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Carl, Michael, Bangalore, Srinivas and Schaeffer, Moritz (eds.) (2016). *New directions in empirical translation process research: Exploring the CRITT TPR-DB* [New Frontiers in Translation Studies]. Cham: Springer, pp. 315, €64.25 (e-book)/€81.84 (hardcover). ISBN: 978-3-319-20358-4/978-3-319-20357-7.

New directions in empirical translation process research (TPR) pursues Jakobsen's vision that by using "the appropriate computational, statistical, and other analytical tools" (viii) it is possible to produce "reliable descriptions of and predictions about" the translation process, which will "contribute to generating a process-oriented model of human translation" (ibid.). This could have many applications, e.g. adapting tools to translation styles or designing personalised assistive technologies, such as gaze-based terminological prompts.

The book is a collection of 14 chapters by 43 authors and is divided into three parts. Part I, "Empirical TPR," comprises two chapters. In Chapter 1, the editors give an overview of the book and develop the notion of moving beyond description towards *explaining and predicting* translation phenomena (3, citing Holmes 1972: 71). Although the scope of what is meant by translation 'process' is not delimited explicitly, the reader can infer that the book deals with translation processes at the micro-level. This includes the physical and cognitive activities performed by individual translators while generating their translations, and excludes macro-level processes such as those involved during the lifecycle of a translation project. Chapter 2 describes the Translation Process Research Database (TPR-DB), created under the auspices of the Centre for Research and Innovation in Translation and Translation Technology (CRITT) for storing translation process data, or User Activity Data (UAD). At the end of the chapter, an overview of the various studies collected in the TPR-DB is provided in Appendix 1.

Part II, "Post-editing with CASMACAT," contains five chapters, all of which report on the results of different experiments carried out using the browser-based translation tool developed under the European Commission's FP7 project "Cognitive Analysis and Statistical Methods for Advanced Computer-Aided Translation" (CASMACAT). The chapters in Part II demonstrate the advantages of having a research-focussed CAT tool that allows for testing different modes of interaction with MT (static MT, interactive prediction, online learning, active learning) and offers the possibility of integrating keyboard logging and eye tracking to facilitate the analysis of UAD.

Part III, "Modelling Translation Behaviour," contains the remaining seven chapters of the book and illustrates how the hard data contained in the TPR-DB can be used to describe and predict translator behaviour.

The chapters in Part II and Part III cover a wide range of aspects in TPR. For example, some look at how translators consult information sources for finding their translation solutions, either consulting external resources (Chapter 6) or internal resources provided by a biconcordancer integrated into CASMACAT (Chapter 7). Others look at the relation between syntactic entropy and cross-linguistic priming (i.e. facilitation or induction) effects for testing the literal translation hypothesis (Chapters 9 and 10). Yet others describe methods for annotating and tagging the process data (Chapters 8, 12 and 14).

The techniques used to collect data across all the studies include keyboard and mouse logging, screen recording and eye tracking. Keyboard logging was done with Translog (Chapter 10), Translog II (Chapters 11, 13 and 14) and Inputlog (Chapter 6), as well as with the keylogging feature integrated into CASMACAT. Several eye-tracker models are mentioned, from an EyeLink2000 (Chapter 6) to several Tobii models – T60 (Chapter 4), T120 (Chapters 10 and 11) and TX300 (Chapter 14). Two other chapters that make use of eye-tracking data do not mention the models with which the data were captured (Chapters 5 and 8). The chapters that use screen recording software (Chapters 5, 7 and 8) unfortunately do not name which software they use.

As far as data analysis is concerned, some of the methods used in the book are novel or still being consolidated in TPR, such as machine learning techniques or statistical analyses based on linear mixed effects regression. Some of those methods are more common in disciplines such as Computational Linguistics, Artificial Intelligence and Human-Computer Interaction, which demonstrates a great level of interdisciplinarity throughout the book.

Most authors make an effort to introduce and explain the main concepts and definitions, although some of those can still be difficult to grasp for people working with TPR but not very familiar with the terminology in the technical fields from which many of the authors come. In fact, the 43 authors in the book come from multiple educational backgrounds and report 24 different affiliations, both in academic institutions and private companies, spread over 15 countries. Despite this diversity, the editors have successfully maintained relatively consistent terminology across the different chapters, which facilitates understanding and contributes to consolidating the terminology in the TPR field.

It is worth noting that the chapters feature more than half a dozen language combinations, some of which have not been covered in many TPR studies before, if at all, such as Chinese-Portuguese or French-Polish. Even if many of the results are inconclusive or not generalizable, the book demonstrates the advantages of building a database for storing TPR data, so that the effort invested in a study can be leveraged by other researchers, perhaps looking at different variables and even using different methods of analysis.

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