Working with Pre-translated Texts:
Preliminary Findings from a Survey on Post-editing and Revision Practices in Swiss Corporate In-house Language Services

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Abstract

With the arrival of neural machine translation, the boundaries between revision and post-editing (PE) have started to blur (Koponen et al., 2020). To shed light on current professional practices and provide new pedagogical perspectives, we set up a survey-based study to investigate how PE and revision are carried out in professional settings. We received 86 responses from corporate translators working at 23 different corporate in-house language services in Switzerland. Although the differences between the two activities seem to be clear for in-house linguists, our findings show that they tend to use the same reading strategies when working with human-translated and machine-translated texts.

1 Introduction

In recent years, quality improvements achieved by the latest-generation machine translation systems have put machine translation (MT) under the spotlight. Results of recent language industry surveys (ELIS, 2022; Pielmeier and Lommel, 2019) show that language service providers (LSPs) identify MT post-editing (PE) as one of the most requested services and as an opportunity to increase productivity and improve profit margins. Therefore, many of them have implemented MT or plan to do so as soon as possible.

In Switzerland, a multilingual country where many companies have their own in-house translation service, the situation is no different. Many LSPs have already added MT to their workflows and started offering PE among their services, together with translation and revision.

Since neural MT (NMT) output more closely resembles human translations than machine-translated texts (Martikainen, 2019; Yamada, 2019), correcting it is often considered more similar to a *revision*. Recent work by Koponen et al. (2020) has paved the way for studying the relationship between these two activities whose boundaries are "starting to blur" (2020:3).

To shed light on current practices and provide new perspectives for the training of both students and experienced translators who work with MT, we set up a survey-based study to investigate how PE and revision are carried out in professional settings. In particular, we chose to focus on Switzerland-based corporate in-house language services (CILS), as this cohort is underrepresented in language industry surveys and has been scarcely investigated compared to institutional (Cadwell et al., 2017; Riondel, 2021; Rossi and Chevrot, 2019) and freelance translators (Gaspari et al., 2015; Zaretskaya, 2015).

Our study consisted of two questionnaires, available in four languages: the first questionnaire (Q1) was aimed at language service directors and project managers and contained questions about the structure and workflow of the language service. The second questionnaire (Q2) was aimed at language service employees who translate, revise and post-edit texts. It included questions about their workflows, strategies and attitudes towards PE and revision. In the present article, we will delve into the design and the results of the Q2[1].

The aim of this questionnaire was to investigate

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[1]The questionnaire can be obtained from the author upon request

how corporate in-house linguists carry out revision and PE in terms of (i) reading strategies – whether they read the source or target text first – and (ii) overall strategies, *e.g.* whether they follow specific parameters or guidelines. Additionally, we also investigated whether linguists apply the same strategies when revising texts that have been translated or post-edited by another person. To the best of our knowledge, this is the first survey explicitly comparing revision and PE practices of professional translators in Switzerland.

The remainder of the paper is structured as follows: Section 2 details previous survey-based studies that dealt with revision and PE practices, respectively, as well as studies on similar topics conducted in Switzerland. Section 3 describes the survey design, while results are analysed in Section 4. Section 5 includes some final remarks and pathways for future research.

2   Previous studies

Several researchers have used country-specific surveys to investigate revision practices. In Belgium, Robert (2008) launched two small-scale surveys (48 and 21 responses, respectively) among translation agencies to establish which translation revision procedures and revision methods (revising on paper and/or on-screen) are the most used. She found that while revisers use different procedures, most compare source and target texts to make corrections and then reread the target text one last time. Results also suggest that revision is mainly carried out on screen.

This latter aspect was also included in a survey-based study conducted by Scocchera (2015, 2017) in the Italian publishing sector. The study included two questionnaires: one for translators to investigate self-revision practices (55 participants) and one for revisers to investigate other revision practices (25 participants). Results of the latter show that revision is mainly carried out on-screen, but the choice of the medium depends on various factors and on-screen is preferred if the translation needs many corrections. Regarding revision methods, 60% of revisers do not read the whole source text before starting to revise, primarily due to "lack of time and cost-effectiveness" (2017:13). Instead, participants claim they mostly compare source text and target text segment by segment.

