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Productivity vs Quality?

A pilot study on the impact of translation memory systems

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Translators working in the localisation industry are faced with the task of producing high-quality translations in a very short turnaround time. One way in which they are trying to balance these goals is by using translation technology to help. One of the most popular translation technology tools available is the translation memory (TM). TMs are often promoted as tools that can help translators to improve their productivity, but less is known about the impact that the use of such tools can have on the quality of the translation. This article investigates the impact of TMs on both speed and quality by presenting the results of a pilot study in which three groups of student translators were asked to translate the same text. Translators in Group A did not use a TM, and while their translations were of relatively high quality, they took longer to produce. Translators in Group B used an "unadulterated" TM, and they were able to translate more quickly, but there were some minor concerns with the quality of their work. Translators in Group C used a TM that had been deliberately "seeded" with a number of translation errors, and while they were able to work quickly, the quality of their translations was lower than that of the other two groups. The results of this small experiment seem to indicate that, when faced with the pressure to translate quickly, translators using TMs may not be critical enough of the proposals offered by the system. This in turn indicates a definite need for proper training in the appropriate use of translation technology.

1. Introduction

One of the most talked-about translation tools to enter the market in recent years is the translation memory (TM) (Austermühl 2001; Bowker 2002; Esselink, 2000; L'Homme 1999; Somers 2003). A TM is essentially an aligned bilingual database containing texts that have been previously translated. It is based on the principle of "recycling" previously translated documents – a translator should be able to re-use parts of texts that have been previously translated, and should never have to re-translate a portion of text that has already been translated (O'Brien 1998). An oft-cited reason for using a TM is that it can help to increase a translator's productivity – with the help of such a tool, a translator can translate a greater volume of material in a given period of time.

This desire to increase productivity is needs-driven. In this era, more and more companies are trying to sell their products in foreign markets – a strategy known as *globalisation*. This has been greatly facilitated by the Web and e-commerce. Nevertheless, while the Web makes it possible to reach international audiences quickly and easily, research has shown that in order for sales and marketing to be effective, the advertisements, the products themselves, and any accompanying documentation should be presented in the language of the target market.[1] For example, according to IDC's eWorld 2001 survey[2], most non-English-speaking Internet users prefer Web sites in their own language. Meanwhile, a survey by Forrester Research[3] indicates that business Web users are three times more likely to buy when addressed in their own language. Therefore, in order to stay competitive and maximize profits, many companies are localising their products. The term *localisation* refers to the process of customizing or

adapting a product (e.g. a software package, a Web site) for a target language and culture.

Localisation has grown into a big business (Brooks 2000; Thibodeau 2000). Market watchers at Allied Business Intelligence suggest that the value of revenues from software localisation could reach US$3.4 billion by 2007, while those from Web page localisation could reach US$3.1 billion by the same date (ABI 2002).

This trend towards localisation has resulted in a significant increase in the volume of material to be translated, which has been accompanied by an increase in pressure on translators to work more quickly while still maintaining high quality output. The deadlines that translators are expected to meet have also grown shorter. This is in part because companies want to get their products onto the shelves in all corners of the world as quickly as possible, and the practice of "simship" or simultaneous shipment means that they want to release all language versions of that product at the same time, or within a reasonably short period of time. In addition, electronic documents such as Web sites may have content that needs to be updated frequently (Cheng 2000). Companies want to be sure that their sites reflect the latest information, so translators are under pressure to work very quickly to ensure that the up-to-date information is reflected in all language versions of the site.

Translators are therefore faced with a dilemma – how can they translate faster but still maintain a high standard of quality? Maintaining high quality is essential since a poor translation could result in, at best, wasted time and money, and at worst injury, illness or loss of life (e.g. if medical or maintenance information is mistranslated). One way in

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which translators working in the localisation industry are trying to achieve this balance is by turning to technology, such as translation memories (TMs), for assistance.

It is this question of balancing speed and quality with the help of a TM that I wish to examine in this article. As previously mentioned, there have been numerous investigations reporting that TMs can help to improve productivity. By reusing parts of previous translations, translators are bound to save time. However, there have been fewer investigations into the effects that the use of this type of technology has on the quality of the resulting translation.

