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Article abstract

Language technologies (for example, computer-aided and machine translation tools) are now well established in the language industry. Unfortunately, so are questions about their advantages and drawbacks. Many of these appear to be linked to language professionals' control over their work and working environment. We surveyed these professionals to discover how they perceive language technologies' effect on their control over the amount of work they do, the tasks they carry out and the methods they use, the quality of the product, the relationships with clients/employers, and their remuneration. The results reveal that most current users have positive opinions of technologies overall and generally feel that these tools increase their control over their work and working environment (and particularly the quantity and quality of the work). However, hesitations remain, in particular in regard to relationships with clients/employers and remuneration.

Taking Control: Language Professionals and Their Perception of Control when Using Language Technologies

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RÉSUMÉ

Les technologies langagières telles que les outils d'aide à la traduction et la traduction automatique sont bien implantées dans l'industrie de la langue, mais malheureusement le débat sur leurs avantages et inconvénients l'est aussi. Plusieurs de ces points forts et faibles peuvent être reliés au contrôle du langagier sur son travail et son environnement. Dans ce projet nous avons sondé des langagiers au sujet de leurs perceptions des effets de ces technologies sur leur contrôle de la quantité de travail qu'ils font, les types de tâches qu'ils effectuent et les méthodes employées, la qualité du résultat, les relations avec les clients/employeurs, et leur rémunération. Les résultats montrent que la majorité des utilisateurs ont une perception positive des technologies en général, et trouvent que, grâce aux technologies, ils ont plus de contrôle sur leur travail et leur milieu de travail (surtout la quantité et la qualité de ce travail), mais ils ont encore des hésitations, particulièrement pour ce qui est des relations avec des clients/employeurs et la rémunération.

ABSTRACT

Language technologies (for example, computer-aided and machine translation tools) are now well established in the language industry. Unfortunately, so are questions about their advantages and drawbacks. Many of these appear to be linked to language professionals' control over their work and working environment. We surveyed these professionals to discover how they perceive language technologies' effect on their control over the amount of work they do, the tasks they carry out and the methods they use, the quality of the product, the relationships with clients/employers, and their remuneration. The results reveal that most current users have positive opinions of technologies overall and generally feel that these tools increase their control over their work and working environment (and particularly the quantity and quality of the work). However, hesitations remain, in particular in regard to relationships with clients/employers and remuneration.

MOTS-CLÉS/KEYWORDS

outils d'aide à la traduction, traduction automatique, langagiers, perceptions, contrôle
computer-aided translation tools, machine translation, language professionals, perceptions, control

1. Introduction and objectives

Since the 1990s, computer-aided translation (CAT) tools and other language technologies have gradually been gaining ground and have now become well established in the language industry and in university-level training programs (as noted by McInnis and Takla;[1] Lagoudaki;[2] Gauthier;[3] and the Association of Translators and Interpreters of Ontario (ATIO),[4] among others). CAT tools include translation environment tools (TEnTs) which generally include translation memory (TM) systems

and terminology management systems (TMS); TEnTs also include functions for analyzing texts to be translated, automatically extracting and retrieving terminology, and quality assurance. Other tools include concordancers, localization tools and spelling and grammar checkers, which are used by a variety of language professionals. Moreover, while machine translation (MT) has for decades lagged behind CAT tools, with the advent of statistical MT (SMT) there has been a resurgence of interest, for example in integrating MT and TEnTs.

Despite their long history, however, language technologies are not universally acclaimed among the language professionals they are designed to assist (see descriptive titles in the literature including Rode 2000; Bowker 2005; García 2006 and 2010). While many praise technologies' contribution to productivity, efficiency and ease of work, others raise concerns about effects on language professionals and their work and working environment. Below, some key points in the language technology debate are outlined.

1.1. Background and context

The nature and use of language technologies has provided considerable fodder for discussion in both professional and academic circles. Benefits and drawbacks of language technologies have been analyzed in detail, from practical and technological perspectives as well as from a more subjective, "human" perspective, focussing on the reactions of users as they implement and adjust to the use of technologies. The discussion below will focus largely on the tools in TEnTs, and specifically on TM systems; however, many of the principles also apply to tools such as concordancers and term extractors.