In Denmark, Rasmussen and Schjoldager (2011) surveyed 24 translation companies about their revision policies and conducted 13 follow-up interviews with survey respondents and in-house revisers in five of these companies. Collected data suggest that not all texts are revised. This depends on different factors, including the translator who translated the text, assignment difficulty, text type/genre, intended use, and customer. The most used procedure is monolingual revision followed by a comparative revision or vice-versa. However, interviews reveal that revision is rarely fully comparative. Most companies do have revision guidelines, but not in written form.

In Austria, Schnierer (2020) surveyed translation companies to determine whether their revision practices complied with the former translation standard EN15038 (currently replaced by ISO 17100). She found that two out of six certified companies do not systematically revise translations, although the standard requires this. Regarding revision methods, all companies report comparing the translation with the source text. In contrast, only one uncertified company reported performing monolingual revisions of the target text (referring to the source text if needed). Five out of six certified companies use revision parameters, while this applies only to six out of thirteen uncertified companies.

Lastly, Hernández Morin (2009b) conducted a survey among translation practitioners (115 respondents, primarily freelance translators) to find out about revision practices and perceptions of revision in France. Two of her questions dealt with the revision of automatically pre-translated segments, *i.e.*, those coming from a CAT tool and machine translation, respectively. 69% of respondents state that they do not work with machine-translated texts, 23% claim they revise those texts in-depth, and 6% revise the text to ensure just its overall comprehension. In the author's thesis (Hernández Morin, 2009a), both processes are referred to as *post-editing*. Therefore, it is not clear whether respondents refer to post-editing or actual revision practices.

When it comes to defining how the task is carried out, studies of revision practice outperform those on PE practice. In participant-oriented studies, PE discourse most often concerns adoption rates and attitudes toward the task (Gaspari et al., 2015; Guerberof Arenas, 2013; Läubli and Orrego-Carmona, 2017; Vieira, 2020; Zaretskaya, 2015). For instance, in a survey of the state of the linguist

supply chain, researchers at Common Sense Advisory (Pielmeier and O'Mara, 2020) reported that, out of 6,997 respondents, 55% use MT on most projects or whether the customer requests it.

Some studies focused on salaried translators as the target population (Cadwell et al., 2017; Rossi and Chevrot, 2019) but did not investigate how MT was introduced and integrated or how PE was carried out in terms of reading strategies, *i.e.*, which text – source or target – is read first.

To the best of our knowledge, the only study that deals with this topic is the one by Ginovart Cid (2021), who surveyed European LSPs, university lecturers and linguists about their MTPE practices and training protocols. Results of the questionnaire sent to PE educators – detailed in Ginovart Cid and Colominas (2020) – show that 49% of respondents do not provide their students with any advice on whether the source or the target segment should be read first, while 33% of instructors advise reading the source text first. It must be noted that the question was asked in a close-ended, single-answer format. Therefore, other possibilities, *e.g.* reading the whole source or target text before starting to post-edit, are not explored. The question on reading strategies was also included in the questionnaire addressed to professional linguists, but the results are not discussed in any publication to date.

2.1 The Swiss context

We found only a few country-specific, participant-oriented studies that deal with revision or post-editing in the Swiss context.

A recent study by Riondel (2021) pointed out similarities and differences between revision policies of two cohorts of salaried translators. The researcher conducted 20 semi-structured interviews in a sizeable intergovernmental organisation and a medium-sized language department of the Swiss Confederation. He found that while revision is mainly carried out on screen in the former context, at the Confederation, texts are often printed before revision. In both settings, revisers apply a complete bilingual revision, but those who work at the intergovernmental organisation also consider other types of revision (*e.g.* spot check for outsourced translations). Unfortunately, the article does not deal with revision strategies more in-depth.

