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Translator Attitudes towards Translator-Computer Interaction – Findings from a Workplace Study

Abstract

Today technology is part and parcel of professional translation, and translation has therefore been characterised as Translator-Computer Interaction (TCI) (O'Brien 2012). Translation is increasingly carried out using Translation Memory (TM) systems which incorporate machine translation (MT), referred to as MT-assisted TM translation, and in this type of tool, translators switch between editing TM matches and post-editing MT matches. It is generally assumed that translators' attitudes towards technology impact on this interaction with the technology. Drawing on Eagly/Chaiken's (1995) definition of attitudes as evaluations of entities with favour or disfavour and on qualitative data from a workplace study of TCI, conducted as part of a PhD dissertation (Bundgaard 2017) and partly reported on in Bundgaard et al. (2016), this paper explores translator attitudes towards TCI in the form of MT-assisted TM translation. In doing so, the paper has a particular focus on the disfavour towards TCI expressed by translators. Moreover, inspired by Olohan (2011), who applies Pickering's "mangle of practice" theory and analyses resistance and accommodation in TCI, the paper focuses on how translators accommodate resistances offered by the tool. The study shows that the translators express disfavour towards MT in many respects, but also acknowledge positive aspects of the technology and expect MT to play a significant role in their future working lives. The translators do not make many positive or negative comments about TM which might indicate that TM is a completely integrated part of their processes. The translators seem to have a flexible and pragmatic attitude towards TCI, adapting to the tool's imperfections and accommodating its resistances.

1. Introduction

Today all professional translators interact with technology[1], and thus, drawing on the field of Human-Computer Interaction, O'Brien (2012) characterises translation as Translator-Computer Interaction (TCI). As stated by Garcia (2009: 199), Translation Memory (TM) has been the most

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1 Translation technologies have been classified by, among others, Alcina (2008). She groups translation technologies into five categories: 1) the translators' computer equipment, 2) communication and documentation tools, 3) text edition and desktop publishing tools, 4) language tools and resources and 5) translation tools. The first category includes elements related to the general functioning of the computer such as the physical components, antivirus software and printers. The second category comprises tools and resources used by translators to interact with clients and other translators, for example, such as e-mail, chat and virtual networks. Included in the third category are tools used for writing, correcting and editing texts, especially word processors. The fourth category includes tools and resources for the collection and organization of linguistic data such as electronic dictionaries, databases and text corpora. The fifth category comprises tools used in "the actual translation process" (Alcina 2008: 98). This category includes "assisted translation programs (which include translation memory management software, terminology databases and word processor) and machine translation programs" (Alcina 2008: 98). In this paper, I am specifically interested in the fifth category, i.e. in the translators' attitudes towards TM and MT.

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significant computer-assisted translation (CAT) tool for many years, but now translation is increasingly carried out using TM systems that incorporate machine translation (MT) (Pym 2011). I refer to this as MT-assisted TM translation. In the present paper, drawing on data from a TCI workplace study, I explore the following research question: What are the translators' attitudes towards TCI in the form of MT-assisted TM translation?

A TM is basically a database of paired source and target texts divided into segments, typically sentences. The primary purpose of using TMs is the recycling of past translations in the form of so-called *matches*. Three types of TM matches are normally distinguished: If a new source segment is identical to a source segment stored in the TM, a *100% match* will be retrieved; if the source segment is not identical, but similar to a segment in the TM, a *fuzzy match* will be retrieved; and if the TM contains no similar segment, we talk about a *no match*, in which case the translator will have to translate the new source segment from scratch. In systems which incorporate MT as an additional translation aid, the *no matches* are machine translated. This integration of TM and MT means that all segments for which the TM retrieves either a *100%* or a *fuzzy match* are translated by means of matches stored in the TM, and the remaining segments (*no matches*) are machine translated, resulting in a "hybrid" pretranslated text (Guerberof 2009: 1, Garcia 2009: 206-207, Tatsumi 2010: 26-27, Pym 2011: 1, Flanagan/Christensen 2014: 257, Teixeira 2014: 16). Thus, according to O'Brien/Moorkens (2014: 132), in MT-assisted TM translation, translators switch between editing TM matches and post-editing MT matches[2]. In this process of interacting with an MT-assisted TM tool, translators might experience that the tool poses difficulties which they have to adjust to in different ways. Olohan (2011) takes a similar point of departure in her analysis of translators' interaction with translation technology, applying Pickering's "mangle of practice" theory. Pickering's (2005) theory represents the dialectic of resistance and accommodation between human and non-human agents, e.g. between a scientist and a machine. In the interplay between these agents, which Pickering refers to as a "dance of agency", an agent may offer resistance which is accommodated by the other agent. For example, a new machine may offer resistance in the sense that it does not perform as intended by the scientist, and the scientist may then accommodate this by for example changing the material form of the machine. Taking this theoretical perspective as a point of departure, similar to Olohan (2011), TCI may be seen as a "dance of agency", in which a human agent (translator) interacts with a non-human agent (the technology) in a process of resistance and accommodation. For instance, while the CAT tool is generally expected to aid and support the translation process, it may also offer resistance and restrain the process in several ways. In order to accommodate the resistances offered by the tool, translators may need to carry out certain actions enabling the ongoing interaction between the tool and the translator to progress (see also Bundgaard et al. 2016).

It is generally assumed that translators' attitudes towards technology impact on their interaction with the technology (Hutchins/Somers 1992: 173, Lange/Bennett 2000, Guerberof et al. 2012, Doherty/Moorkens 2013, Teixeira 2014). Teixeira (2014: 30) even states that attitudes to technology might be as important as technology itself in the sense that negative attitudes towards technology might negatively influence the translators' use of it. Accordingly, this paper draws on data from a workplace study conducted as part of a PhD dissertation (Bundgaard 2017) and partly reported on in Bundgaard et al. 2016, to explore translators' attitudes towards TCI in the form of MT-assisted TM translation. After a brief review of previous studies of translator attitudes to TCI in section 2, I present the design of the workplace study and the method for data analysis in section 3. In section 4, I present the results of the analysis, ending with a discussion and some concluding remarks in section 5.

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2   In the paper, the term "match" is used when referring both to suggestions coming from a TM and from an MT engine, although "match" is technically not entirely accurate when talking about MT suggestions, since, contrary to TM, there is no comparison involved which might produce a "match".

2.   What do we know about translator attitudes to TCI?

Eagly/Chaiken define an attitude as a "psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly/Chaiken 1995: 414). They term the evaluated entity an "attitude object" and thus "attitudes are people's evaluations of attitude objects" (Eagly/Chaiken 1995: 414). In the following analysis, the favour and/or disfavour expressed by the translators towards the attitude object of TCI in the form of MT-assisted TM translation is analysed.

