural characteristics of professionals and novice translators that differ from each other. Local behaviour, on the other hand, refers to the approach toward the text at the lexical level. This involves the identification of translation problems and the strategies used to negotiate such issues using subjective methods such as translator notes, concurrent TAPs (during translation), and retrospective (after translation) TAPs, and/or objective methods such as eye-tracking and key-logging.

The fourth chapter, titled “Eye-Tracking Method”, lays down the details of the experimental study used for data collection. The sample population comprised of two groups: nine professional interpreters and thirteen novices, sight translating from Chinese to English. Data was collected between July and December 2018. Language proficiency and translation

competence were self-rated. Four source texts in Chinese which were comparable in terms of difficulty, word count and lexical variation, and containing a similar number of types of translation problems were selected. The Tobii TX300 eye tracker was used along with the Tobii StudioTM 3.4.8 software for stimulus presentation and data collection. The font used for Chinese letters was Microsoft YaHei size 19 double spaced. Participants were given fifteen minutes for advance preparation. The actual oral translation was recorded, and participants reviewed the recordings. The author then discusses the statistical methods used for the analysis of the data. Linear Mixed Effects Regression (LMER) models were used for analysis. Such models are useful to examine trends at both global and local levels, especially when the sample sizes are small, and there are fixed effects and random effects. The chapter also includes the Chinese texts which were used for the study and their English translations, as appendices.

In Chapter 5, "Global and Local Styles of Sight Translation", Su describes the results of the experiment in light of their implications upon style. Task-time (TT), fixation count (FC), saccadic amplitude (SA), fixation duration (FD), pupil dilation (PD) and (eye-voice span) EVS were used as measures for global styles. It was found that overall, the preparation phase involved higher measures of TT, FC and SA and lower FD and PD than actual sight translation. With respect to professionals, the overall speed was faster, with lesser FC during the preparation stage. Novices took a comparatively longer time during the preparatory phase, with higher FC. However, during the actual sight translation, there was no significant difference in the measures TT, FC, FD, SA, and PD between professionals and novices. Gaze behaviour patterns with respect to FD and PD were consistent in both stages. That is, higher measures of FD and/or PD in the preparation phase corresponded to higher values of FD and/or PD in the actual

sight translation phase, and vice versa. EVS measures were larger for professionals, indicating that they tended to read ahead or scan larger groups of words than what was required for immediate translation. Translation problems were identified as those words containing peculiar Chinese features and characters and were characterized by longer first fixation duration (FFD) and total fixation duration (TFD) and EVS were used for local styles. Professionals were found to have made fewer errors, disfluencies (breaks in speech), omissions and expression errors when compared to novices, but also committed higher values of meaning errors.

"Gaze Behaviors, Interpreting Styles, and Language Specificity", the sixth chapter, discusses the findings of the study and their significance, throwing light upon the various cognitive processes in sight translation. Actual sight translation demanded more cognitive processing and load as revealed by the longer fixation durations and greater pupil dilation. Advance translation (preparation) required less cognitive load but consumed more time. Professional translators spent lesser time and lesser fixation counts than novices in the preparation phase. Professional interpreters also exhibited the tendency to read ahead while verbalizing the translation as shown by higher values of EVS. Novices tended to utilize higher cognitive loads in the processing of problematic words in the ST as revealed by longer fixation durations. The study also revealed that the eyes fixate on the problematic word just before verbalizing its translation, revealing the cognitive processing and the refreshing of active memory. Translation problems also tended to interrupt and delay the smooth flow from comprehension to the production of interpretation.

The seventh and final chapter, titled "Looking Ahead" summarizes the study and suggests avenues for further research on similar topics in the future. Because the study

showed that professional interpreters require lesser time and cognitive effort than novices, while at the same time, producing more fluent and error-free translations, the author emphasises the need for adequate training in translation and interpretation. Su also acknowledges the limitations of the study, which included the comparatively small size of the sample population and the fact that the study was carried out in laboratory settings which could affect the ecological validity of the study. In addition, only words which were identified prior to the experiment as problematic were analysed. However, other words which were not considered to cause translation problems resulted in errors, disruptions and higher fixation times were not examined. This gap opens up space for further research in this area. Moreover, future studies can move beyond how translators respond to translation problems and investigate the cognitive processing of not just style, but performance as well.

Eye-Tracking Processes and Styles in Sight Translation is a handy resource for researchers who are working in the area of sight translation, simultaneous interpretation, consecutive interpretation and written translation as it draws from previous studies in these fields, and also reveals findings that would be useful in the mentioned fields. In addition, it also contains practical material that would provide insights to researchers using eye-tracking as a methodological tool. However, this book holds the basic structure of a thesis and might cause the lay reader to lose interest. The book assumes that the reader is familiar with the methodology of eye-tracking, and fails to introduce and explain the design of the eye, common eye movements and what they indicate. Therefore, it might be confusing to a person unfamiliar with the terms and methodology of eye tracking. The reviewer recommends Andrew T. Duchowski's Eye *Tracking Methodology* (2017), and *Eye Movement Research* (2019) edited by Christoph Klein

and Ulrich Ettinger, as additional resources for readers who are new to eye-tracking. Though neuroimaging methods are able to provide deeper and more extensive data on the function of the brain during translation, the equipment costs are very high and require steep learning curves and often must be done with collaboration between different institutions as a researcher in literature/linguistics/translation studies alone does not usually possess the qualifications or credentials required to carry out such studies. As a methodological approach, however, eye tracking holds much potential for an investigation into the cognitive processes in translation and interpretation, combined with the relatively lesser costs and less-steeper learning curves. Sight translation is a much overlooked sub-discipline in TS, though it is frequently applied in our day-to-day life. Research in translation and interpreting studies has been seeing increasing studies, especially from China, that use eye-tracking as a major methodological approach. Such explorations hold great potential in a multilingual country like India as well, and similar approaches from the Indian context can add to the understanding of the cognitive processes involved in translation and interpretation.

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