This paper will be divided into six main sections. Following this introduction, section 2 will briefly explain how a TM works. Section 3 will explore the impact on productivity and quality as observed by other scholars and practitioners. Section 4 will outline a small pilot study undertaken to explore the balance of speed and quality obtained by translators using TMs. Section 5 will discuss the results of this experiment. Finally, section 6 will offer some concluding remarks.

2. How a Translation Memory Works

Translation memory tools are computer-aided tools, which means they are designed to help (rather than replace) human translators. Although they were conceived of as early as the 1970s (Melby 1995), such tools have only been widely commercially available since the late 1990s.[4] As stated above, a TM is a database that contains texts that have already been translated by a human translator.[5]

The data contained in a TM is organized in a very precise way. There are two types of texts stored in a translation memory: source texts, which are the original texts in language A, and target texts, which are the texts that have been translated into language B. In an initial step, a conventional TM tool divides each text into small units known as segments. These segments usually correspond to sentences or sentence-like units (e.g. list items, table cells, titles, headings). Through a process known as alignment, the segments from the source texts are linked to their corresponding segments in the target texts. An aligned pair of segments is known as a translation unit (TU), as illustrated in Table 1.

Table 1. French and English segments are aligned to created TUs

Translation Unit 1	FR:	L'École de traduction sollicite des candidatures pour un poste menant à la permanence au rang de professeur(e) adjoint(e).
	EN:	The School of Translation invites applications for a tenure-track position at the rank of Assistant Professor.
Translation Unit 2	FR:	La création de ce poste est liée à l'autorisation budgétaire de l'Université.
	EN:	This position is subject to budgetary approval by the University.

This alignment can be carried out in one of two ways. Previously completed translations can be automatically aligned after the fact in a process known as post-translation alignment. This is done using alignment software that comes with the TM package. Alternatively, translators can choose to align the translation they are currently working on as they go along.

When translators receive a new text to translate they begin by opening this text in the TM environment. The TM tool proceeds to divide this new text into segments. Once this has been accomplished, the tool starts at the beginning of the document and compares each segment to the contents of the TM database. If it finds a segment that it "remembers" (i.e., a segment that matches one that has been previously translated and stored in the TM database), it retrieves the corresponding TU from the database and shows it to the translator, as illustrated in Table 2. Now translators can refer to the previous translation and adopt or modify it for use in the new translation.

Table 2. An exact match located in a TM

Segment from new source text		Les candidats et candidates doivent être bilingues, anglais-français, et détenir un doctorat dans le domaine de la traduction ou dans une discipline apparentée.
Matching TU retrieved from TM	FR:	Les candidats et candidates doivent être bilingues, anglais-français, et détenir un doctorat dans le domaine de la traduction ou dans une discipline apparentée.
	EN:	Candidates should be bilingual, French-English, and hold a PhD in translation or in a related discipline.

Of course, language is dynamic, which means that the same idea can be expressed in a number of different ways (e.g. 'Applications should be sent to:' / 'Please forward your application to:'). Consequently, translators cannot always expect to find a high number of exact matches for previously translated segments in the TM. However, it is highly likely that there will be segments in a new source text that are similar to, but not exactly the same as, segments that are already stored in the TM. For this reason, TMs also employ a feature known as fuzzy matching. As shown in Table 3, a fuzzy match is able to locate segments in the memory that are an approximate or partial match for the segment in the new source text. These types of matches can be very useful for translators because at least part of the previous translation may be reusable.

Table 3. A fuzzy match retrieved from the TM

Segment from new source text	Seuls les candidats convoqués à une entrevue recevront un accusé de réception.	
Fuzzy match retrieved from translation memory	FR:	Seuls les candidats sélectionnés pour une entrevue recevront un accusé de réception.
	EN:	Only the applications of candidates selected for interview will be acknowledged.

Most TM systems also operate in conjunction with an associated term base, which is essentially an electronic glossary that has been created by a translator using a terminology management system (TMS) that is compatible with the TM. As described above, a TM system compares the new source text segments against the previously translated segments stored in the TM database. At the same time, using a process known as active terminology lookup, the TMS compares the individual terms contained in each source text segment against the terms contained in the termbase. If a term is recognized as being in the termbase, the translator's attention is drawn to the fact that an entry exists for this term, and the translator can then view the term record and can copy and paste the term from the record directly into the target text. This means that, even in cases where no exact or fuzzy matches are found for source text segments, the translator might at least find some translation equivalents for individual terms in the TMS's termbase.

