Keeping an eye on the UI design of Translation Memory: How do translators use the "Concordance" feature?

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ABSTRACT

Motivation – To investigate the usefulness of sub-segment matching (Concordance feature) in a Translation Memory interface and translators' attitudes to new UI developments around such matching.

Research approach – An explorative work-in-progress using eye tracking for translation conducted by professional translators, followed by an opinion survey.

Findings/Design – The results suggest that the Concordance window is useful for checking terminology and context, but there is some evidence that the translators do not wish to have this feature turned on constantly.

Research limitations/Implications – This is an initial work-in-progress study with a limited number of participants. Quantitative and qualitative results are presented.

Originality/Value – This is the first empirical research of its kind. Translators are rarely, if ever, consulted about the UI of the tools they have to use.

Take away message - The potential productivity and quality gain from sub-segment matches in Translation Memory is not fully realised and may be enhanced with improved UI design derived from focused research on user experience.

Keywords

Translation technology, Translation Memory (TM), user interface, sub-segment matching, concordance, eye tracking, user experience

INTRODUCTION & MOTIVATION

Since the mid 1990s, professional translators have used "Translation Memory" (TM) tools. A TM is a database, containing aligned pairs of corresponding source language (SL) and target language (TL) segments. TM tools are used in translation scenarios where there is a very high volume of repetitive text (for example in series of releases of User Assistance documentation in the IT, automotive or aeronautic domains) and they have been shown to reduce both time and cost in translation.

The TM user interface is made up of several components: The TM Window displays the source and target language segment contained in the database. The translator's Edit window contains the source language text that requires translation. If a "match" is found in the TM database, this is also displayed in the edit window and if it is not an "exact" match the differences are marked up using colour coding as well as a numerical display of match percentage. A TM tool typically also has a Terminology window, which is a distinct window displaying terms in the SL and TL that are contained in the terminology database. User information is displayed showing, for example, who created the translation, when and for which project. Finally, if the file format is tagged (e.g. XML, XHTML etc). tags are also displayed in the TM and Edit windows. The result is a very complex user interface.

TM tools search for matches in the database on the level of a "segment". Although the segmentation rules can be customised, a segment most commonly refers to a sentence delimited by a full stop. Other segments include text delimited by colons, semi-colons, tabs or end-of-line markers. However, other potentially useful text fragments below a sentence level can go undetected by the tool. This has led TM tool developers to propose "sub-segment matching" as a way of squeezing more out of the TM database. To capture these sub-segment text fragments translators can use a feature of TM tools called "Concordance" by typing a search word or string of words which allows the user to retrieve all the occurrences of a particular searched pattern (word or words) in its immediate context (Bowker, 2002: 149). Currently, translators are paid according to the number of source words to be translated and they come under significant pressure to give discounts to clients if matches of high similarity exist in the TM (Austermühl, 2001: 141). Recently, there has been speculation that further discounts will be demanded if sub-segment matches occur in the TM. This has been further fuelled by the release of a radically redesigned version of the market-leading TM tool (SDL Trados Studio 2009), which offers *predictive*

suggestions to the translator as s/he types. This feature is called *AutoSuggest*. However, no research has been carried out on the *usefulness* of sub-segment matching. Colominas (2008) investigated the "usability" of sub-sentential segmentation, but does so using recall/precision rates and no translators were consulted for that research.

Thus there are two new developments in the field of translation memory: pressure for cost models that include sub-segment matching and the introduction of predictive sub-segment matching. Both of these developments raise some important questions regarding the usefulness of sub-segment matching for the translation process (basically is this a hindrance or help for the translator?) and how sub-segment matching can be integrated into an already very busy user interface.

This short paper presents a work-in-progress that seeks to investigate the usefulness of sub-segment matching through analysis of the use of the "Concordance" function. Implicit in this objective is also to give a critical assessment of specialised translation tools, such as TM, from a user-oriented perspective.

METHOD

A semi-technical German text of 424 words in 25 segments from the domain of business was prepared as the source text to be translated into English by subjects. A TM database was created, containing pre-determined proportions of various kinds of matches. 16% of the segments (4) were an exact match with the text segments in the TM; 28% of the segments (7) were "fuzzy" matches, meaning that part of the segment was matched with a segment in the TM; and the remaining 56% of segments (14) produced concordance matches. The fuzzy match minimum threshold was set at 70% (more or less standard for the translation industry), and the concordance minimum threshold was set at 50%. This means that any match below a 50% similarity level would not be suggested to the translator. The algorithms for calculating similarity are proprietary to the TM developers and so cannot be explained here.

