

Chapter 5.2 Process Research

Maureen Ehrensberger-Dow

1. Introduction/definition

Process research involves the systematic investigation of how translation products come into being. The defining characteristic of all process research is a focus on translating as an activity rather than on translation as a product or as a societal phenomenon. Although often most strongly associated with expertise and cognitive research (see Shreve, present volume), process research is actually related to many aspects of translation studies. Depending on the interests of the scholars involved, the object of study can range from the micro level of an individual translator's decision making to the macro level influences on that translator's process, such as context, organization, and societal expectations. Process research can also include what in localization contexts is sometimes referred to as the translation lifecycle, covering the stages from when a decision is made that a translation is needed until the delivery of the final target text.

In his seminal mapping of the discipline of translation studies, Holmes referred to process-oriented descriptive translation studies as being concerned with the "process or act of translation itself" and "what exactly takes place in the 'little black box' of the translator's 'mind' as he [sic] creates a new, more or less matching text in another language" (1972/2000: 177). More recently, Vandepitte (2008: 576) has suggested in her ontology that process-oriented translation studies is one of four foci of the discipline (the others are matter-oriented, cause-oriented, and result-oriented translation studies), and encompasses research into translation competence (development), translation teaching, and the profession. As explained in the next section, process research has evolved in line with technological developments in data collection and methodological developments with respect to what phenomena are considered relevant. Much of

the research has been driven by a motivation to understand problem solving, decision making, and the entire process better in order to improve translator training (e.g. PACTE 2005). More recently, however, claims have been made about the relevance of translation process research to other disciplines that focus on human cognition, learning, and/or human-machine interaction (e.g. Ehrensberger-Dow, Göpferich, and O'Brien 2015).

2. Evolution of process research

From its beginnings, process research has been empirical and evidence-based. Various understandings of what constitutes the translation process and what is available for observation have driven progress from exploratory investigations through to recent multi-method large-scale projects (see Jääskeläinen 2011 for an overview). Initially, the focus was on trying to access what happens in the translator's mind during the process of converting a source text into a target text. Lacking the possibility of direct observation, early process research employed a technique proposed by Ericsson and Simon (1984) to encourage people to 'think aloud' while translating and the transcriptions of these verbalizations, so-called think-aloud protocols or TAPs, served as data. Krings (1986), in what is considered a landmark in process research, actually investigated post-editing of machine translation output done by language students rather than translating done by professional translators. Nevertheless, his systematic approach to analyzing TAPs and his identification of problem indicators inspired other researchers who were interested in the translation process and pushed methodological developments as certain limitations to the method of think-aloud were acknowledged. These include the influence on (i.e. reactivity) and slowing down of the process as well as the recognition that professional translators do not talk about much of what they do, possibly because their automatized processes are not accessible to conscious reflection or because they are too inhibited to do so (see Jakobsen 2002). Nevertheless, TAPs and variants such as dialogue protocols continue to be a useful source of data to address

questions such as strategies, competence development, and criteria for revision (e.g. Göpferich 2009).

Analyzing corrections, revisions, and intermediate versions as target texts are produced can provide insights into the translation process, but the reconstruction of the complete process is limited by accessibility to the drafts at each relevant stage. The development of a keystroke logging program designed specifically for translation work done on a computer (i.e. *Translog*; Jakobsen 1999) opened up the possibility of tracking all versions of the emerging target texts without unduly influencing the process and permitted finely-granulated investigations of different phases of the process. In addition, indicators of interruptions to the flow of the translation process, such as pauses, revisions, and typing errors, can be analyzed in order to support hypotheses about comprehension, linguistic issues, problem solving, and formulation challenges that might be related to directionality (i.e. translation into the translator's first or other working language).

Whereas keystroke logging permits deep analyses of the act of target text production, other methods such as direct observation, video, and screen recording allow researchers to determine which online, paper, human, and other resources are used at what points during the process and how professional translators might differ from other groups in their use of internal and external resources (e.g. PACTE 2005). Newer techniques that track eye movements and changes in pupil size (e.g. O'Brien 2010) or record brain activity (e.g. electroencephalography or EEG) are allowing additional research questions to be addressed, such as the focus of attention and mental load during different parts of the process or during various types of tasks. Another advantage of methods that are not directly related to written text production is that they can be used to research the interpreting process, possibly but not exclusively in comparison with other modes of translation (e.g. Tirkonnen-Condit and Jääskeläinen 2000).