Nevertheless, there is still a level of linguistic repetition that falls between full sentences and specialized terms – repetition at the level of expression or phrase. For many types of texts, this is the level where linguistic repetition will occur most often. Until recently, most TMs permitted phrase or expression searching only though a "manual" concordancer; in other words, a translator could manually select an expression and instruct the TM to search through the database to find examples. In more recent versions of a number of TMs, however, an auto-concordance function has been added, which, when activated, will automatically search for text fragments when no segment-level match is found.

Once the translator is satisfied with the translation for a given segment – which can be taken directly from the TM database, adapted from a proposed match, or created by the translator from scratch – the newly created TU can be added to the TM database and the translator can move on to the next segment. In this way, the database grows as the translator works.

3. Impact of TMs on Productivity and Quality

Because TMs have only been widely available since the late 1990s, it is only recently that people are beginning to learn about the impact these tools can have on the speed and quality of translation. This section will survey some of the observations and speculations that have been made to date. Before doing so, however, it must be emphasized that TM system performance is dependent on the scope and quality of the existing TM database and is expected to improve as the database grows. A TM is of no use if it is empty (i.e., if no translations have been stored in it), and the quality of the translations stored in the TM is dependent on the skill of the translator. Remember that a TM is a tool that is designed to support translators, but the translations suggested by the TM are in fact texts that have been previously translated and stored in the database by human translators.

Another important point to keep in mind is that not all texts are equally suitable for inclusion in a TM. Given that the aim of a TM is to allow translators to reuse previously translated work, it makes sense that the types of texts that are best suited for working with a TM are those which are repetitive or which will be updated or revised. Texts that are written about highly specialized subjects are also good candidates for inclusion in a TM, particularly if the subject matter and format of the texts do not vary greatly and if the translator using the TM frequently works in that subject field.

The most widely professed advantage of a TM is that it will save translators time. Translators who are able to reuse portions of a previous translation will be able to translate texts more quickly, and by increasing their productivity, they will, in principle, be able to earn more money. Webb (1998) conducted a number of surveys and case studies which demonstrated that, when used in the right circumstances (e.g., with suitable text types, with sufficient training), TMs can indeed lead to a significant increase in productivity.[7] O'Brien (1998:119) states "our experience has shown that anything from 10% to even as high as 70% can be leveraged from translation memories."[8] Meanwhile, according to Somers (2003:42), a 60% productivity increase may be possible on occasion, but a 30% productivity increase is a more reasonable average expectation.

Following claims of increased productivity, the second most often cited benefit of working with a TM system is that it improves translation quality by increasing consistency. A translator who is working on a long document is able to maintain consistency throughout the text. In addition, many TM systems can be networked, which means that several translators working on the same document or working for the same agency or client can share the same TMs, thereby maintaining consistency within the group. While consistency is often a good thing, it is worth remembering that there are some situations where consistency may not be desirable.[9]

In addition to the question of consistency, other quality-related issues have been raised by translators working with TMs. One of the most significant is the fact that TM databases store isolated segment pairs, rather than complete texts. In the words of Arrouart and Bédard (2001:30), a TM is actually a memory of sentences out of context.

This can be problematic because the sentences in a text generally depend on each other in various ways. For example, when we read/write the third sentence in a text, we can refer back to information already presented in the first two sentences, which means that it is possible to use pronouns, deictic and cataphoric references, etc. However, if we take that third sentence in isolation, the antecedents of such references may not be clear.

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In addition, because languages do not have a one-for-one correspondence or the same stylistic requirements, translators who are trying to convey the overall message of a text may map the information to the sentences in the target text in a way that differs from how that information was originally dispersed among the source text sentences. The result is that even if the two texts are considered to be equivalent when taken as a whole, the sentences in a translation may not relate to each other in precisely the same way in which the source text sentences do (Bédard 2000).

In order to maximize the "recyclability" of a text, translators working with a TM may choose to structure the sentences in the target text to match those in the source text, and they may choose to avoid using pronouns or other references. According to Heyn (1998:135) and Morgensen (2000:28), the result may be a text that is inherently less coherent or readable, and of a lesser overall quality. Bédard (2000) describes this as a "sentence salad" rather than a text.

