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The problem-solving processes of experienced and non-experienced translators

Abstract

In translation process research, translators' actions and comments can be analysed to make inferences about their cognitive processes during problem solving. As the ability to solve translation problems is considered to be related to the level of translation competence, it is assumed that differences can be detected between experienced professional translators and master's students of translation when they are confronted with complex translation problems. To test this, data gained from retrospective verbalisation, screen recording and eye tracking was analysed. Results show that while both groups were equally aware of the translation problems, their categorisation of the problems and therefore also their paths to find adequate solutions differed. Among the professionals a higher proportion correctly categorised two translation problems as complex and then made adequate use of external resources to find solutions. On average, the professionals also performed more steps to solve the translation problems than the students. In conclusion, the experienced translators were more likely to adequately approach complex translation problems than the non-experienced translators. In a further step of analysis it would be of interest whether there is a relation between this ability and the quality of the solution.

Introduction

In the 1980's translation researchers like Krings (1986) and Lörcher (1989) adapted the method of introspective verbal commenting from the field of cognitive psychology to study translation processes. Their analyses of the resulting think-aloud protocols allowed them to make inferences about translators' cognitive processes and initiated a focus shift from product research to process research. Since then, technological innovations like computer screen recording,

key-stroke logging and eye-tracking has enabled automated gathering of data and its statistical analysis (cf. Göpferich 2008). This definitely put the actors, i.e. the translators, their actions and thought processes at the centre of attention.

Within the vast field of process research one of the main foci is the concept of translation competence and its evolvement. The PACTE group (2003, p. 58), who established a model of translation competence, defines translation competence “as the underlying system of knowledge needed to translate”. Translation competence

“(a) pertains to a field of expert knowledge, since it is not possessed by all bilinguals; (b) is predominantly procedural (operative) knowledge; (c) comprises different inter-related sub-competences; and (d) includes a strategic component which is of particular importance” (PACTE 2011, p. 318).

Therefore, comparing the translation processes of two groups of translators that are assumed to have different levels of translation competence can reveal not only general knowledge on the translation process but also on the practical nature of translation competence. Asadi and Séguinot (2005, p. 523) suggest that “[l]earning more about the processes involved in translation will help determine which processes require training and which processes require repetition to become automated”. In order to identify potential general patterns or strategies of how experts approach translation-specific problems, they recorded the translation processes of experienced staff translators at their workplace.

Given that the act of translating is a decision-making and a problem-solving process (cf. Pym 2003), translation problems are seen as “reliable indicators of progress in acquiring translation competence [since they] may appear at any stage of the translation process; [they are] observable, [...] and, in solving translation problems, subjects certainly show their ability to use translation strategies, which is a relevant element of translation competence” (Orozco and Hurtado Albir 2002, p. 380).

To illustrate the problem-solving process the following simplified model is used (figure 1). It is based on the research process model by Nord (2002, p. 115) and adaptations by Jud (2010, p. 16), who is a member of our research team.

The first step in the problem-solving process is problem awareness. There is general agreement in translation research that translation problems are associated with non-automatic processes in that they require conscious action to be solved (PACTE 2011, p. 325f). This means that the translator starts by identifying an element of the source text as a translation problem (Krings 1986, p. 121). By comparing problem awareness of professional translators and foreign-language learners, PACTE (2011, p. 333) found no large variation in the rate

of problem identification between these two groups. They concluded that “[s]ubjective difficulties, depending on personal knowledge and skills, may well account for the difference in which of the Rich Points [their predetermined translation problems] was identified as a problem and by whom” (2011, p. 333). Prassl (2011, p. 44) found that on average the professionals did research on less of her predefined translation problems than the non-professionals.

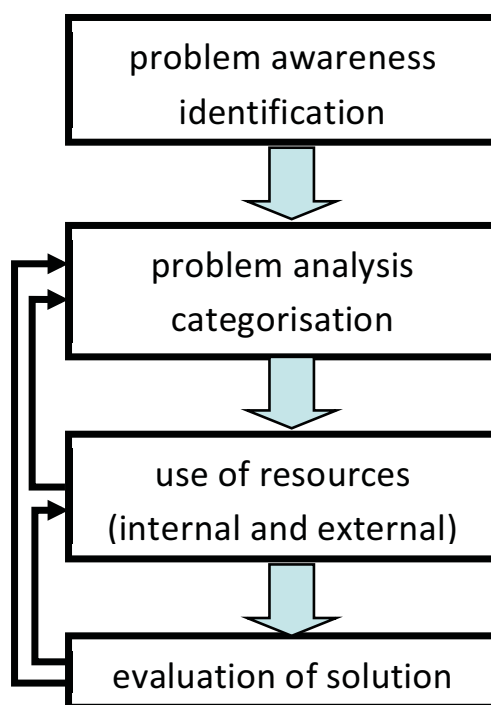


Figure 1: Model of problem-solving process

The second step is problem analysis and, as a crucial part of it, problem categorisation. It is assumed that an appropriate categorisation of the problem based on its complexity will lead to the selection of an adequate type of resource and hence increase the chance of finding an acceptable solution (Massey and Ehrensberger-Dow 2010, p. 129). PACTE’s (2011, p. 335) analysis of professional translators’ and foreign-language teachers’ ability to characterise selected translation problems, that is explain their nature, revealed no notable difference between the two groups. Their conclusion was that the theoretical knowledge needed to characterise a translation problem is not a feature of translation competence. However, as PACTE still seems convinced that translation competence shows in knowing “how to identify and solve translation problems by applying the relevant knowledge and strategies” (2011, p. 339), it can be assumed that there is a difference between how translators with different levels of translation competence approach translation problems.