Several studies have contributed to our knowledge of translators' attitudes to translation technology. For example, Dillon/Fraser (2006) explored translator attitudes towards TM in their questionnaire survey among UK-based professional translators and found, among other things, that translators who use TM seem to have more positive attitudes towards TM than non-users and that translators with strong IT skills are more likely to have positive perceptions of TM. The study led the authors to suggest that non-adoption of TM had more to do with translators' lack of understanding of and familiarity with TM than the nature and applications of TM itself. Lagoudaki (2008) conducted a large-scale survey with a view to investigating the usage and benefits of MT-assisted TM and showed, for example, that inexperienced translators seemed to favour MT, whereas experienced translators (with more than 5 years of experience) expressed more disfavour towards MT. In Christensen/Schjoldager's study (2011), which investigated student-translators' retrospective comments in an online questionnaire survey regarding their experiences in a hands-on course on TM, the translators for example offered negative comments indicating that TM technology made them think less for themselves. The translators regretted a general loss of control, letting the technology take over the translation process. On the other hand, they found the sentence-by-sentence approach to be a useful way of dividing up the translation task. Guerberof (2013) studied translators' opinions about post-editing and MT through an online questionnaire and retrospective interviews and found that the translators had mixed experiences and feelings towards MT meaning that on some occasions the translators thought the experience with MT had been good and on others poor. She concluded that the translators generally had a very practical and open attitude towards MT, although some did not like working with it. Interestingly, the translators found that post-editing requires either similar or more cognitive effort than reviewing human translations. LeBlanc (2013), in his ethnographic study in three translation services and agencies, paid particular attention to professional translators' attitudes towards TM and found that they mentioned, for instance, the following advantages: increased productivity, improved consistency and the elimination of uninteresting and repetitive work. The disadvantages mentioned by translators were, for example, the sentence-by-sentence approach in TMs, that TMs are a barrier to creativity and that TMs contribute to error propagation when translations containing errors are recycled. Moorkens/O'Brien (2013) and O'Brien/Moorkens (2014) investigated translators' attitudes towards CAT editors in general and towards post-editing interfaces in particular in a survey of professional translators. To their surprise, they found a high level of dissatisfaction with TM tools (for instance due to poor layout and slow response times) and a general suspicion of MT. The study also showed that translators wish to be able to customise their user interfaces and that they wish for more keyboard shortcuts, for example for dictionary searches and one-click rejection of MT matches. The study also showed that metadata showing the origin of match suggestions are important to translators.

The above-mentioned studies all contribute to our knowledge of translator attitudes towards TCI and highlight different aspects of TCI which translators evaluate with favour and disfavour. The following analysis aims to contribute further to our knowledge of translator attitudes to TCI in the form of MT-assisted TM.

3.   Methodology

The data analysed in the present paper were collected as part of a workplace study at Denmark's second largest Language Service Provider, TextMinded Danmark A/S, which at the time of data

collection (2013) was in the process of integrating MT into its usual TM tool. The purpose of the workplace study was to explore TCI in an MT-assisted TM environment focusing on the editing of TM and the post-editing of MT matches. As part of the workplace study, I spent four weeks at TextMinded: one week in February/March 2013 and three weeks in May/June 2013. During the third week an experiment was conducted with 8 of TextMinded's 11 in-house translators. They each translated two English source texts into Danish (mother tongue of all eight translators) using an MT-assisted TM tool. The two source texts came from Bang & Olufsen, a regular client of TextMinded. The first source text was a technical text containing Frequently Asked Questions (FAQ) for a surround-sound speaker system (625 words in 76 segments) and the second was a marketing newsletter about one of their music systems (368 words in 25 segments). The source texts were chosen in collaboration with TextMinded and were authentic translation tasks in the sense that these source texts were recent assignments that TextMinded had completed for Bang & Olufsen. Bang & Olufsen gave their consent for the texts to be used in the study.

At different times during the week, each translator translated the two texts. In the experiment, the translators worked at their usual computers at their usual desks and had access to their usual sources of information. The CAT tool used in the experiment was TextMinded's usual CAT tool, SDL Trados Studio 2011, into which the MT engine SDL BeGlobal Enterprise had been integrated. The TM applied was a client-specific one and the MT engine had been trained with TM data and with a client-specific termbase. The termbase was also accessible to translators during translation. Both texts were pretranslated; when the TM contained matches with match values of 70% and above, a TM match had been inserted, and segments with match values below 70% were translated by the MT engine. Metadata were included, i.e. the translators could see whether a match came from the TM (and with which match value) or whether it had been translated by the MT engine. Additionally, in TM matches, the textual differences between the new source segment and the source segment retrieved from the TM were highlighted. During the experiment, data were collected using screen capture (BB FlashBack Express[3]), keystroke logging (Inputlog) (Leijten/Van Waes 2013) and observation. The latter resulted in an observational protocol in which I noted, for instance, if translators talked aloud (to their colleagues or to themselves) or had frustrated or other facial expressions during the experiment.

After the translators had translated the two texts, I compared the translations to the pretranslated versions, using the software SDLXLIFF Compare (SDL AppStore 2016), in order to highlight the changes made by the translator. After approximately one hour, each of the translators participated in a retrospective interview consisting of two parts. In the first part, the translators were asked to verbalise their process regarding specific segments (selected by me based on the comparison) while watching their screen capture recording. In the second part, I asked the translators questions about their participation in the experiment, about factors influencing their translation process and about TextMinded's perception of translation quality. After the interview, the translators were asked to fill in a post-experimental questionnaire about their background, experience and thoughts about the experiment and MT. During the other weeks of the workplace study, I observed the daily routines and work processes at TextMinded while writing field notes. For instance, I participated in a webinar on MT together with the translators (February 2013) and observed translators and project managers while doing their daily work.

The following analysis draws primarily on the retrospective interviews and secondarily on my field notes and the translators' written answers to two questions in the post-experimental questionnaire (questions 16 and 17) concerning their attitudes to MT and their expectations about the consequences of MT for their futures as translators. In exploring the translators' attitudes towards TCI, the analysis will focus on 1) identifying instances when the translators *explicitly* evaluate TCI in the form of MT-assisted TM with favour or disfavour, i.e. explicitly express their attitudes towards the technology and 2) identifying instances when the translators *implicitly* evaluate TCI

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3   http://www.flashbackrecorder.com

in the form of MT-assisted TM with favour or disfavour, based on my context knowledge of the experimental setup and of the translators' interaction with the system as observable in the screen recordings. Illustrative examples from the analysed data will be provided, thereby focusing on how translators accommodate resistances offered by the system.

3.1. Data analysis

The transcribed retrospective interviews, field notes and the translators' written answers to question 16 in the post-experimental questionnaire concerning their attitudes to MT were analysed adopting a template analysis approach (King 1998, 2004, 2012, Crabtree/Miller 1999, Brooks/King 2012). Next, the template analysis results were supplemented with a synthesis of the translators' answers to question 17 about their expectations relating to the consequences of MT for their future careers as translators.

Template analysis is a form of thematic analysis aimed at the qualitative analysis of textual material, often interview transcripts, but also for example field notes and free response items in questionnaires (King 2012: 126). Template analysis involves the construction of a list of codes (a template) which represents themes in the textual data. A code is a label attached to a section of text to relate it to a theme in the data and the codes in the template are usually hierarchically ordered, thus representing relationships between the identified themes.