The sentence salad effect is exacerbated when the sentences in a TM come from a variety of different texts that have been translated by different translators. Each text and translator will have a different style, and when sentences from each are brought together, the resulting text will be a stylistic hodgepodge. It is highly unlikely that the source text has been created in such a fashion (i.e., by asking a variety of authors to contribute individual sentences), and Bédard questions whether this approach should be used to produce a translation, which is also a text in and of itself.

4. Pilot Study

As previously noted, TMs have only been widely available for a few years, which means that, while there has been lots of speculation about the impact or potential impact of these tools on translation, there have been relatively few empirical investigations. To the best of my knowledge, those studies that have been conducted have focused either primarily on productivity (e.g. Webb 1998) or primarily on quality (e.g. Merkel 1998). I therefore decided to undertake a small pilot study with the aim of investigating the impact of TM use on both translation productivity and quality. This pilot study was carried out in early 2004 using student translators from the School of Translation and Interpretation of the University of Ottawa, Canada, as participants.

The decision to use student translators rather than professional translators was made primarily for reasons of convenience: as a translation professor, I had access to a group of students who were willing to participate in this project. In addition, it seemed logical to conduct an initial pilot study with students in order to work out any methodological problems before asking professional translators to participate in a future study. While there are unquestionably some differences between student and professional translators, given that the latter have more experience than the former, these differences are not so significant as to nullify the results of research conducted using translation students as subjects. For instance, Lörscher (1996:30), who set out to compare the translation processes and strategies used by

non-professionals and professionals, makes the following observations:

The first point I would like to make is that in spite of the differences, professional and non-professional translation processes have many features in common. The fact that the categories of my model of analysis, which were developed on the basis of non-professional translations, adequately capture professional translations, too, highly suggests that the two kinds of mental processes are similar, to say the least. From the point of view of the strategies detected, the mental processes of the two kinds of translators did not reveal significant differences.

It is important to note, too, that the non-professional translators who participated in Lörscher's experiment were not translation students but rather students of English as a foreign language. Therefore, they had not received any translator training per se. Meanwhile, other scholars, such as Tirkkonen-Condit (1990) and Jääskeläinen and Tirkkonen-Condit (1991), have also conducted research aimed at comparing the translation behaviour of professional and non-professional translators. In their experiments, they used first year students to represent the "non-professional translators" and final year students to represent the "professional translators". Presumably these researchers felt justified in considering that students who were on the verge of graduating from a professional translator training programme – in this case the Savonlinna School of Translation Studies in Finland – could reasonably be equated to professional translators, at least for the purpose of their research.

For the experiment described in the present paper, nine student volunteers participated as translators. The students were all anglophones and were all in the final semester of the honours BA in Translation (French-English) programme. Each of them had previously completed a course in translation technology where they learned how to use the Trados Translator's Workbench TM system. The students were randomly divided into three groups of three. Students in Group A were asked to translate a text without the help of a TM; however, they were free to use any other resources (e.g., dictionaries, term banks). Students in Group B were asked to translate the same text using a TM that had been previously prepared. Students in Group C were asked to translate the same text using a modified version of the TM – one that had been deliberately seeded with a number of errors.

The aligned source and target texts in the TM consisted of 32 job advertisements for translation positions. These bilingual (French and English) job ads were distributed by the Association of Translators and Interpreters of Ontario (ATIO) between January 2000 and December 2002. Unlike the short ads that appear in most newspapers, these ads are quite detailed and range from 111 to 473 words in length, with an average word length of 283. The text to be translated by the students was a 387-word French job advertisement.

