Ferreira, A., & Schwieter, J. W. (Eds.). (2015). *Psycholinguistic and cognitive inquiries into translation and interpreting*. Amsterdam: John Benjamins. 206pp.

Since the very beginning of its existence, Translation Studies (TS) has covered a remarkably broad array of approaches, theories and methods. The interdisciplinary nature of TS has brought with it a diverse research landscape as well as theoretical and methodological input from neighboring disciplines. Among all these disciplines, cognitive science and psycholinguistics play a vital role in TS, especially when it comes to translation process research (TPR), which explores what happens in the "black box" when translators and interpreters are doing their work.

The book under review, edited by Aline Ferreira and John W. Schwieter, is a recent publication in the Benjamins Translation Library series. It is a collection of joint efforts - from Translation and Interpreting Studies (TIS), cognitive science, expertise studies and psycholinguistics - that aims at diversifying traditional approaches to TS and at highlighting methodological innovation. This eight-chapter volume consists of two parts, presenting theoretical and methodological TS constructs. Part I, *Psycholinguistic and Cognitive Intersections in Translation and Interpreting*, includes three chapters from leading scholars. The contributions not only discuss the vital role that cognitive sciences and psycholinguistics have played in TS but also critically review the contributions of these disciplines to TPR and to interpreting studies respectively. Part II, *Studies from Psycholinguistic and Cognitive Perspectives*, presents five original studies that explore various issues in TIS using various methodologies. These methodologies, resulting in more refined experiments, have generated more reliable results. Thus, the presentation of these fruitful results in the collection is "a step forward in the direction of improving TS through mutual cooperation"(p. 13).

In Chapter 1, *The Position of Psycholinguistic and Cognitive Science in Translation and Interpreting: An Introduction*, Aline Ferreira, John W. Schwieter and Daniel Gile briefly review the development of empirical research in TS and its connection with a wider spectrum of neighboring disciplines such as cognitive science and psycholinguistics. They point out that the continued diversity and ever-deepening exploration of various aspects of TS are results of these joint efforts and that TS, in turn, will offer inspiration to these disciplines. In addition, the editors' brief introduction to the papers in the volume gives readers a first taste of the contents and framework of the book. The collection embodies the editors' ambition to present the latest fruits in interdisciplinary TS research and to continue the development of methodological rigor.

In Chapter 2, *Translation Process Research at the Interface: Paradigmatic, Theoretical, and Methodological Issues in Dialogue with Cognitive Science, Expertise Studies, and Psycholinguistics*, Fabio Alves analyzes how cognitive science, expertise studies and psycholinguistics interface with TPR. The three main epistemological streams of cognitive science (cognitivism, connectionism and connected cognition) have influenced TPR continuously to such an extent that they have helped to establish the epistemological foundation of TPR. Expertise studies offers a new perspective for the development of TPR, allowing researchers to map expertise trajectories and draw a demarcation line between domain expertise and general cognitive capabilities. In turn, psycholinguistics plays an influential role in TPR methodology, since it has introduced a range of methodologies into TPR, such as think-aloud protocols since the 1980s, and key logging, eye tracking and computational modeling in more recent years. On the basis of the interface with these related fields, TPR has built its paradigmatic and methodological foundations. Furthermore, Alves points out that TRP is now conducive to the development of other related fields, not only borrowing from them but also contributing to them.

In addition to TPR, interpreting studies also finds enlightenment from psycholinguistics. Chapter 3, *The Contributions of Cognitive Psychology and Psycholinguistics to Conference Interpreting: A Critical Analysis*, is a contribution from Daniel Gile. By briefly revisiting conference IS, Gile shows how psycholinguistic theories have established a central position in interpreting studies through several stages, namely an initial stage, the rise of *the theory of sense* and, subsequently, its turn to sociology. Throughout these stages, psychology not only serves as a source of theoretical references, but also provides a variety of methods to interpreting studies. Three key components are stressed in the discussion of the contribution of psychology to conference IS: factual findings, methods and tools, and ideas. These components have helped interpreters to gain a better

understanding of complexity during the interpreting process. Regardless of the aforementioned contributions, Gile points out that psychology could continue to be a theoretical and methodological reference to interpreting studies for issues related to ecological validity and for theory-building purposes.