1.1.1. Practical issues

Most benefits of language technologies are practical. Recycling of information (for example using CAT tools such as TM systems to find and insert previously translated sentences, or active terminology recognition functions coupled with TMSs to automatically insert known term equivalents) is lauded by tool vendors (e.g., noted in Bédard 1998), in textbooks (e.g Austermühl 2001: 140; Bowker 2002; L'Homme 2008), and by users (e.g., Taravella 2011) for reducing repetitive, boring work and ensuring uniformity in texts containing internal or intertextual repetitions, thereby increasing consistency and quality of the output. By speeding information retrieval, reducing the need for revision to ensure consistency, and thus increasing productivity, TEnTs are praised for helping language professionals increase their income and employers and clients reduce translation costs.

However, challenges persist. While the claims of increasing language professionals' income and reducing clients' translation costs are both reasonable, they are also often mutually exclusive. For example, the reduction in translation costs for clients often results from lower rates (or even no remuneration) for the translation of passages for which translated versions or similar translations already exist (Bowker 2002; De Vries 2002). This discounting is very often received badly by language professionals (Cohen 2002; García 2006; many discussion board postings),[5] but few solutions aside from moving from a per-word to an hourly rate (Cohen 2002; Marguerat 2002) have presented themselves. Despite some movement,[6] there appears to have been only

limited adoption of hourly rates to complement conventional per-word or per-line rates: 93% charged by the word both in a 2005 survey of freelance translator members of ATIO and a 2012 survey of the *Ordre des traducteurs, terminologues et interprètes agréés du Québec* (OTTIAQ) (which asked about methods of billing used for 50% or more of the respondents' translation work) (see note 3).

The literature also reveals that time-savings in translating are at least partially countered by investments in time and money. The most common TEnTs on the market, and certainly the market leaders, tend to require a considerable financial investment (Lagoudaki (see note 2); Bowker *et al.* 2008), as well as an investment of time in installing and maintaining the technologies, and in learning how to use them effectively (Bédard 2006; García 2006; Marshman and Bowker 2012). This steep learning curve can be a considerable barrier to technology use (Lagoudaki (see note 2); Bowker and Marshman 2010).

Even after the learning curve has flattened somewhat, working practices and workflows must still be adjusted for the use of technologies and associated best practices, which not all users welcome unreservedly. This is particularly pronounced when the specific tasks required of users change, for example when tools such as MT systems coupled with controlled language are implemented.

Translators may also perceive their choices being restricted in other areas. When clients or employers expect language professionals to use matches from existing resources systematically, they may not (adequately) take into account the time required to evaluate these suggestions and their appropriateness in context. In the most pronounced cases, some clients or employers provide hybrid, "pretranslated" documents in which solutions have already been inserted and translators are requested to simply translate the remaining source-language passages (Bédard and Hétu 2004; Wallis 2008).

Another issue raised in the literature (Cohen 2002; Marguerat 2002; Gow 2007) is of ownership of resources such as TMs produced either during the translation process or after translation by aligning the source and target texts. Ownership of TMs is a tricky grey area for clients and language professionals to negotiate, and for which no widely recognized roadmap yet exists.

1.1.2. Technological issues

At a technological level, debate over the merits of CAT tools has often centred on basic matching functions. For concordancers, this might be a character string to search for in a text; for an automatic terminology recognition tool, a known term in a text for which the stored equivalent should be suggested; for a TM system, likely a sentence in a text to translate to be matched to a segment in a TM that can be suggested for reuse. All of these applications involve first delimiting the item to be searched for (such as a segment to be translated), and then matching it with identical or similar stored items.

The most straightforward challenges are in the matching itself. Because of the variability of language (for instance, inflection), simple character string matching is often inadequate and potential solutions may be missed, or solutions may need to be adjusted (for example, conjugated or pluralized) before they can be used (Macklovitch and Russell 2000). Alternatively, instead of making revisions after the insertions, users may adjust the way that they store data such as terminology, to permit effective

matching and thus optimize its usability with these technologies (for example by storing inflected forms). TM systems may estimate the extent of the required changes and where they are likely to be needed. However, some scholars (e.g., Macklovitch and Russell 2000) note that this estimation may not adequately reflect the real work required. TEnT analysis functions are used to provide an overview of the matches available for a complete text, so that the time and work required to process it can be estimated; however, because the analysis cannot take into account the more complex factors involved in translation, the accumulated gaps between estimated and real work may be considerable, and savings in time and effort may be difficult to predict accurately.