While job advertisements may not be texts that are typically encountered in the localisation industry, the decision to

Table 4. A variety of errors that were deliberately introduced into the modified translation memory TM-M

Original source text extract	Original translation (in TM-O)	Modified translation (in TM-M)	Type of modification
de façon autonome	autonomously	automatically	incorrect equivalent
un baccalauréat en traduction plus au moins deux années d'expérience	B.A. in translation plus a minimum of two years translation experience	diploma in translation plus a minimum of twelve years translation experience	incorrect equivalents
de l'anglais au français	English to French	French to English	reversal of information
compréhension de base des principes du syndicalisme et de l'équité	a basic understanding of trade union and equity principles	an […] understanding of trade union and equity principles	omission of information
aptitude à communiquer verbalement en français et en anglais	the ability to communicate orally in French and English	able to communicate […] in French and English	change in syntactic structure and omission of information
effectue de la recherche terminologique	research terminology	effectively research terminology	addition of information
Prière de faire parvenir votre curriculum vitae	Please submit your resume	Please ensure that your resume and three letters of reference are submitted	change in syntactic structure and addition of information
Nous adhérons à l'égalité d'accès à l'emploi	An equal opportunity employer	We adhere to egalitarianism for accessing jobs	change in syntactic structure and very literal/awkward phrasing.
l'orthographe et de la grammaire	spelling and grammar	orthography and syntax	change in register

use job ads for this pilot study was based on a number of factors. Firstly, this text type contains a reasonable amount of repetition, as well as a relatively limited vocabulary and syntax. For these reasons, such texts are good candidates for use with TMs. Furthermore, since students were being asked to volunteer their time to participate in this experiment, it was necessary to find a text that would be reasonably short, and yet still self-contained, as well as a text type with which students would be familiar, and which is not so specialized as to require them to do copious amounts of additional research. I felt that I could reasonably expect final-year translation students to produce good quality translations of this type of text.

Two different versions of the TM were produced: TM-O (TM-Original) contained the job advertisements exactly as they originally appeared, while TM-M (TM-Modified) was modified to include a number of errors. To create TM-M, we took T-MO and deliberately seeded it with ten errors of varying types, as shown in Table 4. These errors were introduced into segments that the system would then present to translators as exact or fuzzy matches. Of the ten errors, five were added to exact matches and five to fuzzy matches.

A pre-translation analysis[10] of the text to be translated showed that it contained 36 segments. For seven of these, TM-O contained exact matches and for another six, TM-O contained fuzzy matches. In addition, a term base containing 33 term records was integrated with the TM and was available for consultation. Students translating with the help of TM-O were also permitted to use other resources, such as dictionaries or external term banks, as desired.

A pre-translation analysis of the same source text conducted using TM-M showed the same number of matches (7 exact, 6 fuzzy); however, even though these were presented as matches, some of the information they contained was erroneous. Students using TM-M were also permitted to use other resources as desired.

All the students were given 40 minutes to translate the text. This is quite a short deadline, but one of the things I wanted to test was whether the pressure to translate quickly led students to use the tools unwisely (e.g. to blindly accept proposals offered by the TM even when they were incorrect or inappropriate to the context in question).

5. Results and Discussion

The results of the pilot study will be discussed below in terms of both productivity and quality for each of the three groups of students.

5.1 Productivity

With regard to productivity, the results of this experiment were not too surprising.

Group A: Two of the students did not finish the translation. One of them completed approximately three-quarters of the text while the other completed approximately five-eighths of the text. These two students said they were reasonably happy with the quality of the work they had completed, but would ideally like more time both to finish and to revise their work. The third student did finish but emphasized that it was only of draft quality and more time would be needed to produce a polished translation.

Group B: All the students in Group B finished the translation. In fact, one of the students finished in 22 minutes and another in 26 minutes, while the third student used the full

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40 minutes allotted. All of the students said that they felt happy with the quality of their final translation.

Group C: All the students in Group C finished the translation, and all used the full 40 minutes allotted for the experiment. Two of the three said they were happy with the quality of their final texts, while the third student indicated that it would be desirable to have more time in order to proofread and edit the translation.

5.2 Quality

To evaluate the quality of translations, I used the "official" translation provided by ATIO as a guide. Of course, it is certainly possible to produce different, yet equally valid versions of a text, so I also had to rely on my own judgement and experience as a certified translator and translator trainer. In a future, scaled-up version of this experiment, I would like to solicit the opinions of several independent evaluators; however, for this pilot study, I acted as the sole judge of quality.