Characteristic of template analysis is that the outset of the analysis is normally a set of pre-defined, *a priori* codes in the form of an initial template. The development of the initial template can take various forms. The researcher may start out with pre-defined codes based on the theoretical position of the research, he or she may develop the initial template after a preliminary examination of a sub-set of the data or the researcher may take a half-way position, where some codes are defined prior to exploration of the data and these are refined after exploration of the data (Crabtree/Miller 1999: 167, King 2004: 259, Waring/Wainwright 2008: 86).

In the current study, a half-way approach was taken. Thus, after I had read the data closely for familiarisation and had checked the interview transcripts for potential transcription errors (King 2012: 434), two *a priori* codes were defined: 1) Favour towards TCI in the form of MT-assisted TM and 2) disfavour towards TCI in the form of MT-assisted TM. Next, by examining one translator's (Translator A) retrospective interview, sub-codes were added under the *a priori* codes. As recommended by King as a strategy for enhancing the quality of the data analysis (King 1998: 122, 2004: 259, 2012: 322), one of my colleagues, another translation scholar, assisted me in this process. She was informed about the research question guiding the analysis as well as about the *a priori* codes, and we then independently coded the interview with Translator A in order to define relevant sub-codes. I conducted the coding using NVivo[4], a piece of software for qualitative data analysis, whereas my colleague conducted the coding manually, i.e. by marking sections of text and assigning them a label.

Based on these two independent coding sessions, we compared our codes and discussed similarities and differences between them. This process was productive, since it forced each of us to justify our codes, and it brought new perspectives to the table, which were used to develop the template. Overall, we agreed on distinguishing between attitudes expressed towards TM and MT, respectively, under each of the *a priori* codes. Our discussion revealed minor differences between the specific sub-codes relating to TM or MT, but we easily reached an agreement about the sub-codes to be included. At the end of our discussion, we agreed on an initial template.

The next step in the template analysis process consists of the researcher working through the full set of data, identifying and marking sections of text, which are relevant to the research question (King 2004: 261). This means that the initial template will often need revision, for example, through the insertion, deletion or merging of codes and the data will typically be reread several

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4   http://www.qsrinternational.com

times and the template adjusted accordingly. This process will go on until the researcher reaches a point of analytical saturation where all sections of text relevant to the research question have been assigned codes, the analysis stops producing new codes and the template represents the themes in the data (King 1998, 2004, 2012, O'Brien/Saldanha 2013: 192). This final template is then used as the point of departure for producing an account of the data, providing illustrative examples.

Thus, after the development of the initial template in collaboration with my colleague, I continued with the coding of the full set of data (retrospective interviews, field notes and questionnaire answers), also using NVivo. This was an iterative process in the sense that the data were read closely multiple times and a number of changes were made to the initial template. For example, for the "MT" code under "Disfavour towards TCI", it became clear that new sub-codes were needed. The retrospective interviews revealed that the translators sometimes evaluated *specific* matches or parts of matches offered by the tool during the translation process with disfavour, i.e. considered them not useful, and that sometimes the translators expressed a more *general* opinion about the lack of usefulness of MT. Thus, two new codes were formed, namely "Specific MT output is not useful" and "MT is generally not useful". Other changes were made as well such as the insertion of new codes and changing the location of codes. To sum up, following the template analysis approach, the data were reread and codes were adjusted until I reached a point of saturation, i.e. a final template which represented the themes in the data.

As described above, the analysis process departed from *a priori* codes and arrived at a final template through an iterative and recursive process "of applying, modifying and re-applying the initial template" (King 2012: 430). Thus, inspired by Waring and Wainwright, my analytic process was a "deductive leading to an inductive research approach with sub-codes emerging from the data" (Waring/Wainwright 2008: 90). This resulted in the final version of the template shown in Figure 1.

Favour towards TCI in the form of MT-assisted TM
- TM
  - Concordance search provides adequate translation
  - AutoSuggest is useful
- MT
  - Parts of MT matches or whole MT matches are useful
  - MT is generally useful

Disfavour towards TCI in the form of MT-assisted TM
- TM
  - The concordance search in the TM is not useful
  - "Trapped" by TM
- MT
  - Specific MT output is not useful
    - Element left out
    - Untranslatable element translated
    - Missing formatting / Missing and misplaced tags
    - Problems caused by integration of the MT engine with the termbase
    - Incorrect word order in the MT output
  - MT is generally not useful
    - Double-checking MT output
  - MT impacts negatively on cognitive processes
    - "Trapped" by MT

Figure 1. Final template

3.1.1. Limitations

The analysis sketched above has some limitations. For instance, TM technology was a totally integrated part of the translators' daily work processes, whereas they had limited experience with MT. This might have made them more inclined to express their attitudes towards MT than to-

wards TM. Moreover, although I never specifically stated that I was particularly interested in MT, the translators seemed to expect me to be, since the study was conducted right at the time of MT implementation at TextMinded. This might have led them to comment more on MT than on TM. Also, it is generally assumed that people have a tendency to remember the issues they want to criticise more than those they would like to praise which may have made them more inclined to express disfavour towards TCI than favour.

As explained above, some attitudes towards TCI identified in the data relate to specific MT matches or parts of MT matches from the experiment which the translators, for different reasons, experienced as problematic. Others relate to their general attitudes as to whether MT is useful for them as an additional translation aid. This is a somewhat artificial distinction, however, since the specific experiences in the experiment will probably influence their evaluations of the general usefulness of MT, and conversely their general attitudes towards MT will most likely have influenced their specific experiences of the interaction with the tool, as also indicated in the introduction.

3.1.2. Presentation of results

The presentation of the analysis results will be structured along the themes identified in the data and included in the final template. Themes recurring in at least half of the translators' comments (either in retrospective interviews, field notes or answers in the questionnaire) are explained and illustrated with quotes.[5] Since the field notes did not contain many examples of the translators expressing their attitudes towards TCI and since the length of their answers in the questionnaire was limited, the analysis is primarily illustrated through quotes from the retrospective interviews. When relevant, quotes are supplemented by short descriptions of the translators' processes as observable in the screen recordings.

In the presentation, Kvale/Brinkmann's guidelines for reporting interview quotes are followed (Kvale/Brinkmann 2009: 279-281). Hence, the quotes are rendered in a "readable written textual form" (Kvale/Brinkmann 2009: 280) and a balance between quotes and accompanying interpretative text has been pursued. Thus, for example, repetitions, pauses, "hm"s and the like have been omitted from the quotes. Also, my frequent comments in between, which were only uttered to confirm that I understood what the translator was saying (such as "yes", "no" and "okay") have been omitted. The interviews were conducted in Danish (translators' mother tongue), but in the following, the quotes are translated into English following a functional approach with the skopos of conveying the semantic meaning of the Danish quotes to the reader. When the translators or I read parts of the English source segments out loud during the interview, this is indicated by quotation marks in the quotes followed by "said in English" in square brackets. When we read parts of Danish matches out loud, back translations into English are provided in quotation marks followed by the italicised Danish expression in square brackets. In the interpretative text that accompanies quotes, generally only the English back translations are used. Translators are referred to as Translators A, B, C, D, E, F, G and H, and in quotes, I refer to comments by myself as "R" (for "Researcher").