The third step is the actual use of the chosen resources. As discussed by Alves & Liparini Campos (2009, p. 193), resources are either internal (i.e. the translator's mind) or external (i.e. dictionaries or the internet).

The fourth step is the evaluation of the solution. If the translator is not able to find a solution or decides that her solution is not acceptable, she will either repeat her search or revert to step 2 in the process and analyse and categorise the problem anew. If the translator is satisfied with her solution, she adopts it.

Based on the above model of the problem-solving process, the following hypothesis is proposed: their level of translation competence will lead experienced translators to recognise a complex translation problem and their subsequent actions will reflect this.

Corpus

For this preliminary study to a PhD project, data from the "Capturing Translation Processes" corpus (funded by the Swiss National Science Foundation) was used. To test the hypothesis, two groups that presumably differ in translation competence because of experience were chosen: Eight MA students of translation, who had just started their programme at the Institute of Translation and Interpreting of the Zurich University of Applied Sciences, and six professional staff translators with more than three years of experience at a large translation company. They all did a short translation in the institute's usability laboratory. The source text was a journalistic article of 95 words on whale stranding from the online edition of a British daily newspaper and had to be translated for an equivalent German-speaking audience. The translators worked from their strongest foreign language into their first language. They were allowed any online resources they needed but had to do the whole process on the computer. Because of time limitations, not all the master's students managed to finish their translations whereas all the professionals did.

As in the overall project, the focus was placed on ecological validity of the results and therefore non-invasive research methods such as retrospective verbalisation, screen recording and eye tracking (Ehrensberger-Dow and Künzli 2010, p. 130) were used instead of concurrent think-aloud protocols to analyse problem-solving processes (cf. Jääskeläinen 2002). Screen recording, which records all the actions happening on the screen, provides information on which applications have been used and which internet sites have been accessed. It shows for example the switching between windows, the hit lists of online searches and how the text evolves. Eye-tracking software recorded the translator's eye movements and fixations on the computer screen. The data is then visualised as dots and lines integrated in the screen recording. Retrospective verbalization

(RVP) is a think-aloud technique used right after the translation process. The participants are shown the screen recording of their process together with the representation of the eye-tracking data and are asked to comment freely. The recording including the audio is then transcribed.

Other methods used were interview and key-stroke logging. The data from the different methods was then triangulated to allow for more precise analysis and a certain degree of cross-verification of results (cf. Ehrensberger-Dow & Massey 2008, p. 5). Specifically, it was checked whether the comments on problem categorisation made in the RVP corresponded to the actions taken in the external research process. To fill information gaps, the screen recordings of the processes were analysed. They revealed which online resources the translators had consulted and which search terms they had used. The recorded eye movements helped to identify actions such as reading the source text or focusing on entries in a Google hit list.

As a starting point for the investigation into problem identification and from there into problem categorisation, two potentially problematic expressions from the source text were selected:

- sonar sea exercises
- low-frequency race

They were chosen because they are of a complex linguistic structure and they are both ad-hoc constructions closely related to the text topic, which dealt with whales at risk due to military testing of sonar equipment. Their rendering in another language therefore has to be based not only on understanding the source text but presumably requires background information as well. Looking up the expressions in a dictionary would not yield any useful results.

Analysis

As a basis for analysis, the following three translation problem categorisations were established. They are based on Nord's (2002, p. 145ff) list of different types of research terms used in external resources.

- on word level: Here, the parts of the expression in question are regarded as independent units. This is reflected for example in the use of a bilingual dictionary to look up single words.
- on expression level: In this case, the expression is seen as a common entity, for example a technical term. This is reflected for example in the use of a search engine, such as Google, where the whole term is entered to find a definition.

- on context level: Here, the expression is regarded as embedded in a context, which first has to be researched in order to be able to find a suitable translation. This is reflected for example in the use of a parallel text, that is, a text on the same topic written in the target language.

The problem complexity increases with each category. In contrast to studies that categorise predetermined translation problems based on the types of errors produced (e.g. Prassl 2011), here the focus was placed on the overall level of complexity of the problem. In yet another approach, Orozco and Hurtado Albir (2002, p. 381) chose translation problems representing different types of problems “because in order to solve them, the translator has to mobilise nearly all the translation competence sub-competencies”.

Since translation problems often are multidimensional they may share features of several categories (PACTE 2011, p. 327). Yet, due to their high overall complexity, both of the expressions analysed in this study are assumed to belong to the third category.