Part I provides us with panoramic views of process research of translation studies and interpreting studies in the past decades. These two fields have had different developmental stages and orientations. For translation studies, TPR is not only taking in theories and methodologies from cognition-related fields, but also offering new insights to these fields. All these efforts are working towards a common core of interdisciplinary studies. For interpreting studies, cognitive studies and psycholinguistics are also important theoretical and methodological sources. Researchers are still working on the integration of these sources into interpreting studies and cross-pollination of these cognition-related fields is premature at present. Reasons for the difference in development may be twofold. First, interpreting studies is a younger discipline, which is still working on establishing its epistemological system. Second, studies into interpreting are mostly conducted by practitioners-cum-researchers without any background in psycholinguistics or cognitive studies. They need to take in concepts and methods from neighboring disciplines before they make new ones. Hence, at present, interpreting studies focuses more on absorption than on reciprocity.

Part II includes five studies that explore the performance of expert and novice translators/interpreters in issues ranging from redundancy, working memory, role of expertise to language competence, post-machine-translation editing and the use of triangulation. In Chapter 4, Discourse *Comprehension in Simultaneous Interpreting: The Role of Expertise and Information Redundancy*, Adelina Hild presents a study of higher-level discourse processing in simultaneous interpreting (SI). Using a quasi-experiment, in which data collected in interviews and through retrospection have been triangulated. Hilda analyzes the effects of discourse variables to assess the process components – such as inference, shifting and integration – in simultaneous interpreting. The results show that experts execute tasks much better than novices in integrative processing of high semantic density. This finding suggests that experts, because of their experience, strategically allocate more attention to processing resources in discourse comprehension. The contribution of this study is the fine-grained design of the experiment as well as the insights into development of expertise in discourse processing. It reminds us that comprehension processes still remain a central issue in studies into interpreting.

Chapter 5, S*imultaneous Interpreting and Working Memory Capacity*, explores the correlation of SI performance and working memory capacity (WMC). Šárka Timarová et al. study the performance of 20 professional interpreters through WMC tasks and several measures of SI concerning language processing, vocabulary richness, temporal delay, etc. The findings reveal that there is no significant correlation between WMC and general cognitive ability. In addition, WMC does not necessarily correlate positively with interpreting experience. The study also shows that WMC may not be as significant for professionals as expected. Hence, the findings go against the pervasive assumption that good WMC is a presupposition of a successful interpreter. Although this study convincingly shows that our performance skills play a more important role in SI than WMC, the researchers fail to offer operational definitions of these skills in the paper. An enormous strength of this study is the detailed description of experimental procedures, which greatly ensures its ecological validity.

Chapter 6, *Process and Text Studies of a Translation Problem*, includes studies conducted by Sonia Vandepitte, Robert J. Hartsuiker and Eva Van Assche. They discuss the difficulty that metonymic constructions pose for translator trainees. Through three case studies, Vandepitte et al. examine the translation performance of subjects on metonymic vs. non-metonymic constructions, distinguishing between trained and untrained student groups, and students performing in their foreign language A (L2A) vs. foreign language B (L2B). The data show that metonymic constructions consume more cognitive effort in translation tasks than non-metonymic constructions. Furthermore, they also constitute a bigger challenge for students with a lower L2 proficiency. In addition, translation directionality may play a role in the students' performance, which means that translating abstract nouns from L2A to L2B requires more cognitive efforts than translating human nouns. However, this disparity of cognitive efforts does not exist in translation from L2 to L1. A major contribution of these experiments is the insight that rhetorical constructions can also be a

source of translation problems and errors, reminding us that complex translation processes go beyond lexical and syntactical issues.

Chapter 7, *Post Editing Machine Translation: Efficiency, Strategies, and Revision Processes in Professional Translation Settings,* touches upon a thriving area in TS. Michael Carl, Silke Gutermuth and Silvia Hansen-Schirra report on an empirical study in which they compare translation efficiency and strategies in three forms of post-editing of machine translation (PEMT). The researchers make use of a full package of tools and methods to study the cognitive processes in several tasks, such as key logging, eye tracking and questionnaires. Cross-examined data reveal that PEMT is actually an efficient preparatory step for producing a translation. However, data from the questionnaires contrast with data from key logging and eye tracking in certain respects. The eye tracking data, for example, imply that PE efforts are unevenly concentrated, with more efforts focused on single, more difficult constructions, despite the translators' claims that they have to edit the majority of the machine-translated output. This study reveals a comprehensive process of translators' cognitive movements as well as detailed data on effort concentration. It shows that PEMT, as a frontier of computer-aided translation, deserves more attention from trainers and practitioners-cum-researchers.