We could not find any studies on PE practices in Switzerland, but we found a handful of studies on MT adoption and attitudes towards MT and PE. For instance, Yuste (2002) carried out a survey among Swiss LSPs about their use and perception of translation technology. The author concluded that there was "no overall interest in MT in the Swiss translation arena" at the time of writing. However, we are unable to further comment on these findings since, in the electronic version of the paper, the section describing collected data is missing.

More recently, Porro Rodríguez et al. (2017) conducted a survey on the use of machine translation and post-editing in Swiss-based LSPs (deliberately excluding CILS). Results revealed that, in 2015, only two out of 16 LSPs were using MTPE in their workflows. Furthermore, most respondents were not considering using MTPE in the future or were unsure about it.

With the advent of neural machine translation, the Swiss translation landscape has changed significantly, as revealed in a recent study carried out by Selinger (2020), who focused on the use and perception of MT among translation professionals and non-professionals (170 and 115 respondents, respectively). Data show that almost 40% of professionals use MT as a starting point for translations into their mother tongue. The results of the questionnaires were complemented by interviews with five LSPs who had already integrated or were integrating MT in their workflows. These respondents expressed some concerns regarding the confidentiality of data. Therefore, they were using or testing either a customised system or DeepL Pro. The participants report a general positive attitude of their in-house translators towards MT. Regarding how MT is used, participants clarify that MT suggestions are fully integrated into their CAT tools or made available to internal customers as a self-service translation tool. However, the study did not include any questions on how PE is carried out.

As the review of existing literature pointed out, while there have been several surveys on revision procedures, PE procedures have been only scarcely investigated. Most importantly, reading strategies in revision and PE have never been studied with a contrastive approach in a context where both activities are carried out. Our research will try to fill this gap.

3 Methods

3.1 Sampling

The target population of our study consists of professional linguists working at CILS who use MT in their professional workflows.

We used various sampling and dissemination methods to identify Switzerland-based companies with an internal translation department. Firstly, we contacted via email language service directors of corporate in-house services that we directly knew; we asked them to participate in the survey and to help us recruit new participants (snowball sampling). Secondly, we used the research function on LinkedIn, looking for terms such as "translator", "language services", and "project managers", restricting the research area to Switzerland. Thirdly, we compiled a list of private and semi-private companies serving the Swiss public at large, including banks, insurance companies, and retail outlets. We discarded from this list all the companies whose website was not translated into a different language and then contacted prospective participants using their generic email address or through a contact form on their websites. A link to participate in the survey (Q1)[2] was sent by email[3] to the language service directors or project managers who agreed to take part in the study.

Questionnaire Q2 was distributed to in-house linguists working at CILS who use MT in production (n=26). Dissemination was mainly handled by CILS's directors or project managers who filled out the first questionnaire. In most cases, these respondents included the researcher when sending the email invitation to their employees or colleagues, enabling the researcher to send a reminder after some time. In the emails, it was specified that participation in the study was voluntary and anonymous. This information was also clearly stated on the first page of the online questionnaire, which contained a consent form.

The questionnaire was hosted on the LimeSurvey platform and was made accessible from

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[2]Analysis of the information gathered through questionnaire Q1 falls outside the scope of the present article. Nevertheless, where necessary, relevant data will be mentioned.

[3]In some cases, this email invitation contained also the link to questionnaire Q2, with clear instructions on the applicability criteria of this second questionnaire. However, we also received some responses from companies who answered "not yet" to the question "Do you use MT in your production workflow?".

November 15th, 2021, until February 16th, 2022. Depending on respondents' answers, the questionnaire included up to 58 questions, but not all were mandatory.

3.2 Survey structure

The questionnaire was structured in five sections: Section A (*Respondent's profile*) contained demographic questions, such as age and mother tongue of the respondent, years of translation experience and years of employment in the CILS. This section also included two questions about how often respondents perform revision and PE – to ensure that participants carry out these activities in their workflow.

Sections B (*Revision*) and C (*Post-editing*) contained two symmetric sets of questions related to different aspects of the two activities, such as the primary reading strategies used by respondents when revising and post-editing.