Another source of data that has proven very valuable in process research is retrospective verbalization (as opposed to the concurrent verbalization of TAPs). Retrospection can be elicited through post-task interviews and questionnaires or by replaying keystroke logs or screen recordings and asking participants to comment on their processes. The latter technique mitigates some of the issues associated with forgetting and selective recall, since the recorded activities associated with the processes are available to stimulate recall (e.g. Hansen 2006). Although it must be assumed that what participants comment on is only a fraction of the considerations that they actually make during the translation process, the rich cues provided by screen recordings or gaze plots from eye tracking have proved to be very effective at stimulating verbalization and reflection. Used as a primary source of data, retrospective verbalizations can be analyzed similarly to TAPs for indications of problem solving, decision making, strategies, competence, and self-concept with comparisons being drawn between groups that differ with respect to language combination, level of education, and/or experience.

A milestone in process research was its commitment to multi-method approaches and above all to triangulation of data sources and results (see Alves 2003). This included calls for integrating considerations of the products into process research in order to make claims about the interrelationship (e.g. Englund Dimitrova 2005). Rather than a return to solely product-based research, this has broadened the focus to far beyond the 'little black box'. Process research has expanded to encompass an understanding of cognition as embedded and embodied and to increasingly appreciate translators as agents who are situated within and affected by social and environmental contexts (e.g. Risku 2014). The implications of this broader view are reflected in the diversity of phenomena that are currently being studied within the framework of translation process research (e.g. affect, creativity, expertise, intuition). Just as technological developments have driven methodology in process research, they have also changed the nature of the translation

process itself as professional translation becomes less about translating from scratch than about deciding between or rejecting options provided by translation memory and machine translation engines (e.g. Carl, Bangalore, and Schaeffer 2015). The studies outlined in the next section exemplify the range of phenomena that have been examined and the methodological approaches that have been taken in recent process research.

3. Examples of process studies

Researchers in Denmark have been investigating the translation process since the mid-90s, exploiting and developing techniques for data collection and analysis (e.g. Hansen 2006; Jakobsen 1999). In the meantime, the group from the Centre for Research and Innovation in Translation and Translation Technology (CRITT) has increasingly focused on the micro level of the process, aligning text production activities from computer logging of keystrokes and mouse movements with gaze information from eye tracking in a number of cross-sectional studies involving different groups of participants (e.g. students, translation professionals, and non-professionals), various source and target languages, and tasks (e.g. reading, translation from scratch, post-editing). Their large database of processes has been made available to other researchers in order to encourage innovation, replication, and comparisons.ⁱ With what they refer to as user activity data, it is possible to address questions such as the effects of source text characteristics (e.g. word frequencies, metaphors, syntactic complexity), translation direction, differences between tasks, parallel processing, and resource use during the process (see Carl et al. 2015 for examples).

Cross-sectional studies are more common in process research than longitudinal studies, but researchers in the *TransComp* project followed a select group of students over six semesters of their undergraduate program in order to study the development of translation competence (see

Göpferich 2009). The project was carefully designed to control for the order of source texts and comparisons were drawn between the performance of students at different stages of education and that of professional translators. A multi-method approach, combining techniques such as keytroke logging, screen recording, verbal commentaries, and questionnaires, was used to allow investigations of decision making, problem solving, and creativity as well as to contribute to model building and validation to explain the acquisition of translation competence. In another example of good practice in process research, detailed information about the participants, source materials, transcriptions, and target texts have been made available on the project website to encourage collaboration, replication, and follow-up studies.ⁱⁱ

Attempts are made to increase ecological validity in process research by using authentic source texts, providing realistic translation briefs, and allowing access to external resources. However, most of the studies outlined above were carried out in relatively controlled settings such as university laboratories and classrooms rather than at professional translators' workplaces. This is partly attributable to the constraints imposed by the data collection methods that were used (e.g. computer logging and eye tracking) and partly because of an interest in comparing non-translators or students with professional translators.