Additional concerns are raised about the potential effect of a segment-by-segment approach on textuality. Because these tools match one segment at a time, they are unable to take the greater context into account. Solutions that might work in some contexts but not in others are likely to be suggested, and may be mistakenly accepted by the user (Bédard 2006; Bowker 2005 and 2006). Markers of textual cohesion may also be lost, potentially producing inconsistency and even incoherence in the product. This compromises text quality, even while favouring consistency. The complex relationship between quality and consistency is itself another point of contention.

1.1.3. Human issues

Technological and practical strengths and weaknesses of language technologies are discussed frequently in the literature, and several projects have monitored technology use. Researchers and translators' associations (Fulford and Granell-Zafra 2005; Dillon and Fraser 2006; Gauthier (see note 3); Marshman and Bowker 2012; ATIO (see notes 1 and 4)) have conducted surveys, monitoring the level of technology use and in some cases motivations for use, obstacles and roadblocks. However, another factor should be considered: the user's reactions to the changes that technologies can bring to the working environment.

One human factor frequently raised in the early days of MT, but that could still apply today, is the perception that such technologies are intended to replace human translators entirely. This perception has evolved, and may now focus more on a change in the amount or type of work offered to professional translators because of increased implementation of MT (especially SMT), the use of TEnTs, or perhaps new technology-supported strategies such as crowdsourcing (see García 2010). Another focus might be the respondents' own reactions to the practical and technological issues described above and of clients' and employers' role in them, for example whether the users are willing to change their practices, or whether they perceive that the changes affect how much their work and expertise is valued or appreciated. Finally, additional factors include uncertainty or stress relating to the user's level of computer skills or ability to learn about, use and adapt to technologies. This uncertainty is reasonable, as over 15% of respondents to Lagoudaki's survey in 2006 (see note 2) reported owning but being unable to learn to use a TM system.

Some recent projects have begun to focus increasingly on more subjective, "human" factors in technology use, including personal reactions to the changes technology can bring to the language industry and participants' involvement in it (for instance, Guerberof-Arenas 2013; Taravella and Villeneuve 2013). They have gathered data from various sources: García (2006) analyzed comments from the

mailing list *Lantra-L*, McBride (2009) collected and classified comments from discussion boards, Taravella and Villeneuve (2011) conducted case studies of technology users, Désilets, Melançon *et al.* (2009) used contextual inquiry, and LeBlanc (2013) observed technology users in the workplace and conducted interviews to gather information about their perceptions and reactions. The accumulated data can be explored to identify some common complaints about technology use and its effects and to begin to interpret what exactly users find objectionable.

One potential source of challenge relates to the amount and type of cognitive effort required to use technologies. Although solutions may be suggested automatically, they must nevertheless be evaluated for quality and appropriateness in context before they can be used. A number of studies have used techniques such as eye-tracking (for example, O'Brien 2006), screen recording (for example, Massey and Ehrensberger-Dow 2011) or think-aloud protocols to study the cognitive activity involved in working with technologies, giving additional insights into the non-financial investment required to implement technologies in the workplace. The need to adapt to the demands of and build the skills required for working with technologies may be expected to affect users' reactions to these tools.

1.2. Motivation and objectives

Many issues raised in previous analyses appear to be linked by a common thread of language professionals' perceptions, and specifically those of control over the processes and product of their work. Contradictory and yet often equally relevant arguments may be presented on the subject. Therefore we need to examine the prevalence and relevance of these issues among language professionals to help to determine which of the many possible factors currently appear to influence technology implementation and evaluation by language professionals, and the nature of technologies' effect.

Despite increasing attention to human factors, previous in-depth evaluations such as interviews, contextual inquiry and case studies necessarily involve restricted groups of participants, which makes quantitative data analysis rather difficult. The larger-scale questionnaire-based studies have rarely focused (at least primarily) on human factors. Studies based on mailing lists and discussion forums are by definition limited to the information supplied for purposes other than the investigation itself, limiting the possibilities for focusing discussion. Thus, there is still a need for quantitative data from a larger group of participants that focuses specifically on the "human" factors of perceptions of technologies' effect and attitudes towards these technologies.