Section D (*Post-editing, revision and overall strategies*) comprised three questions on the relationship between revision and PE: whether participants used the same strategies when revising human-translated texts and post-editing MT content or when revising texts that had been previously translated or post-edited. The third question asked whether the introduction of MT in the workflow brought about any changes in the way revision was carried out. Participants were encouraged to comment on their answers.

Lastly, Section E (*Satisfaction*) focused on respondents' satisfaction in performing translation, revision and post-editing. The results of this section will not be shown in the present article due to space constraints.

3.3 Participants' profile

The most represented mother tongue is French (44% of respondents), followed by Italian (24%). German ranks third (17%), while English is the mother tongue of 9% of respondents. Two respondents identified themselves as bilingual, while two others indicated different mother tongues.

Age is well distributed across ranges and per mother tongue, except for the most extreme categories (18-29 and 60+, including young linguists or translators approaching retirement, respectively). Translation experience ranged from two to 36 years, with an average of 15.8 years and
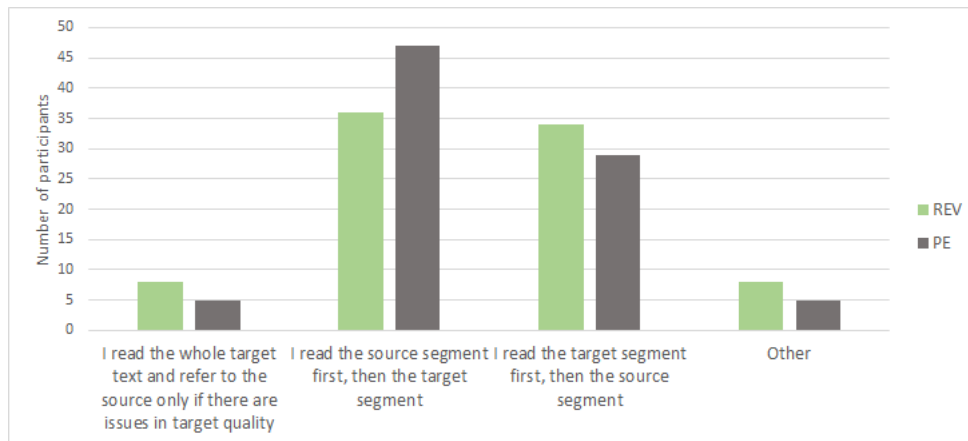
Figure 1: When revising/post-editing, what is your main reading strategy?

a median of 14.5 years. Overall, participants have been working at their respective CILS for an average of nine years and a median of seven years.

All participants indicated they revise texts and use MT in their workflows, but the proportion of those who revise almost daily is slightly higher than those who post-edit texts nearly every day (79% versus 72%, respectively).

While 66% of respondents already had some revision experience, most participants (80%) started PE at their current company. This result is expected and in line with the recent introduction of MT in many Swiss CILS.

Most respondents declare having attended a PE training session (53%), while only 41% of revisers have been trained to carry out revision jobs. Since PE has been introduced only recently in the workflow of surveyed CILS, it was necessary to provide linguists with some initial training to carry out the process. Regarding revision training, these findings are in line with those of Scocchera (2015), who found that 72% of revisers working in the Italian publishing sector had not received any revision training.

4 Results

We initially received 107 responses, but we had to discard 18 of them for various reasons. Five responses came from linguists who do not perform revision or PE in their daily jobs and were incomplete. Six responses came from linguists working at companies who did not yet use MT in their production workflow. Seven responses could not be traced back to any company that filled out the first questionnaire; this happened because we had only partial control over how the questionnaire was circulated (as explained in section 3.1). Additionally, five valid responses were incomplete, but we decided to keep those who at least completed the first four sections of our survey (n=2).

In total, we retained 86 valid responses from 23 Swiss CILS. If we consider the number of in-house linguists indicated by each company in questionnaire Q1, we can calculate a response rate of 44%. However, we cannot compare this response rate with that of other surveys focusing on similar topics, mainly because we decided to address a specific group of stakeholders and focus on a geographical area that is scarcely represented.