In process research that focusses on the situated activities of professional translators, certain compromises have to be made with respect to the comparisons of interest and other techniques deployed. *ErgoTrans*, an interdisciplinary study of the physical and cognitive ergonomics of the translation workplace, included direct observations, ergonomic assessments, screen recordings, video recordings, questionnaires, and interviews in an attempt to capture and investigate authentic processes of freelance, institutional, and commercial translators.ⁱⁱⁱ The reality of professional translation activities became clear during the study, including the role of language technology, human-computer interaction, working conditions, and organizational structures.

Certain comparisons are not possible in process research conducted at the workplace because of the impossibility of controlling for the variety of source texts, tasks, and language versions encountered, but detailed examination in the form of case studies can provide insight into translation practice and the impact of external influences on the complex phenomenon of human translation (e.g. Ehrensberger-Dow and Hunziker Heeb 2016).

4. Criticisms, shortcomings, and directions

Common criticisms of process research have been directed at the exploratory, mostly descriptive nature of many of the studies, the small numbers of participants, the lack of standardized methods, and the consequent difficulties with replication. The research desiderata remain similar to those outlined by Krings (2005) almost 20 years after his seminal publication. Validity continues to be an issue with respect to tasks and participants, since temporal and economic constraints can limit process researchers to testing hypotheses with convenience samples of students rather than with professional translators. A focus on the process rather than the resultant products can make it easier to convince professionals to participate in studies but, without a consideration of the products, claims about the impact of certain aspects of the process are speculative at best. In studies focusing on the development of competence, comparisons between the processes of students and professionals are based on assumed correlations of education and/or experience with competence, quality, and/or efficiency. These assumptions may be reasonable but still need to be validated in some other way, especially since notions of translation quality – usually considered a good indication of competence – can differ depending on socio-cultural, functional, and temporal factors. Most non-literary translators are subject to strong economic pressures that require them to adjust their translation processes in order to maximize efficiency. An understanding of how translation processes under ideal conditions differ from those in the

workplace can contribute to preparing future graduates for the changing realities of professional translation.

Despite decades of work, process research has not yet managed to break into the black box of the translator's mind. There have also been criticisms that the psycholinguistic nature of some process research risks ignoring the most interesting aspects of translation as part of a communicative event. However, much has been learned about human translation through examinations of the isolated act. Reflections about methodological rigor (e.g. Muñoz 2012; O'Brien 2010) are contributing to progress in the field as it expands to considering the phenomenon of translating as an activity situated in translators' physical, organizational, and socio-cultural environments and not just in their minds.

Cited works

Alves, Fabio (ed). 2003. *Triangulating Translation. Perspectives in Process Oriented Research* [John Benjamins Translation Library 45]. Amsterdam and Philadelphia: John Benjamins

Carl, Michael, Bangalore, Srinivas and Schaeffer, Moritz (eds). 2015. *New Directions in Empirical Translation Process Research: Exploring the CRITT TPR-DB* [New Frontiers in Translation Studies]. Cham: Springer.

Ehrensberger-Dow, Maureen, Göpferich, Susanne and O'Brien, Sharon (eds). 2015.

Interdisciplinarity in Translation and Interpreting Process Research [Benjamins Current Topics 72]. Amsterdam and Philadelphia: John Benjamins.

Ehrensberger-Dow, Maureen and Hunziker Heeb, Andrea. 2016. "Investigating the ergonomics of the technologized translation workplace". In *Reembedding Translation Process Research*, R. Muñoz Martín (ed), 69-88. Amsterdam and Philadelphia: John Benjamins.