We hypothesize that a range of factors – including effects on control over amount of work done, types of tasks performed, quality of the result, methods used to achieve this result, relationships with clients and/or employers, and remuneration for work – are relevant to language professionals' evaluation of technologies, but that (as previous studies have shown), opposing points of view are held by different individuals.

This project thus aimed to focus an evaluation specifically on the issues of language professionals' perceptions of control over their work and working environment, in order to explore the above hypothesis, to identify which effects may be most significant in users' evaluations of technologies, to what degree and in what way users' reactions are affected, and what specific phenomena motivate the evaluations.

Our ultimate goal in providing quantitative and qualitative data about these phenomena is to assist professionals and professional associations in considering various implications of technology use and ways to optimize this use, to help clients and employers to better understand the potential impact of their policies on language professionals, to help vendors to better grasp what these professionals identify as the strengths and weaknesses of various products, and to provide information to allow translator educators to provide students with a balanced, up-to-date and realistic portrait of how language professionals perceive technologies' positive and negative influence.

2. Survey design and methodology

This section explains the methodology used in the project. In addition to the design of the survey, it will provide a brief description of the responses received and how they were analyzed. Finally, it will discuss some of the limitations of the project.

2.1. Survey design

Language professionals world-wide were invited to participate in an online survey with 34 closed- and open-ended questions. The first questions established consent and eligibility, asking whether the respondents had ever used language technologies in professional work. Then, 23 multiple-choice questions asked about: 1) the profile of the respondents (primary occupation, number of years of experience, type of job, collaboration using technologies, etc.); 2) overall perceptions of technologies' value and what factors affected this evaluation; and 3) whether respondents felt that technology use affected the level of control they had over various aspects of their work and working environment (that is, amount of work, type of work, quality of work, working methods, relations with clients or employers, remuneration). Respondents who perceived an effect on control were asked whether they felt more or less in control and to what degree. Additional open-ended questions asked respondents to provide details about their earlier responses and to identify the tools that gave rise to these. Most questions were optional; exceptions were the initial consent and eligibility questions and questions about the nature and degree of technologies' effect on control (for respondents who perceived an effect). Appendix I presents an excerpt of the questionnaire.

The survey, available in English and French, was pilot tested with a group of 10 respondents (full and part-time professors and graduate students in translation and translation studies at the University of Ottawa). After approval from the Research Ethics Board of the University of Ottawa, it was made available via the online survey provider Fluid Surveys () from February 15, 2012 until May 1, 2012.

The survey was publicized via postings on LinguisTech (www.linguistech.ca) and Term Wiki, via mailings from the Translators' Toolkit from International Writers Group, LinguistList, ATIO and OTTIAQ, through the Réseau lexicologie, terminologie, traduction, through invitations posted on blogs, and via e-mail messages to the author's personal contacts as well as word-of-mouth.

The survey received a total of 257 responses, of which 255 included consent to participate in the study. Of the responses, 176 were complete, a completion rate of

approximately 69%. As respondents were not required to answer every question and some questions were only open to respondents who had given a specific answer to a previous question, the number of responses for each individual question varies.

2.2. Analysis

Basic quantitative data analysis was carried out by evaluating the percentages of respondents who selected each response to the multiple-choice questions. In questions about the nature of technologies' influence on professionals' control, in order to provide a more compact preliminary portrait of the reactions, some of the data were consolidated by merging responses from those who felt much and somewhat less in control, and much and somewhat more in control. This analysis included both complete and partial responses to maximize the data.

Weighted means were calculated to reflect the intensity of perceived effects. Only these complete responses (which excluded those surveys which the respondents did not finish, but did include responses for which "I don't know" or "Does not apply" answers) were retained in this analysis to provide a more equal basis for comparison. Scores were assigned to each of the multiple-choice answers (-2 for perceptions of being much less in control, -1 for somewhat less in control, 0 for no perceived effect, 1 for a perception of being somewhat more in control, and 2 for much more in control). Answers of "I don't know" or "Does not apply" were not included in the calculations.