Group A: As noted above, two of the students did not complete the translation. One of them was approximately three-quarters finished and the other approximately five-eighths finished. In the case of both of these students, the quality of the work they had completed was quite reasonable. There were no major errors, and no omissions or additions of information. There were several instances of inelegant or awkward turns of phrase (e.g. sentences that were grammatically correct but were not idiomatic or did not flow well). The third student in Group A had completed the translation but noted that it was only a first draft and could not be considered a "final version". This was evidenced by the fact that, in several places, the student had indicated a range of terms under consideration (e.g. uniformization/standardization, direction/supervision) and had clearly not finished the research that would allow a final decision to be made. In addition, there were a number of sentences that followed the syntax of the French original quite closely and which sounded unidiomatic in English, even though they were grammatically correct. There were, however, no major errors of meaning.

Group B: The students made extensive use of the segments suggested by the TM. In all cases, the exact matches were adopted with no changes. Furthermore, all of the students appear to have edited the fuzzy matches that were presented rather than translating these segments from scratch. This is not to say, however, that the resulting translations were problem-free. Two noticeable shortcomings were apparent. Firstly, although it is frequently claimed that TMs improve consistency, this is not always the case. Sentences culled from different translations – or even from within the same translation but from different contexts – may contain different terminology. Because the texts stored in the TM were likely produced by 32 different translators, there was inconsistency in the terminology that was presented in different matches. For instance, *"relecture"* appeared in two different segments in the source text, both of which had a match in the TM. In the first match, *"relecture"* was translated by "proof-reading" (with a hyphen) and in the second by "proofreading"

(with no hyphen). Similarly, *"de façon autonome"* also appeared twice in the source text and was translated in one TM match as *"autonomous"* and in another as *"independent"*. In all cases, the students adopted such inconsistencies into their own translations.

A second problem created by the use of TMs was inconsistent style. Because the texts in the TM database had been translated by different translators, they were written in slightly different styles. For example, while most were written in the active voice, at least one contained a high number of passives. Furthermore, when listing duties or qualifications, some ads used verbs (e.g. translate, revise, proofread), while others used nouns (e.g. translation, revision, proofreading). Because the students used matches that originated from different ads, their texts ended up suffering from the "sentence salad" effect – a series of sentences that were inconsistent and non-parallel in terms of their style (e.g. a list of qualifications containing a mixture of verbs and nouns).

Group C: These students were the ones using the TM that had been modified to include a number of errors that were presented to them in both exact and fuzzy matches. In addition to the problems of inconsistent terminology and style that were experienced by the Group B students, the students in Group C also encountered some additional difficulties caused by the errors that were deliberately built into the modified TM. Table 5 summarizes the number of errors that the students incorporated into their translations.

Table 5. Number of TM errors that students incorporated into their own translations

Students in Group C	Deliberate errors seeded in exact matches (5)	Deliberate errors seeded in fuzzy matches (5)
Student 1	5	1
Student 2	5	2
Student 3	3	1
Total	13	4

As indicated in Table 5, only one of the three students in Group C questioned the errors that were presented as exact matches, while the other two students incorporated all of these errors unquestioningly into their own translations. In the case of the fuzzy matches, all of the students recognized and fixed the majority of the errors that were present, although a few did slip through. The probable reason that the students were able to fix the errors in the fuzzy matches more easily is because they know that a fuzzy match will not be perfect and so they expect that they will need to do some editing. This means that they are more critical of a fuzzy match that is presented and they examine it more closely. In the case of the exact matches, the students were often too trusting and they blindly clicked on OK to accept exact matches as they were presented. This blind trust may have been exacerbated by the fact that they were working to an extremely short deadline.

6. Concluding Remarks

Although this pilot study was conducted on a very small scale, it nevertheless revealed some interesting trends. In terms of productivity, it is clear that the use of a TM can indeed help translators to work more quickly. This is supported by the fact that all six of the students using a TM were able to complete their translations within the allotted 40 minutes, whereas the students who did not have access to a TM were unable to complete their translation (2 students) or could only complete a rough draft (1 student). However, being able to translate more quickly is only part of the equation – translators also need to be able to ensure the excellence of their work.