- Englund Dimitrova, Birgitta. 2005. *Expertise and Explicitation in the Translation Process* [Benjamins Translation Library 64]. Amsterdam and Philadelphia: John Benjamins.
- Ericsson, K. Anders and Simon, Herbert A. 1984. *Protocol Analysis. Verbal Reports as Data*. Cambridge, MA: MIT Press.
- Göpferich, Susanne. 2009. "Towards a model of translation competence and its acquisition: The longitudinal study 'TransComp'". In *Behind the Mind: Methods, Models and Results in Translation Process Research* [Copenhagen Studies in Language 37], S. Göpferich, A.L. Jakobsen and I.M. Mees (eds), 11-37. Copenhagen: Samfundslitteratur.
- Hansen, Gyde. 2006. "Retrospection methods in translator training and translation research". *Journal of Specialised Translation* 5: 2-41.
- Holmes, James S. 1972/2000. "The name and nature of Translation Studies. In *The Translation Studies Reader*, L. Venuti (ed), 172-185. London and New York: Routledge.
- Jääskeläinen, Riitta. 2011. "Studying the translation process". In *The Oxford Handbook of Translation Studies*, K. Malmkjaer and K. Windle (eds), 123-134. Oxford: Oxford University Press.
- Jakobsen, Arnt L. 1999. "Logging target text production with Translog". In *Probing the Process in Translation: Methods and Results* [Copenhagen Studies in Language 24], G. Hansen (ed), 9-20. Copenhagen: Samfundslitteratur.
- Jakobsen, Arnt L. 2002. "Translation drafting by professional translators and by translation students". In *Empirical Translation Studies: Process and Product* [Copenhagen Studies in Language 27], G. Hansen (ed), 191-204. Copenhagen: Samfundslitteratur.
- Krings, Hans Peter. 1986. *Was in den Köpfen von Übersetzern vorgeht. Eine empirische Untersuchung zur Struktur des Übersetzungsprozesses an fortgeschrittenen Französischlernern* [Tübinger Beiträge zur Linguistik 291]. Tübingen: Gunter Narr.

- Krings, Hans Peter. 2005. "Wege ins Labyrinth – Fragestellungen und Methoden der Übersetzungsprozessforschung im Überblick". *Meta* 50 (2): 342-358.
- Muñoz Martín, Ricardo. 2012. "Standardizing translation process research methods and reports". In *Iberian Studies on Translation and Interpreting* [New Trends in Translation Studies 11], I. García Izquierdo and E. Monzó (eds), 11-22. Bern: Peter Lang.
- O'Brien, Sharon. 2010. "Eye tracking in translation process research: Methodological challenges and solutions". In *Methodology, Technology and Innovation in Translation Process Research: A Tribute to Arnt Lykke Jakobsen* [Copenhagen Studies in Language 38], I. M. Mees, F. Alves, and S. Göpferich (eds), 251-266. Frederiksberg: Samfundslitteratur.
- PACTE. 2005. "Investigating translation competence: Conceptual and methodological issues". *Meta* 50 (2): 609-619.
- Risku, Hanna. 2014. "Translation process research as interaction research. From mental to socio-cognitive processes". *MonTI Monographs in Translation and Interpreting Special Issue 1*: 331-353.
- Tirkkonen-Condit, Sonja and Jääskeläinen, Riitta (eds). 2000. *Tapping and Mapping the Processes of Translation and Interpreting: Outlooks on Empirical Research* [Benjamins Translation Library 37]. Amsterdam: John Benjamins.
- Vandepitte, Sonia. 2008. "Remapping Translation Studies: Towards a Translation Studies ontology". *Meta* 53 (3): 569-588.

Further reading

- The edited volume by Alves (2003), focusing on methodological issues, has contributions by some key figures in the development of the process research.

- The handbook chapter by Jääskeläinen (2011) provides an excellent overview of studies using verbalization and keylogging to investigate the translation process and the relevance of that research to the field of translation studies.
- The articles in the republication of a special issue of *Target* (Ehrensberger-Dow, Göpferich, and O'Brien 2015) consider how other disciplines have contributed to translation process research and the potential for the converse.

Notes

ⁱ <https://sites.google.com/site/centretranslationinnovation/tpr-db>

ⁱⁱ <http://gams.uni-graz.at/fedora/get/container:tc/bdef:Container/get>

ⁱⁱⁱ www.zhaw.ch/linguistics/ergotrans