On average, 50% of linguists in each company have responded to the questionnaire Q2. We did not receive any responses from linguists working in three out of 26 companies who currently use MT in production (as indicated in questionnaire Q1).

4.1 Reading strategies

As shown in Figure 1, the most used reading strategy is to proceed segment by segment, starting from the source text. This is slightly more common in PE (approx. 55% of participants) than in revision (42%). The second most used strategy is the opposite one, in which linguists start by reading the target segment (approx. 34% in PE and 40% in revision). Only a few respondents claim to read the whole target text while referring to the source in case of issues, especially when revising. Five respondents claim to use this strategy during PE. However, reading only the target text in PE is a dangerous practice since omissions are not infrequent in neural MT, and the fluency of NMT output can be misleading (Castilho et al., 2017).

A few respondents claim to use other reading strategies when revising and post-editing. From a closer inspection of their comments, we understood that revisers' strategies depend on different factors, such as the text type, the translator who carried out the translation or the customer who requested it. One respondent described his/her strategy, which we found to match significantly with our first-listed strategy (reading the whole target text and referring to the source in case of issues or to check numbers and tags). One reviser uses a two-step revision strategy (monolingual proofreading followed by bilingual revision), while another one reads the source and target in parallel.

Regarding PE, one respondent is unable to provide us with an answer since he/she only uses MT as a further suggestion in the CAT tool. Two respondents mentioned they vary their strategies depending on the text, while two others read the source and target in parallel. Although the latter did not clarify whether they start with the source or target segment, we note that this strategy enables linguists to quickly shift attention between the source and the pre-translated text. Checking source and target text in chunks instead of reading the whole segment could benefit linguists' text comprehension, especially in case of longer sentences or complex syntactic structures.

In an additional question, we asked our participants whether they vary their strategies depending on the text or other factors. The answer was positive for approx. 63% and 37% of revisers and post-editors, respectively. Therefore, in PE, linguists tend to apply the same reading strategy more often than in revision. Criteria often cited by revisers to vary their preferred reading strategy are text type, time constraints and the translator who translated the text. In contrast, post-editors mention text type, text complexity, target audience, text length, and PE level (light or full) to be applied.

Studies on the influence of different reading strategies on post-editors' and revisers' efficiency are extremely scarce. Volkart et al. (forthcoming) found that students who start by reading the source text during PE introduce slightly more preferential changes than those who begin by reading the target. In the same study, the authors found no significant influence of the strategy on the ratio of corrected errors or on the time spent on the PE task. In revision, Ipsen and Dam (2016) found that revisers who start by reading the target text detect more errors than those who read the source text first. However, since the time to complete the task was not taken into account, it is unclear whether this procedure is faster than the opposite one. These findings would suggest that if linguists had to choose the same reading strategy to carry out revision and PE jobs, then reading the target text first would probably be the best option. However, this does not correspond to what the majority of our professional linguists does in practice.

It should be noted that the above-mentioned studies were both conducted with translation students or recent graduates, and did not assess texts' final quality. Therefore, it remains to be clarified whether – and to what extent – using the same reading strategy in PE and revision could affect professional linguists' performance.

4.2 Overall strategies

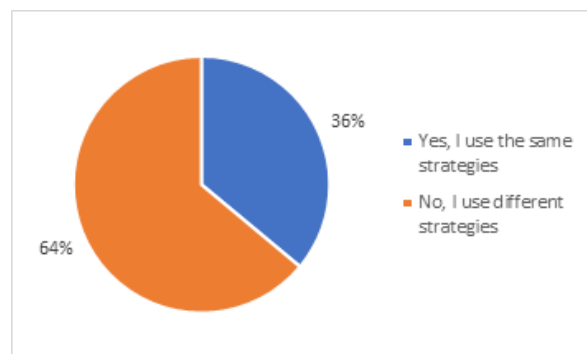### 4.2.1 Revising vs post-editing

Figure 2: Do you use the same overall strategies when revising human-translated texts and post-editing machine-translated texts?