In the last chapter, *On a More Robust Approach to Triangulating Retrospective Protocols and Key Logging in Translation Process Research*, Igor Antônio Lourenço da Silva presents a methodological proposal. He proposes to incorporate retrospective protocols in key logging analysis so as to increase TPR reliability. In a pilot study with four expert researchers in the medical field, he explores representation and segmentation in translation tasks. Da Silva finds that discrepancies exist between data elicited from key logging and those from verbal protocols. While key logging data show that subjects mostly segment at word rank, protocol-elicited data imply that their translation output is more represented at clause rank. Da Silva offers the explanation that translation involves more factors than expertise in translation (e.g. reading and writing). Factors such as task representation at higher levels and awareness of linguistic constraints also matter. Subsequently, da Silva argues that triangulation of different, equally informative data-elicitation methods is necessary for robust TPR. In addition to its methodology, this study is noteworthy given the selection of its subjects. Different from other studies in the book, which use novices or expert translators as subjects, this study has four medical researchers as subjects, which gives the reader the opportunity to examine performance in non-domain tasks and domain-specific tasks.

This volume is inspirational with regard to theory, methodology and education. Theoretically, it presents the latest findings of cognitive and psycholinguistic paradigms in TIS internationally. The book tries to tackle several key issues in TPR, such as "How do translators translate?", "How do novice and expert translators differ in their processes?", "What triggers errors and problems in translation?". The studies presented in the volume bring us a step closer to answering these questions. For instance, chapters in Part II discuss perspectives of TIS (working memory capacity, information redundancy, language competence, expertise) from different approaches (cognitive science, psycholinguistics, machine translation). In addition, of the five studies presented in Part II, three are translation studies (TS) and two interpreting studies. We would wonder if cognitive and psycholinguistic paradigms are mutually interconnected in TS and IS, that is to say, if TS findings also hold true in IS. Vandepitte's study can serve as an example here. Their study demonstrates that metonymic constructions require much cognitive effort and accordingly trigger more errors than non-metonymic constructions. Will the results be the same in interpreting? Will novice and expert interpreters deal with these constructions in a similar manner as translators? This line of reasoning is likely to inspire more studies into TPR, which will greatly contribute to its development.

This collection of papers is also innovative in methodology. Researchers employ a rich variety of research methods, such as think-aloud protocol, questionnaires, key logging, eye tracking, etc. All these measures greatly enhance the validity and reliability of any findings, which is beneficial to the further advancement of TIS as a whole. Despite these achievements, it should be pointed out that there is always room for further improvement in terms of methodological choices. In Chapter 6, Vandepitte et al. present three complicatedly designed studies on metonymic constructions in translation texts. However, the use of retrospection or questionnaires could have improved the validity of the study to some extent. In Chapter 7, Carl et al. exert great efforts to illustrate key

logging and eye tracking data in detail, but they do not seem to pay enough attention to the discussion part, making the findings less convincing.

Although none of the papers concerns training or education directly, we cannot deny their contributions or implications for interpreter and translator training (ITT), as TIS always link to ITT in one way or another (Xiao & Yu, 2017). Four out of five studies in this volume use a novice–expert paradigm, with trainees as subjects, which allows researchers to map translation/interpreting competence development. Trainers could make use of these findings in curriculum, syllabus and class design, integrating advanced technology into ITT to better prepare trainees for future careers.

It seems that the editors make great efforts to be inclusive of psycholinguistic and cognitive studies in TIS. However, the organization of Part II is likely to puzzle readers somewhat, as they may have to jump from one field of study to another. For instance, Chapter 4 focuses on discourse comprehension in SI, Chapter 5 on working memory in SI, Chapter 6 on metonymic constructions in translation, Chapter 7 on PEMT, and the last chapter on methodological triangulation.

All in all, this volume is a valuable reference for practitioners, translators, interpreters and those who are interested in translation and interpreting from psychological and cognitive fields. It shows us the recent findings of psycholinguistic and cognitive paradigms in TIS, not only critically reviewing the achievements made in TIS, but also paving the way for future studies.

References

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