This small experiment seemed to indicate that, when faced with the pressure to translate quickly, translators using TMs may not be critical enough of the proposals offered by the system. The students in Groups B and C tended to accept the suggestions offered by the TM even if these contained errors or did not fit well into the context in question. As previously mentioned, the translations stored in the TM are provided by a human translator and therefore, a prerequisite for obtaining a high quality result from a TM is that the translations stored there by humans must be correct in the first place. If the contents of the TM are of poor quality, then the translators must spend time correcting the translations, and they risk losing some of the time that they may have saved by working with the TM in the first place. Furthermore, it is important to note that even though translations may be accurate when they are initially stored in a TM, they may become inaccurate over time (e.g., if terminology changes) or they may be inappropriate in a given context (e.g., if they contain homonyms or are in an inappropriate register). Consequently, quality control must be treated as an ongoing process, and it is not advisable for translators to reuse previous translations without first verifying that they are indeed correct. This may lead to a conflict between the promise of increased productivity and the need to maintain high quality.

It is easy to see how, when faced with pressures to increase their output, translators may be tempted to work too quickly when using TMs, blindly substituting proposed translations without verifying their accuracy, but this may compromise the quality of the final product. This type of "blind faith" behaviour indicates a definite need for more training in the appropriate use of technology, especially among novice translators, who may not yet have the experience or confidence required to question the suitability of the TM's proposals. When training translators to use TMs, it is very important to stress that the contents of the TM may not always be correct or suitable in every context. Translators must be reminded that they are still responsible for double-checking the proposals put forward by the system, and for reading and revising the text as a whole (rather than just reading and revising individual sentences)[11] in order to produce a text that is accurate as well as readable. If a translation is produced by recycling individual sentences from a variety of different texts – which may have different terminology, different styles, pronouns or

deictics that are unclear without a larger context – the result may be more of a "sentence salad" than a coherent text. This extra text-level revision may mean that the increase in productivity will not be as significant, but taking the time to verify the appropriateness of the TM's suggestions will help translators to achieve a better balance between productivity and quality.

A final point to note is that it may not be worth including all texts in a TM. If a text has a very unique style or uses in-house terminology that is not common to the field as a whole, including it in a TM could actually be detrimental as it may exacerbate the "sentence salad" phenomenon. In other words, a smaller TM containing well-chosen texts can actually be more useful than a large TM containing a wide range of texts. Translators may get fewer matches overall, but the matches they do get will be of higher quality and will likely need less revision.

Notes

[1] Note that even in cases where Internet users do not intend to make an online purchase, they often use the Web to research products that they intend to buy, so manufacturers and retailers would be wise to provide product literature in multiple languages (ABI 2002: 3-5).

[2] Online at: http: //www.global-reach.biz/eng/ (consulted 16.06.2004)

[3] Online at: http: //www.globallisting.com/globallisting/fact.html (consulted 16.06.2004)

[4] There are a number of commercially-available TM systems, including Trados Translator's Workbench, STAR TransIT, Déjà Vu, and SDLX among others.

[5] Detailed descriptions of how a TM operates can be found in sources such as Bowker (2002) or Somers (2003). It will be useful, however, to present a brief overview in section 2 for the convenience of readers.

[6] A detailed discussion of automatic alignment is beyond the scope of this paper; however, it is worth noting that this is a non-trivial process since the lack of one-for-one correspondence between languages may lead to problems (e.g. a single source text segment may be translated by two target text segments or vice versa, or some information may be omitted from or added to the target text). For a more detailed discussion of alignment, see Bowker (2002).

[7] It is important, however, to keep in mind that while using a TM may speed up the actual translation process, translators who wish to use this type of technology may be required to make other types of time investments. For example, they will be required to learn how to use this sophisticated software, and they will need to spend some time pre-processing the texts (e.g., aligning texts, converting to different file formats, stocking the glossary). This means that translators may actually see an initial drop in productivity during this learning phase; however, productivity will hopefully begin to increase as they become more comfortable with the software and pre-processing requirements.

8 At the time this article was written, O'Brien was working for International Translation and Publishing Ltd. in Ireland.

9 For example, as observed by Merkel (1998:145), "when two source sentences (or segments) occur in different structural contexts, such as headings and table cells, translators should be more cautious in applying consistent translations."

10 Most TM systems come with a module that will quickly compare a new source text against the TM database and calculate how many matches a translator can expect to find.

11 This advice is generally given to all translators, whether or not they are working with the help of technology. Scholars who emphasize the importance of treating a text as whole include Baker (1992) and Hatim and Mason (1990), among others.

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