Most respondents (64%) claim to apply different strategies when working with human-translated or machine-translated texts (Figure 2). Comments show that respondents trust MT less than human colleagues. Linguists are aware that humans and machines do not commit the same error; therefore, they are much more careful when working with MT than when they revise human-translated texts.

When analysing responses on reading strategies (Section 4.1), however, we found that around 65% of linguists reported using the same strategy during revision and PE. This could suggest that, although respondents claim to be aware of the differences between the two activities, in practice, they behave in the same way when revising and post-editing, at least regarding reading strategies.

4.2.2 Parameters and guidelines

We asked our respondents whether they use any revision parameters (Mossop, 2020) or PE guidelines (Hu and Cadwell, 2016) during revision and PE, respectively. Results show that revision mainly follows specific parameters (72% of respondents), while only slightly more than half of respondents follow any PE guidelines (51%). These figures show that, compared to PE, revision is an established practice with a long-standing tradition.

We also asked our respondents whether and how often they verify that terms are correctly rendered in the target language (Figure 3). Studies on revision practice report that revisers do not always check terminology, especially if they know that the translators have already taken care of it (Allman, 2007; Riondel, 2021). Conversely, a guideline that is often cited in full PE is to check whether terminology is correctly rendered in the target language (Hu and Cadwell, 2016).

Among our respondents, post-editors seem to be aware of this issue and systematically check whether terminology is correct in the target text (approx. 90% of respondents). A tiny percentage of post-editors check terminology "often", while only one respondent admits to only checking it "sometimes". On the other hand, when revising texts, only 62% of respondents systematically check terminology in translated texts; 28% indicated they often check terminology, 8% only sometimes, and 2% rarely do so. Some revisers commented on their answers and confirmed that they check terminology mainly depending on the translator who translated the text.
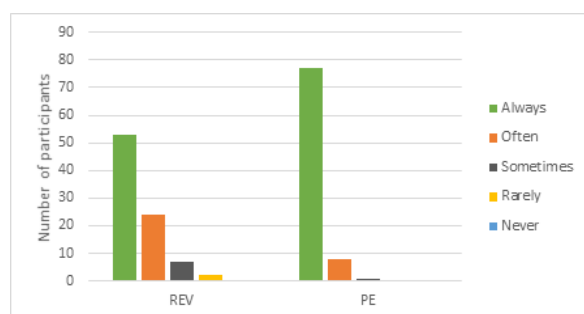

Figure 3: When revising/post-editing, do you check whether terminology is correct?

4.2.3 Revising post-edited or human-translated texts

In another question, we asked participants whether they use the same overall strategies when revising texts with different origins, *i.e.*, texts that had been previously translated or post-edited by a colleague. The answer is clear-cut (Figure 4): 78% confirm using the same strategies, thereby considering translated and post-edited text as the product of human work. Those who admit using different strategies clarify that, when revising post-edited texts, they mainly focus on textual cohesion and terminology consistency or check source and target texts very carefully to ensure that post-editors have not overlooked any MT errors.
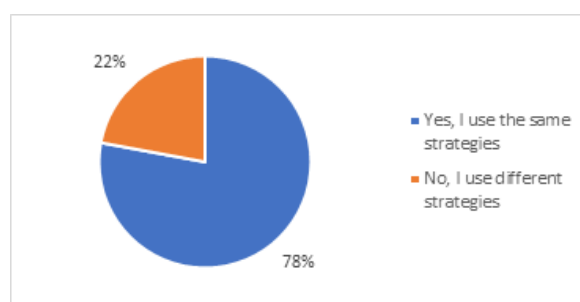

Figure 4: Do you use the same overall strategies when revising human-translated texts and revising texts that have been post-edited by another person?

In the comment section, 13 linguists reported that revision of post-edited texts is not carried out in their CILS or that they never know the origin of the text. When cross-checking these results with those from questionnaire Q1[4], we found that 45 out of 86 respondents do not carry out revision of post-edited texts in their workflows. Nevertheless, they have answered the question based on what they *would do* if they were to revise post-edited output.