4. Findings

Figure 1 above illustrates that disfavour was more prominent than favour in the data. Furthermore, negative attitudes towards TCI are assumed to impact negatively on TCI. Therefore, the presentation of the findings will focus on the disfavour expressed by the translators. Thus, in this section, the favour expressed by the translators towards TCI is first briefly summarised (section 4.1), and in section 4.2, the identified themes relating to disfavour explicitly or implicitly ex-

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5 Two themes are not addressed in the following, i.e. "AutoSuggest is useful" and ""Trapped" by TM", since these were only expressed by one and two translators, respectively.

pressed by the translators are then presented in more detail. Section 4.3 presents a synthesis of the translators' answers about the consequences of MT for their future careers as translators. A discussion of the findings is provided in section 5 together with concluding remarks.

4.1. Favour towards TCI

At different points during the retrospective interviews the translators expressed favour towards TCI. For example, the translators expressed that the concordance search function, which enabled them to search the TM for particular words or phrases, provided them with adequate translations. In terms of the MT matches provided during the experiment, during the retrospective interviews all translators expressed favour towards the usefulness of parts of MT matches or whole MT matches. For example, referring to the MT match in segment 24 in the Newsletter, Translator H stated that the MT match was a "flawless sentence in Danish" [*formfuldendt sætning på dansk*]. Referring to the same segment, Translator E stated that the sentence structure in the MT match was actually a more adequate solution than the sentence structure in the source segment, and referring to segment 41 in the FAQ text, she stated that she could almost use the entire MT match. Referring to segment 1 in the Newsletter, Translator A evaluated a part of the MT match with favour when stating that it "sounded pretty good" [*lød meget godt*], although she added afterwards in an ironic tone while laughing that "that was strange" [*det var mærkeligt*], which could suggest that she has a general negative attitude towards MT and therefore was positively surprised by an adequate solution. However, Translator C generally evaluated the MT matches with favour when stating that the matches she received during the experiment were "surprisingly good" [*overraskende gode*] and that she could use "quite a lot" [*en hel del*]. Translator B mentioned that MT sometimes provided "good suggestions which can be inspiring" [*gode forslag som kan være inspirerende*], and Translator F stated that the MT output can contain "insanely elegant solutions" [*sindssygt elegante løsninger*]. In their comments in the questionnaire about their attitudes towards MT, several of the translators also expressed favour towards MT. Translator A mentioned that she hoped to get assignments for which MT could be of help, and Translator E wrote that MT seemed "useful" [*smart*] in certain contexts in terms of the possibility of saving time in the translation process. Translator F made a similar comment, stating that in time MT could provide a good basis for fast editing and an increase in productivity for certain text types. Translator G wrote that MT can be helpful and Translator H noted that her attitude towards MT was critical, but also positive. Thus, the translators explicitly expressed favour towards TCI in a number of instances, which shows that the MT-assisted TM tool aided the processes on different occasions and in different respects. It should be noted that the translators may have implicitly expressed favour towards matches when, for example, accepting matches without edits.

4.2. Disfavour towards TCI

The translators expressed disfavour towards TCI in different respects: 1) a specific MT output or part of MT output is not useful, 2) MT is generally not useful, 3) MT impacts negatively on cognitive processes and 4) the concordance search in the TM is not useful. These themes are illustrated with quotes in the following sections. Since the presentation of the findings also addresses how the translators accommodated resistances posed by the system, the boundaries between favour and disfavour towards TCI may, at times, appear blurred. For example, if a translator expressed disfavour towards MT (e.g. because MT provided an inadequate translation of a term) and then accommodated the resistance offered by the MT system by using the TM (e.g. using the concordance search), this might at the same time constitute favour towards TM. Thus, analysing TCI in the form of MT-assisted TM can be difficult because it deals with an environment in which disfavour towards one technology may be accommodated by another technology. In other words, translators may have complex and sometimes conflicting attitudes towards the tool because of the different technologies involved. However, in the following, focus is on the disfavour

expressed by translators and particular instances will be addressed which are accommodated by another technology.

4.2.1. Specific MT output is not useful

Most of the translators stated in one or more cases during the retrospective interview that a specific MT match or part of an MT match was not useful in the sense that it was not an adequate translation of the source text segment in question. Sometimes the translators just stated that the MT match (or part of it) was not useful and at other times they explained a little more about the reasons why the translation was not adequate.

Translator D, for example, stated when we discussed segment 11 in the Newsletter:

> D: I think it was maybe the translation of the lowest quality: "experience the brand acoustic innovations it has never been easier sound front" [*opleve den brand akustiske nyskabelser det har aldrig været nemmere lydfronten*]. There is not much else to do than start over again.

Translator D thus evaluated the match with disfavour by stating that the quality of the match was insufficient. In Olohan's (2011) terms, the insufficient quality could be interpreted as resistance posed by the system. The translator did not specify the reasons for this insufficiency, but explained that the match was of no use and that she had to start from scratch. Interestingly, however, as it appeared on the screen recording, the translator did not reject the match by deleting it, but post-edited the match. From a methodological perspective, it is worth noting here that if the interview data had not been triangulated with observation data from the screen recordings, reliance on interview data alone could have led to a misinterpretation of how the translator accommodated this resistance.

When discussing segment 64 in the FAQ, Translator G elaborated on the reasons why parts of a specific MT match were not useful:

> G: that is again the machine how it reads this "volume level" [said in English] and then it says "volume strength level" [*lydstyrkeniveau*], but there I go and look in the memory and say "well, that can be made a little more simple" and I can see that it just says "volume strength" [*lydstyrke*], so I am thinking that is far better than "volume strength level" [*lydstyrkeniveauet*], because it is self-evident that it's a level. And then "wait some time" [*vent et stykke tid*] "wait some time" [said in English] I don't think that sounds particularly good in Danish so I'm saying "wait a moment" [*vent et øjeblik*], I think that sounds good in a guide, you don't have to wait for long, it is just a moment, it might be two minutes, but that you will find out when you are standing there.

Here, he pointed out that the Danish translations of "volume level" and "wait some time" were not adequate. The translator explained that the translation of "volume level" was not adequate due to redundancy since the term "volume strength" implies the semantic meaning of "level". He explained that he searched for the term in the concordance, which is also an example of the TM aiding the translator. In terms of the translation of the phrase "wait some time", the translator explained that it was not an adequate translation in terms of the communicative situation in which the target text was to be used. According to the translator, the translation of "wait some time" should signal to the target text reader that he or she did not have to wait long, and thus the translator was considering the purpose of the translation in its communicative situation. Consequently, he edited the MT match so it said "wait a moment" [*vent et øjeblik*] instead of "wait some time" [*vent et stykke tid*].