Six professional translators were recruited to translate the German text into English. Efforts were made to ensure that the translators had similar professional experience with the TM tool that was used (SDL Trados 2007). The 2007 version of the tool was favoured in this research project over the more recent 2009 version because the latter has been on the market for a relatively short period of time and has a completely new interface. The bulk of the translator community has not yet migrated to this new version and has insufficient experience with the new UI, which would have impacted on our results.

One group translated with the Concordance feature enabled, the other with it disabled. A Tobii 1750 eye tracker was used to record gaze and task data. The translators answered post-task survey questions.

Measurements

Our aim was to measure the "usefulness" of the sub-segment matching, as presented in the Concordance window. To do so, we operationalised "usefulness" in the following ways:

Usage

When the Concordance feature was enabled, we measured the number of fixations and duration of fixations on the Concordance window, compared with other windows in the UI (i.e. the TM window and the Edit window). Note that any fixations outside these specific "Areas of Interest" (AOIs) are classified as "Not an AOI" but fixations on those areas are also recorded by the eye tracker. In addition to fixation data, we also captured the number of direct cut and paste actions from the Concordance window as well as the number of times translators reproduced the suggested content from the Concordance window (but without cutting and pasting (i.e. by direct typing).

Productivity

We compared the average task time length when the concordance feature was used versus its non-use.

Opinions

Translators rarely have input into the design of the tools they are required to use on a daily basis (Lagoudaki, 2006). Therefore, we conducted a post-task survey of participants, showing them the *AutoSuggest* feature in the new version of the TM tool, and asking them how useful or acceptable they considered this feature to be, among other questions.

RESULTS

It should be emphasized here that the results stem from only a small group of participants to date (N=6). This is because the work is ongoing, but also because recruiting professional translators who meet the specific criteria is challenging. Our results are preliminary, but novel.

Usage

When Concordance is enabled, the translators clearly "used" the information presented in that window as the high number of fixations, the fixation duration, cut & paste and use of suggested content imply (Tables 1 & 2). Individual preferences for/against cut & paste and variations in fixations are apparent. The fixations recorded for 'not an AOI' mean that the translator focused their attention on an area which was not marked as one of interest by the researchers. The lower the fixation count and duration, the lower the usage of information in that area of the UI. For example in Table 1, we can see that there is only one fixation count for Translator B on the TM window. From this we can conclude that Translator B did not find the TM window useful when there was a concordance match

shown (136 fixations in contrast). The fixation count for the other two translators follows this pattern.

Table 2 provides evidence of the usage of information provided through the Concordance feature in the form of either cutting and pasting of information or direct typing of the information in the Edit window. We can conclude from this data that when sub-segment matching is provided via the Concordance feature in SDL Trados 2007, that the information is used by translators and, it appears, even favoured over the longer segments displayed in the TM window (compare TM and Concordance window fixations).

Table 1: Fixation Count & Length when Concordance is Enabled (Trans.= Translator)

Fix. Count	Not an AOI	TM Window	Edit Window	Concordance Window
Trans. A	0	11	358	278
Trans. B	8	1	310	136
Trans. C	6	28	1324	331
Fix. Length (secs.)	**Not an AOI**	**TM Window**	**Edit Window**	**Concordance Window**
Trans. A	0	0.329	0.449	0.357
Trans. B	0.633	0.279	0.472	0.376
Trans. C	0.850	0.685	0.911	0.805

Table 2: Usage of Concordance Content via Cut & Paste or direct typing

Cut & Paste Actions (from 14 segments)	
Translator A	11
Translator B	0
Translator C	7
Use of Suggested Content via Direct Typing (14 segments)	
Translator A	7 segments
Translator B	13 segments
Translator C	4 segments

Productivity

Table 3: Task Time with/without Concordance.

	Average Task Time
Concordance Enabled	27 mins 21 secs
Concordance Disabled	21 mins 43 secs

The data in Table 3 suggest that the time required to complete the translation task increases when Concordance is used. Clearly, our sample size is too small to draw conclusions. However, this is worthy of further investigation. In addition to generating eye-tracking measurements, we conducted an investigation of final product quality using a standard localisation Quality Assessment procedure (LISA QA Model). To assess quality, there are three levels of errors that can be identified in a text: S1 (critical), S2 (major) and S3 (minor), and the weighting for these errors is 10, 5 and 1 respectively. The results provided in Table 4 suggest that there are more errors in the final product when Concordance is NOT used. There is, therefore, a potential trade-off between task time and quality.