Results and Discussion

First, it was assessed who of the participants actually identified the two selected expressions as translation problems (step 1 of problem-solving process). This was done using Krings’ problem indicators (1986, p. 121). In the group of eight students, two had no solution for the SSE expression (sonar sea exercises) and one had no solution for the LFR expression (low-frequency race) due to time limitations. Therefore, they could not be used for the analysis. All of the six students who had a translation for SSE considered this expression to be a problem and all of the seven students who had a translation for LFR considered that expression to be a problem. In the group of six professionals, all had solutions for the two expressions. However, one professional showed no indications of problem awareness for SSE whereas the other five did. All six professionals considered LFR to be a translation problem. Therefore, it can be concluded that both the students and the professionals showed about the same level of problem awareness. This may be explained by the obvious complexity of the chosen expressions and by the fact that the students were not complete beginners but already had some translation background from their undergraduate studies.

Secondly, the level of complexity (1. word; 2. expression; 3. context) that the students and the professionals categorised the two translation problems at was analysed (step 2 of the problem-solving process). For this purpose the cued RVPs, that is the translators’ comments when viewing the screen recording of their translation process, were analysed. Then it was determined whether their stated level of problem complexity matched their approach to solving the prob-

lems, in other words, whether their subsequent research activity corresponded to the complexity of the translation problem (step 3 of the problem-solving process). To this end their searches, recorded on screen, were analysed and the number of steps they performed to solve the problems was counted.

	MA students of translation		professional staff translators	
	SSE (sonar sea exercises)	LFR (low-frequency race)	SSE (sonar sea exercises)	LFR (low-frequency race)
category 1 (word level)	2 (out of 6)	0	0	0
category 2 (expression level)	2 (out of 6)	2 (out of 7)	2 (out of 5)	2 (out of 6)
category 3 (context level)	0	3 (out of 7)	2 (out of 5)	3 (out of 6)
average number of steps	2.75	3.0	3.25	5.0

Table 1: The results for the categorisation of the two expressions and the average number of steps in the research process

For SSE two out of the five professionals who had identified it as a problem categorised it as belonging to the highest level of complexity (context level) whereas none of the students did. For LFR half of the professionals who had identified it as a problem categorised it as belonging to the highest level of complexity whereas proportionately fewer students did. In some cases, it was not possible to detect how translators had categorised the translation problem, for example because they did not comment on its nature in the RVP and/or only used internal resources to produce a solution. In summary, it can be concluded that proportionally more professionals than students appropriately categorised the two translation problems as complex and then made adequate use of external resources to find solutions.

Thirdly, as it is assumed that there is a relationship between the number of steps needed to solve a translation problem and its level of complexity, it was of interest whether this relationship would also be evident in the translators' problem-solving processes. Therefore, the number of external searches was determined and added to the number of recorded intermediate versions. It was found that a solution for SSE took more steps on average for the professionals than for the students (3.25 vs. 2.75). The professionals' problem-solving process

for LFR also consisted of considerably more steps on average than the students' (5.0 vs. 3.0). Although the differences are not necessarily large, there is a clear indication that the professionals responded more appropriately to the high complexity of the problems and seem to invest more cognitive effort to solving them than the students did.

The professionals' higher average number of steps may also be the result of their readiness to abandon a research process that does not yield an acceptable result and then to reassess the translation problem. In contrast, the students seemed more likely to re-use the same type of external resource despite their having discarded a previous solution. Perhaps as a consequence, they more often expressed dissatisfaction with their solutions during retrospective verbalisation than the professionals. It has, of course, to be kept in mind that some of the students might have reconsidered their solutions in the revision phase if they had had more time.

Based on the findings of this small study, the proposed hypothesis seems to be supported. Experienced translators are more likely than non-experienced translators to identify a complex translation problem and subsequently use adequate resources to solve the problem. It has to be noted, however, that the results of this study only show tendencies since the group of subjects as well as the number of analysed translation problems is small and no inferential statistics have been applied.

Outlook

This study also seems to confirm the importance of information literacy in translation practice and training (Massey and Ehrensberger-Dow 2011). For translators, translation-specific instrumental competence is needed, which means knowledge about which external resource and which type of search term can help solve which kind of translation problem.

In a further step of analysis it would be of interest to establish whether there is a relationship between the appropriate identification of the level of complexity and the quality of the solution.

It has been claimed that a strategic approach to research processes is needed to minimise the risk of translation errors (Nord 2002, p. 115; Prassl 2011, p. 44). Based on the present study, it is assumed that the approach has been strategic in those cases where both the complexity of the translation problem has been identified and adequate types of external resources have been consulted using appropriate search terms. However, it remains to be seen whether this approach always results in an acceptable solution. Therefore, products would have to be evaluated as well.

As a general observation, it can be said that in order to be able to get information on how translators categorise a certain translation problem it is necessary to triangulate data from both the screen recordings as well as from the retrospective verbal protocols. Only the combination of the type of external resource, search term, eye movements and comments yields sound results.

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