A number of other specific reasons for the lack of usefulness of specific (parts of) MT matches recurred in the translators' comments. These reasons concerned a) that an element had been left out by the MT engine, b) that the MT engine had translated elements which should be left untranslated in the target text (termed "untranslatable elements" in the following), c) that formatting and tags were missing in the MT output and that tags were incorrectly placed, d) that problems were caused by the integration of the MT engine with the termbase, and e) that the word order was incorrect in the MT output. These reasons will be exemplified and commented on in the following.

a. Element left out

Half of the translators mentioned in one or more instances that the MT engine left out elements in the translation. For example, Translator G, referring to segment 15 in the FAQ text, stated that the MT engine left out the translation of "may":

> G: well I'm thinking that, I can see that the machine translation is essentially okay, but for example the word "may" [said in English] has not been included, so it is not given that it is not available, but it can be that it is not, it depends again on the type of equipment one has.

The source text segment read "Note that *'BeoLab 14'* may not be available (…)", but "may" had not been included in the MT match. The translator explained that "may" needed to be included in the translation since otherwise the meaning of the target-text sentence would be inadequate.

That the MT engine leaves out elements in the output can be seen as an example of resistance offered by the system in the sense that we would expect the MT engine to translate the whole source segment. The translator accommodated this by typing an adequate Danish translation of "may". In general, translators may accommodate such resistances by focusing on discrepancies between the source segment and the match.

b. Untranslatable element translated

The FAQ text contained a number of words written in red. These words were to remain in English in the Danish target text, i.e. they were not to be translated. The translators were informed about this in the instructions they received prior to the experiment. Translators A, B, C, D, G and H mentioned on one or more occasions that the red words had been translated into Danish by the MT engine, explicitly or implicitly expressing that this was annoying.

In the observational protocol, I noted that Translator H seemed annoyed with something at a certain point during the experiment, and when I drew her attention to this during the retrospective interview, she said:

> H: then it's simply the thing that it translates things which are not supposed to be translated and I think that you could solve it by, now it is "Technical Sound Guide" [said in English], I think you could solve it if it was included as a term in the term… I don't know, it depends how it is configured, that BeGlobal.

Thus, the translator stated that what was annoying was that the MT engine had translated something which was not supposed to be translated, i.e. the term "Technical Sound Guide". She then presented a potential solution to this challenge, namely to include the term in the termbase, depending on how BeGlobal (the MT system) was configured. During the translation process, as it appears from the screen recording, she solved the problem by copying "Technical Sound Guide" from the source text segment and pasting it into the target segment. Thus, in Olohan's (2011) terms, the system offered resistance in translating something which was not supposed to be translated, and the translator accommodated this by copying the term and inserting it into the target segment. As a potential future way of anticipating such resistances, she presented the solution of including the term in the termbase.

Translator G also mentioned during the interview that "Technical Sound Guide" had been translated and explained that he accommodated the resistance offered by the system by using the Copy Source to Target[6] function instead of having to write "Technical Sound Guide" in the target segment himself. Translator G used this function numerous times when encountering such resistances.

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6 Using this function, the match is replaced by the source segment.

c. Missing formatting/Missing and misplaced tags

The translators explicitly or implicitly expressed disfavour towards the MT system in terms of source-text formatting which had not been transferred to the MT match and in terms of tags which had either not been transferred to the MT match or were not placed correctly in the MT match. This theme was only identified in the parts of the interviews which regarded the FAQ text, since the Newsletter contained no formatting or tags.

As regards tags, Translator A stated when referring to segment 3 in the FAQ text:

> A: well I thought it was annoying that it translated "MODE" [said in English] when it wasn't supposed to be translated, but I know that's the way it is, but also that it's not placed correctly in the sentence, that it's not placed inside those tags.

The translator thus expressed disfavour towards the MT system, not only because it had translated "MODE" into "TILSTAND" (this term was not supposed to be translated, similar to the examples above), but also because "TILSTAND" was not placed inside the correct tags in the MT match. She accommodated this resistance by copying "[tag] MODE [tag]" in the source segment and pasting it into the target segment as could be observed in the screen recording.

When asked about segment 39 in the FAQ, Translator C stated:

> C: of course I have to keep track of all those tags in there, it's a bit confusing so … and I get them placed. So sometimes I simply just took the source segment to be sure that all tags were included, so I didn't miss anything. It is easier than having to copy and paste them, it's a bit faster I think.
>
> R: okay, so there you have to move "AMP" [said in English] into
>
> C: yes that's what I have to do, into the last one there and "line" [said in English] has to be written in capitals. So that's what's going on there
>
> R: so that's the primary thing about that segment
>
> C: yes, it is, to ensure that all tags are included and that the red text is placed inside the tags

In the source segment in segment 39, there were tags around four words written in red, namely "BeoLab 14", "MODE", "LINE" and "AMP". In the MT match provided, the translations of "BeoLab 14" and "LINE" had been placed inside the tags, but the translations of "MODE" and "AMP" had not. Translator C explained that sometimes she uses the Copy Source to Target function to make sure that all tags are included in the translation and are placed correctly, since this is easier than copying single tags from the source and pasting them into the target segment. However, in this case she chose to write "MODE" and "AMP" inside the tags herself. Thus, in this example the resistance offered by the system in terms of the tags was accommodated by the translator writing the translations inside the correct tags herself, and she presented the use of the Copy Source to Target function as another typical way of accommodating such resistances. The Copy Source to Target function was frequently used by the translators to accommodate resistances in terms of missing formatting and tags.

Translator D also explicitly expressed frustration with tags and explained that when the tags are not placed correctly in the match, she has to either copy single tags to the target segment or she has to use the Copy Source to Target function and write her translation in between the tags. According to her, for either solution, the tags get in the way. However, indicating that tags interrupt her natural segmentation, she explained that copying the source to the target segment gives a better flow than copying the tags to the target segment one by one. From the perspective of translation process research (TPR) and TCI, it is interesting to observe that often the translators would rather delete the MT match and replace it with the source segment in order to have the correct tags than copy the tags one by one from the source segment and keep the MT match in the target segment.

d. Problems caused by integration of the MT engine with the termbase

In one or more cases, all translators besides Translator F mentioned problems in the matches which seemed to be caused by the integration with the termbase, which was set to overrule the output of the MT engine.

Referring to segment 39 in the FAQ text, Translator D said:

> D: something goes wrong with this "switch" [said in English]… the verb turns into the noun "switch" [*omskifter*], which maybe comes from the termbase, I guess it does actually if what is in the termbase overrides the machine translation so to speak, which I think is part of the set-up. At least we have been asked as translators that everything which is in the termbase should take precedence over what just comes out as output of an engine.