4.3 MT influence on revision procedures

We also asked our respondents whether the introduction of MT in the workflow had somehow influenced the way revision of human-translated texts is carried out (Figure 5). The majority of respondents (72%) consider that this is not the case.

The analysis of comments from those who did

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[4]In questionnaire Q1, we found that post-edited texts are always revised in six out of 26 CILS. Post-edited texts are sometimes revised (n=6) depending on content type or target audience. In some cases, the linguist can ask for a revision by another colleague. Otherwise, the majority of respondents (n=14) clarified that post-edited texts are never revised.

notice a change (28%) revealed that this question had primarily been misunderstood. The way this question was asked has probably confused those respondents who consider PE as "the revision of MT output" (Mossop, 2020). Indeed, many participants commented again on how they tackle revision and PE, detailed their overall strategies or listed the differences between human-translated and machine-translated texts.

Only a few participants seem to have correctly understood the question and commented that, compared to what they used to do before the introduction of MT in their workflows, they now focus more on accuracy errors (typical MT errors) during revision.
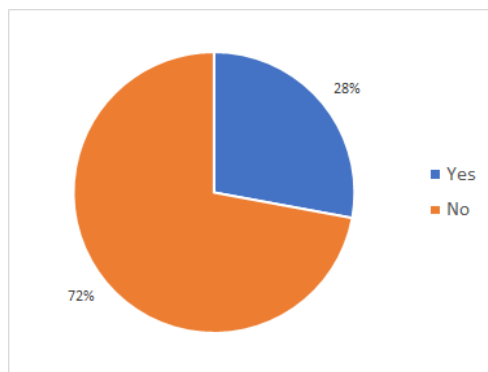

Figure 5: After the introduction of MT in your workflow, did you change the way you revise texts?

5 Conclusion and further research

We conducted a survey-based study to investigate revision and PE practices of salaried translators working at corporate in-house language services in Switzerland. We found that, although revision and PE share some common grounds, most linguists claim to act differently depending on whether they work with human-translated or machine-translated texts. However, they often apply the same reading strategies to these texts in practice.

While research on revision procedures has shown the impact of different revision strategies on revision quality, task duration and error detection potential (Ipsen and Dam, 2016; Robert, 2013; Robert and Van Waes, 2014), similar studies on PE strategies are extremely scarce. As a result, PE training rarely includes useful advice on how to carry out the task. Our survey-based data show that, in PE, most in-house linguists start by reading the source segment and tend to apply the same strategy regardless of the text type, while there

is less consensus on reading strategies in revision. Nevertheless, it remains to be demonstrated whether using the same or different reading strategies in PE and revision could benefit linguists' performance or even influence their attitudes toward the task.

The way many participants misunderstood a question about the possible influence of MT on revision procedures makes us think that there is a sort of cognitive bias toward a view of PE as the revision of MT. Such bias could affect the behaviour of some linguists who could not perceive working with MT as a means to vary their daily tasks but rather as a mere increase in the number of revision jobs to carry out. Displaying MT in a separate window (just as with translation memory fuzzy matches) instead of pre-translating the entire text could perhaps help linguists consider MT as a tool supporting their translation workflow – rather than a "translation dispenser" whose output must be corrected.

Translation scholars have often recommended introducing PE and revision as two separate activities at a later stage in the translation curriculum (Guerberof Arenas and Moorkens, 2019; Mossop, 2020; O'Brien, 2002), once some translation competence has been acquired. In modern translation environments, however, the use of NMT is changing the way we interact with pre-translated texts and we now need to conceive *ad hoc* activities to help translation students construct their own revision and PE strategies in parallel.

Findings detailed in the present article are preliminary. Using the same survey, we also collected data on linguists' satisfaction in performing revision and PE. Further research will include analysing these data to identify and address possible sources of grievance. We hope these additional data will help us draw a clearer picture of the similarities and differences between revision and PE in the NMT era.

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