Table 4: Results for LISA QA Model (lower=better)

Concordance Enabled	LISA QA Model Score
Trans. A	**1**
Trans. B	**0**
Trans. C	**0**
Concordance Disabled	
Trans. D	**12**
Trans. E	**12**
Trans. F	**95**

Opinions

All translators reported using the Concordance feature on a daily basis for their work. The majority of translators reported that they use it and then close it, however one translator said s/he would position it on the right-hand side, pinned on top. When asked what they *use* the Concordance feature for, all translators reported using it to check *terminology*. This is of interest because, as mentioned above, TM tools also have a separate terminology plug-in (in the case of SDL Trados 2007 this is called Multiterm) which differs from the Concordance feature. Two translators said that they also use Multiterm during the translation process, while three translators prefer to use only the Concordance feature to check terminology, and one translator was not aware of the existence of Multiterm. Neither of the two translators who use Multiterm explicitly said that they use Concordance and Multiterm at the same time.

All translators felt that the Concordance feature was a useful research tool but they disagreed over whether quality and productivity were enhanced when using it. Two of the three translators who used the Concordance feature in this study thought the quality of the text would be better, but there would be no effect on the time taken to complete the task. However, the third translator thought that it would be quicker to use the Concordance feature, and that there would be no change in translation quality. Of the translators who did not use the Concordance feature, two thought that they completed the task in a shorter amount of time, but that the quality of the translation would be lower. The third translator believed that s/he was slower to complete the task, and that the quality of the translation would also be compromised.

Having been shown the new *AutoSuggest* feature in the SDL Trados Suite 2009, translators thought that the feature could be useful, but also expressed the opinion that they would like to have the option of turning it off.

Several of the translators commented that the new interface was overcrowded and expressed a preference for the interface they were used to (i.e. the 2007 version of the TM product). However, they also generally felt that they should not have to give price discounts for sub-segment matches, which of course is contrary to what translation clients are seeking with the introduction of new features such as predictive sub-segment matching.

SUMMARY AND CONCLUSIONS

This study has addressed one of the current interests in the translation industry regarding the usefulness of the sub-segment matching in TM databases. We used SDL Trados 2007 as our research tool, but the results may be extended to other, similar, TM interfaces. The Concordance function was used as the sub-segment matcher. The preliminary results suggest that when the Concordance function is enabled, translators do indeed make use of the information presented and may even give the sub-segment matches priority over the longer matches presented in the TM window; this may have a negative impact on their productivity, as we have seen when comparing the task time for translators with Concordance enabled vs. task time with Concordance disabled. However, we noted a positive impact on quality when Concordance was enabled.

Translators' opinions were that this feature is useful, but primarily as a terminology and context-checker, as opposed to a productivity enhancing tool. They also felt that predictive sub-segment matching might be useful, but they wished to have control over its use and not to offer discounts for sub-segment matches. This reflects the consistent, ongoing debate between translation clients and translation suppliers; the former are consistently searching for means to reduce the cost of translation while the latter are constantly arguing that translation is not a word-level or phrase-level task and therefore cannot be charged at the level of word or phrase. Translation tool developers sit in between these two sides of the debate. However, traditionally, large organisations with high-volume translation needs have been the targeted client base of TM tool developers and not the freelance translator. UI design has, therefore, been driven by the needs of the translation client and not by the needs of the translator, the ultimate user of the software in question.

The line between TM and Machine Translation (MT – the automatic translation of text) is now becoming blurred, with many translating organisations making use of both technologies and even integrating them to the extent that the TM interface has also now become the post-editing interface for raw MT output. The MT development community is also interested in the question of sub-segment matching and in predictive suggestions (see, for example Foster et al. 2002a and 2002b, Langlais et al. 2002, Koehn forthcoming). This topic is likely to become a central one in the translation industry. We therefore argue the need for a focused study on user experience as such investigations will contribute to more finely tuned developments of translation tools in future.

Finally, although this research is embedded in our own research and teaching domain of translation technology, we suggest that the issues are such that they might be of interest to the HCI community in general and especially to anyone interested in UI design which is inclusive, serving the needs of both the client and supply side of any production chain and which enhances productivity and quality without overloading the user's cognitive capacities.

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