The source text in segment 39 read "Why does my BeoLab 14 not switch to standby (…)", but in the MT match, the verb "switch" was translated into the Danish noun "switch" [*omskifter*]. Translator D explained that the integration of the MT engine with the termbase probably caused this inadequate translation (the termbase contained the English noun "switch" with the Danish noun "omskifter" as its translation), adding that the translators are to give priority to terms included in the termbase. The translator accommodated the resistance offered by the system by writing the verb (3rd person singular) "switches" [*skifter*] instead of the noun "switch" [*omskifter*].

e. Incorrect word order in the MT output

In six of the interviews, the translators mentioned one or more instances where the word order was incorrect in the MT output. I made a note of one particular example in the observational protocol while Translator H was translating segment 11 in the Newsletter. When reading the segment she stated loudly "this is such a good sentence for critics of MT" [*det er sådan en god sætning for kritikere af MT, det her*]. During the interview I raised this point with her and she explained the reason for this comment:

> H: yes yes, that was really bad, it's a really good example of how it works when it doesn't work, machine translation, that it just takes the words one by one and joins them no matter if they fit together or not, and depending on the type of text then you can encounter such segments or pretranslations to a greater or lesser extent, and we like to laugh a bit about segments like these, but that sentence, I just couldn't use it.

The translator explained that the match was of a very low quality because the MT engine had just taken the words in the source segment and translated them one by one, resulting in a sentence which was unidiomatic Danish, since word-for-word translation was not appropriate in this situation. It appears from my field notes that during lunch after Translator H had participated in the experiment, she told a colleague, a project manager, who asked her about the experiment that "MT is what it is, but it was nice to be able to express one's candid opinion" [*maskinoversættelse jo er, som det er, men at det er rart at få lov at ytre sin uforbeholdne mening*]. This suggests that Translator H had a negative general attitude towards MT, although I did not get the impression from the interview that she was particularly critical.

4.2.2. MT is generally not useful

The translators made several comments about the general lack of usefulness of MT. For example, in the second part of the interview, when I asked Translator B whether he felt any external factors influence him when he translates, he said:

> B: no I don't think so, I think it's a combination of experience and then, well just the approach we take to it that many of our clients expect a little more than they did 5 to 10 years ago. So it's often about finding a synonym to the first, to the obvious choice of term, right? It's a small trick
>
> R: to make it more creative or?

B: well simply to show that you are not just a dictionary or that you don't just choose the first, the most obvious expression. We experience it in particular when we translate into English. Many clients, they think it seems translated if you choose a perfectly usable expression, but if it was also the first word in the dictionary. Well, if you translate "platform" [said in English] to "platform", then someone will think "argh … couldn't it be called something else", so it's simply such a… it's almost a kind of hedging. If we can find an alternative word then we won't get comments from some of our clients like "isn't it a little Danglish" [negative word implying that the Danish translation is too strongly influenced by English]. So it's always at the back of my mind and I will say it actually conflicts a little with the idea of machine translation, because there's nothing wrong with choosing the word "platform", but well we just know that with some clients it's just an advantage to choose an alternative, so it's a strange balance and it definitely plays a role. It's always at the back of my mind when I translate, to find something which is just a little different and also sometimes to merge segments or split them or change the punctuation a bit, that is also a small trick and sometimes it's also necessary linguistically.

Translator B explained that in order to live up to the clients' expectations, he makes translation choices which make the translation seem less like a translation. For example, on the word level, he tries to come up with translations which are not the most obvious choices. Further, he explained that clients might criticise perfectly adequate Danish translations, just because the text still looks English, and that he is anticipating this type of criticism by coming up with creative solutions which demonstrate his competence as a translator. Interestingly, he also sometimes accomplishes this by merging or splitting segments or changing the punctuation. According to Translator B, this impacts a great deal on his translation process. His reflections suggest that he thinks machine-translated texts are typically very close to the sources, and his wish to deviate from the most obvious choices is thus in conflict with the notion of MT, making MT less useful. Along the same lines, he stated later in the interview that MT might be useful for assignments which do not have to be "outstanding" [*superlækre*]. However, he then went on to say that he did not think many of their clients would settle for less than the highest quality, thus expressing a lack of usefulness of MT for TextMinded's purposes.

Translator D stated something similar when stressing that translations should not appear to be translations, and that TextMinded simply cannot afford to deliver translations that resemble something that has been machine translated. This comment strongly suggests that she expects MT to produce poor quality translations, and that there is a long way to go from the MT output to a quality which satisfies the clients' expectations, thus indicating a lack of usefulness of MT for TextMinded's purposes. At another point in the interview, Translator D explicitly stated that MT was not yet entirely good enough for TextMinded's purposes.

Another way in which the translators explicitly or implicitly expressed a general lack of usefulness of MT was by double-checking the MT output, typically against the TM by using the concordance search. Some of the translators explicitly stated that they did not trust the MT output and therefore double-checked the translations provided by MT. For instance, Translator A stated that the terminology was generally not correct in the MT output and therefore she wanted to double-check it against the TM. Other translators implicitly expressed a lack of usefulness of MT. To be sure that the MT suggestion was acceptable, they double-checked it by searching the TM for the source-text element in question, using the concordance search. These are instances where the disfavour towards MT expressed by the translators seems to at the same time constitute favour towards TM, since the translators turn to the TM to accommodate the resistance offered by the MT engine.

4.2.3. MT impacts negatively on cognitive processes

Several of the translators mentioned during the interview that the cognitive processes involved in post-editing MT differ from the processes involved in traditional translation and in working with TM matches in a negative way. In TPR research it is often argued that CAT tools impact on translators' mental processes (Christensen 2011), and it was thus interesting to note that the transla-

tors themselves are conscious about ways in which the integration of MT changes their cognitive processes.

Translator D was quite explicit in her explanation of the differences between her usual translation process and post-editing MT matches:

> D: normally when you start translating and read a segment, then you are already formulating something in your head. Actually you have to refrain from doing that, now you actually have to refrain from doing that. Now you have to read the source text and then you have to read what comes out of the machine translation, then you have to somehow determine how much of it you can use, right? It actually requires that you might still have your own sentence in your head, but it turns into such a comparative exercise for every single segment instead of a flow, right?

Translator D thus explained that the integration of MT changes her cognitive processes and that the translation process turns into an exercise of comparing her own mental translations of segments to the MT output. As mentioned in section 3, during my first visit to TextMinded, I attended a webinar on MT together with the translators. Interestingly, as it appears from my field notes, Translator D already during the webinar described the difference between working with MT and her usual translation process in this way. In fact, she stated that when working with MT, she had to "turn off the creative process" [*slå den kreative proces fra*]. She added that, after the integration of MT, at least in the beginning, she might find it easier to delete the MT match and translate the source segment from scratch. She also stated that translation might become more like reviewing other translators' translations.

In the translators' answers to the question in the post-experimental questionnaire about their attitudes to MT, Translators A, C and F also expressed in different ways that MT changes the translation process. Translator A stated that in the cases where she had used MT, the translation process was prolonged because she started out trying to use and improve the MT output, but often ended up realising that it is not of any use. Translator C stated that post-editing MT matches is another way of working, which requires adjustment, and Translator F stated that translating with MT is a different process, because he has to evaluate the MT match before he can proceed and choose the final solution.

"Trapped" by MT

Six translators expressed that they sometimes feel "trapped" by MT matches. In the retrospective interviews, they used expressions such as being "led astray" [*ledt på afveje* and *forledt*] (Translators A, C and H), being "restrained" [*bundet*] (Translator F), and "falling into [a trap]" [*falde i*] (Translator D) when working with MT. Translator G mentioned that words in the MT output might seem "harmless" [*tilforladelige*], but they are, in fact, not. Similar feelings of being trapped were expressed by the translators in the questionnaire when they commented on their attitudes towards MT: Translator C mentioned that it can be difficult to "free" [*frigøre*] oneself from the MT output, Translator G stated that it is easy to be "led astray" [*forledt*] by MT, and Translator H mentioned that MT entails certain "pitfalls" [*faldgruber*]. Thus, MT was described as something which can deceive translators, suggesting a general suspicion of MT.

Translator F stated that he did not like to have segments pretranslated, because it changes his translation process, since he has to relate to the MT output right away. He continued to say that it also depends on the text and the MT engine, adding that the engine used for translating this text was not that good. He went on:

> F: but this is not good, because you are coloured right away. My normal process, let's say if I get a clean document, it's simply that I have copied everything and then I start writing on top of that, that is how my translator brain works the best, because before I start writing I have reached the solution in my head already – right? – and that is how it works for many in here I think

> R: and what about MT, are you then, well

> F: yes I am restrained

R: instead of starting that process

F: yes yes

R: then you become

F: yes yes

R: forced to relate to

F: yes that's clear yes, yes but at the same time there can be some insanely elegant solutions in the previous, in what is the basis for the machine translated so to speak which I had not thought of myself. Well, it is a little fifty-fifty – right? – but I also think it is a process of adjustment, because it is simply a way of unlearning how you translated before.

Here, Translator F explained that usually, when no matches are found in the TM, he would copy the source text to the target text and then he would write on top of the source text, explaining that this is his optimal translation process. Similarly to Translator D above, he said that before he starts typing his translation, he has already reached a solution in his head, but when working with MT, this is "overruled" by the MT output. Translator F added that the MT output might contain extremely adequate solutions which he had not thought of himself, stating that it is a learning process and that it is about "unlearning" the way you have translated before MT was integrated with the TM tool. This is interesting from a TPR perspective, since this suggests that MT matches are not just providing the translators with translation suggestions they would not have had in a traditional TM environment, but that the integration of MT changes the translation process.

Translator G also expressed a feeling of being trapped by the MT output, since what makes working with MT difficult is to judge whether a provided match is an adequate translation, because even if something has been left out compared to the source segment, the match can read like an adequate translation. Furthermore, deciding on how much of a provided match must be edited is problematic because no match percentages are provided, i.e. no metadata, as in TM matches. He went on:

G: well in some cases you can use it and it saves you time and in other cases it is actually confusing, you think it's rubbish and I would actually have been better off just thinking about a translation for this sentence from the beginning, because now I have been trapped by this and this word which I feel obliged to use and it can be difficult to set this aside and say it is **me** who makes this translation, it is **me** who decides what to write.

To sum up, the translator expressed a feeling of being trapped by the output and explained that it can be difficult to take control and not let the system "decide" what the translation should be. It seems that, by trying to stay in control of the interaction, the translator attempts to accommodate resistance posed by the system. The translator further explained that the reason for his feeling trapped was also that he did not know the origin of the MT matches, i.e. whether the MT engine drew on material from the Internet, from which he was allowed to deviate, or whether it drew on material from the client in question, which he should accept, in accordance with a general norm of giving priority to client preferences. Thus, it seems that the translator had a feeling of MT as a "black box", i.e. that he did not understand why something was translated in a particular way (see also Bundgaard et al. 2016).

4.2.4. Concordance search in the TM is not useful

The translators only mentioned one negative issue related to TM, namely that sometimes concordance searches do not provide solutions to a specific translation problem. For example, Translator C expressed this when commenting on segment 11 in the Newsletter. In segment 11, the source text contained the phrase "accessible or compelling" for which the MT match contained no adequate translation. Translator C therefore used the concordance search, but did not find a suitable translation:

> R: then you search for the part over there "accessible…" [said in English]

> C: yes I thought that there might be (laughs) help for that word "compelling" [said in English], but there wasn't, so I had to go find a solution myself.

Translator H made a similar comment in relation to segments 23-25 in the FAQ text:

> H: that is where I encounter that "bass position knob" [said in English] for the first time and I couldn't find that in the concordance and then I ran some Google searches on what the translation may be and I searched in dictionaries as well.

Both comments suggested that the concordance search was used as the first resource when the translators encountered a translation problem and needed to carry out research in order to find the solution. When the concordance search did not return any results that the translators considered useful, they then turned to other sources: Translator C came up with a solution herself, and Translator H searched Google and some dictionaries.

4.3. The future

The future of the translation profession is something which certainly concerns the research community and translators themselves. In the CAT literature, the question of how translation technology is going to change professional translators' job descriptions in the future is often asked, but rarely answered. As pointed out by Schmitt, conflicting perceptions of the future of MT exist: "Either it is assumed that the MT can never be as good as a human translation or machine translation is viewed as the ultimate enemy of the translator and as a job killer" (Schmitt 2015: 234, see also O'Brien 2012: 119). In the post-experimental questionnaire the translators were asked what they expected that the use of MT would mean for their jobs as translators in the future (question 17). In the following, their answers are summarised.

Many of the translators mentioned that they expected to become "post-editors" [*post-editor-er*] (Translators B, C and G), "reviewers" [*korrekturlæsere*] (Translator G) or "editors" [*redaktører/editors*] (Translator F) in the future. Translator A mentioned that if the quality of MT output increases, she expects that her job as a translator will comprise more text editing [*tekstredigering*], and Translator E stated that she expected that the translation phase would come to contain an element of "review" [*korrekturfase*]. Translator D answered that she hoped that MT will ease translation in the future, but her impression was that translation has already become "high-level text production" [*tekstproduktion på højt plan*] to the extent that many processes cannot be taken over by machines. By this, she probably meant that MT cannot produce translations of a quality which is comparable to what a translator can produce. Translator H stated that she expected the post-editing of MT output to fill up a large part of her working day and that all the texts which she translates will be machine translated in the future. Translator A added that if the quality of MT does not increase, she considered it to be more of an obstacle than a help, and Translator B added that "some (creative) texts" [*nogle (kreative) tekster*] would still require a considerable human effort. Translator C stated that she did not hope it to hold true that, in the near future, translators would never have to translate segments from scratch, but also wrote that translators would probably turn into post-editors. In relation to this, she wrote "this is unfortunate, since translating is fun" [*desværre, for det er oversættelse, der er sjovt*], implying that post-editing is not translation.

5. Discussion and concluding remarks

Taking as a starting point that translator attitudes towards TCI can impact on their interaction with the technology, the translators' evaluations of the attitude object of TCI in the form of MT-assisted TM were analysed, applying template analysis. In favour of TM, many translators stated that the TM aided the translation process since the concordance search function in the tool provided them with adequate translations. This confirms findings in the studies by O'Brien/Moorkens (2014) and LeBlanc (2013), who found that translators find the concordance particularly helpful (O'Brien/

Moorkens 2014: 134) and that the concordance is considered a "one-stop shop" (LeBlanc 2013: 6) replacing other sources of information. In terms of favour towards MT, in the current study, all translators expressed in one or more instances that the MT engine had provided adequate translations of particular (parts of) source segments, and several translators also stated that generally MT can provide translations of a good quality. Thus, the MT system was to some extent perceived as an aid in the translation process.

The presentation of the findings focused primarily on the disfavour expressed by the translators towards TCI, since the analysis revealed that disfavour was more prominent than favour in the data and since negative attitudes towards TCI are assumed to impact negatively on TCI. The disfavour expressed revolved around the lack of usefulness of MT, both in terms of specific (parts of) MT matches in the experiment and in general, around negative impact of MT on translators' cognitive processes and around the concordance search function in the TM not being useful on some occasions. Regarding specific MT matches, translators expressed that it is problematic that elements are left out by the MT engine and that elements which were not meant to be translated were translated by the MT engine. In Olohan's (2011) terms, such instances are examples of resistances offered by the system, which the translators accommodated by, for example, copying elements from the source segment and pasting them into the target segment or by using the Copy Source to Target function. One of the translators suggested that elements which should not be translated could be included as terms in the termbase as a potential future way of anticipating such resistances. The translators expressed disfavour towards the MT-assisted TM tool in terms of source-text formatting and tags which were not transferred to the MT match and tags which were not placed correctly in the MT match. The translators for example accommodated such resistances by copying tags from the source to the target segment or by using the Copy Source to Target function. Interestingly, Guerberof (2013) also observed that tags constitute a problematic issue and notes that "translators often complain that with a heavily tagged document it is easier to work from the source text and not from a proposed text where tags need to be rearranged completely in each segment" (Guerberof 2013: 86). Likewise, O'Brien/Moorkens indicated that tags constitute a typical problematic issue when working with MT (O'Brien/Moorkens 2014: 135). In the current study, several translators highlighted instances where the integration with the termbase seemed to cause problems in the MT output, and many translators noted that often the word order was incorrect in the MT output.

Other comments concerned a general lack of usefulness of MT. These comments suggested that translators think that MT output is typically too close to the source text and that there is a long way to go from the MT output to a quality which lives up to the clients' expectations, indicating a lack of usefulness of MT for TextMinded's purposes. Guerberof (2013) observed something similar when a translator stated that MT was more beneficial to him financially if the quality requested by the client was just "understandable" and the target text was not highly visible, whereas he found that it became unprofitable if the quality was expected to be very high (Guerberof 2013: 86). In the current study, another way in which the translators explicitly or implicitly expressed a general lack of usefulness of MT was by double-checking the MT output, typically against the TM by means of the concordance search.

Interestingly, one of the translators argued that the notion of MT conflicts with his wish to make the translation seem less like a translation in order to avoid criticism from clients. He accomplishes this by making translation choices on the terminological level which deviate from the most obvious choices and by merging or splitting segments or changing the punctuation. That the translator deviates from the structure and punctuation of the source text in order to demonstrate his competence as a translator is highly interesting in the context of some of the aspects of TM often problematised, namely that a monotonic mindset is imposed on translators and that it makes translators feel that they should stay close to the structure of the source text (Bowker/Fisher 2010, Melby et al. 2015). LeBlanc (2013), for example, reported that the interviewed translators in his

study found that combining and splitting segments became more complicated in a TM environment.

From a TPR perspective, it was noteworthy that many translators reflected on the ways in which MT impacts negatively on their cognitive processes. Some expressed that MT disturbed their translation processes, because, whereas they usually read the source text segment and then translate it, with MT, they also have to evaluate the MT match. O'Brien/Moorkens argued that this change in the translation process might explain why translators perceive post-editing to be more cognitively demanding than traditional translation (O'Brien/Moorkens 2014: 132-133).

Many translators expressed a feeling of being trapped by the MT output, because it may seem harmless, but, in fact, it is not. Christensen/Schjoldager found something similar in their study, although in the context of TM, when a student-translator expressed that "when your eyes have first registered a translation proposal, it's harder to think of other solutions" (Christensen/Schjoldager 2011: 125). This feeling of being trapped might, at least partly, have been caused by the translators' lack of knowledge of the origin of the MT matches, suggesting that MT seems to be a "black box" for translators. This "black box perception" was also found by Karamanis et al. (2010), who stated that "[A]lthough the specialised researchers who developed an MT engine are probably able to tell why a certain string has been translated in a particular way, for most people who are not working in this domain the MT engine remains a black box" (Karamanis et al. 2010: 251, see also Karamanis et. al 2011: 45-46). They suggest better information to translators about the origins of the output as one means of improving the integration of MT and TM, which was also one of the conclusions in Bundgaard et al. (2016). O'Brien/Moorkens (2014) also identified such metadata as important to translators.

The only recurring theme encompassing disfavour towards TM covered instances when translators stated that they turned to the concordance search for help, but the search did not provide any. That the translators did not make many negative comments about TM (or positive, for that matter) may indicate that TM was a completely integrated part of their processes, a sort of "business as usual", which the translators typically did not question. This is in line with the observation by LeBlanc, who states that TMs "are completely integrated in the translators' workstations and their use is not optional" (LeBlanc 2013: 5). However, when seen in light of the studies of Moorkens/O'Brien (2013) and O'Brien/Moorkens (2014) who found a high level of dissatisfaction with TM tools, this was a bit surprising. As pointed out by Christensen/Schjoldager, a reason might also be that experienced TM translators are no longer "conscious of any changes that the technology may have caused to their mental processes" (Christensen/Schjoldager 2011: 122). However, as explained above, the translators did seem to reflect on the impact of the technology on their processes.

In conclusion, although the translators put forward many negative aspects of TCI and MT in particular, they also acknowledged positive aspects of MT-assisted TM. Also, they expected MT to play a large role in their future working lives. Generally, the translators seemed to have a flexible and pragmatic attitude towards TCI, adapting to the tool's imperfections and accommodating its resistances as well as offering solutions to how resistances could be anticipated in the future. The findings are relevant to professional translators and to scholars teaching translation since these are issues highly relevant in the translation practice of today. Also, the findings have highlighted potential technological improvements relevant to CAT tool developers. However, we still need more knowledge of how translators interact with the tools that are now an inseparable part of translation as well as of their attitudes to this interaction. In particular, it would be interesting to delve further into translators' expressed feeling of being "trapped" by the MT output and whether this is reflected in the translation process and product. Regardless, if translators feel that the translation process is constrained by the technology, this may impact negatively on their job satisfaction. However, this study has suggested that translators wish to remain in control of the translation process. Thus, it seems suitable to end with the words of Translator G: "it is **me** who makes this translation, it is **me** who decides what to write".

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