For a preliminary quantitative overview of individuals' variation (for example to examine whether individuals tended to show consistent or variable perceptions of the nature of technologies' effect on control in the set of the 6 aspects of the work and environment investigated), the weighted scores were also analyzed for each individual respondent in the set of complete responses. The total scores for the individuals (ranging from a potential -12 for those who felt uniformly much less in control and 12 for those who felt uniformly much more in control) could then be computed, and the mean and median scores calculated to provide a preliminary portrait of the individuals' overall perceptions.

The qualitative evaluation was carried out through manual analysis and classification of respondents' comments, grouping together similar responses to pick out issues that recurred. In cases in which respondents referred back to previously provided answers, the full text of the previous responses was analyzed.

2.3. Limitations

This study is necessarily subject to a number of limitations relating to the questionnaire design and methodology, the respondent population, and various other factors. Some of these are summarized below.

The limitations of online survey methodologies are well-known. The questionnaire model does not permit clarification or complementing of the information volunteered. Moreover, the open invitation method used in this survey does not allow a response rate to be calculated, and therefore no conclusions can be drawn about the representativeness of the sample. The use of multiple-choice questions necessarily forces the respondent to choose among the answers provided, reducing the opportunity for nuancing of the answers. This latter limitation was partially compensated

for by the inclusion of open-ended questions that allowed respondents to explain their reactions as desired. However, quantitative results cannot take into account these caveats.

The design of the questionnaire and in particular the decisions made in an attempt to avoid biasing the results and to obtain spontaneous reactions also imposed methodological limitations. Respondents were not informed at the beginning of the questionnaire of the set of specific issues to be evaluated. No doubt due in part to this fact (and in part to the fundamentally interconnected nature of some aspects analyzed), several respondents referred back to previous answers and/or entered information in one question that more specifically addressed another. The latter was particularly common in the first question presented: while the question specifically asked about control over the *amount* of work done, respondents often commented on a wide variety of topics, including those addressed specifically later on. As noted above, this limitation was reduced by considering the other answers to which respondents explicitly referred in addition to answers entered in the appropriate fields. However, information to which they did not specifically refer may have been lost, and in some cases information was not included in the qualitative analysis because it did not appear to address the specific aspect in question. Unfortunately, it was impossible to reliably exclude answers to the quantitative questions that might have been based on factors other than the specific aspect identified. All answers to the closed-ended questions were thus included in the results reported.

Respondents were not provided with a definition of how specifically "being in control" should be interpreted in this study. This likely led to some variation in interpreting the phrase. However, since the objective of this study was not to measure the extent to which respondents *were* in control of their work and environment, but rather to determine to what degree they *felt* in control, the decision was made to have respondents interpret this statement in whatever way was meaningful for them.

In the interests of survey brevity, only basic information about respondents' work and working environment was collected, and only a restricted set of aspects of this work and environment was studied. Other potentially relevant information about the respondents' profile or their reactions was unfortunately not included in this survey.

Finally, the vast majority of the data were provided by current users of language technologies. It is thus entirely possible that users who were unhappy enough with previous use of technologies to stop using them are under-represented in the sample. This may have skewed the data (as noted, for example, by Dillon and Fraser 2006); however, the current survey design does not allow for the study of non-users or former users specifically.

3. Results

In this section, we will begin by describing the full pool of survey respondents and provide a basic outline of their work and working environment. We will then outline their overall reactions to the use of technologies in their professional milieu and finally summarize the quantitative and qualitative data obtained about their perceptions of how technologies affect their control over the various aspects of their work and environment.

3.1. Respondent sample

The demographic questions allow us to draw a basic portrait of the respondent group. (In interpreting the data, two points should be noted: as mentioned above, not all respondents answered every question, so the total numbers of responses vary from question to question; and due to rounding, some percentages may not add up to 100.)

Of the 229 respondents to the question about occupations, 61% reported that they were translators, 7% editors or revisers, 4% terminologists, 3% interpreters, and 2% writers or technical writers. The remaining respondents were in other language professions (18%) or non-language-related occupations (4%).

A similar majority of the 228 respondents to the next question (58%) reported primarily freelance work while 28% were salaried, and an additional 9% were salaried workers who also did some freelance work (meaning that 67% of the respondents did some freelance work, and 37% received a regular salary). Of the remaining respondents, 4% were students and 1% felt that none of the above categories accurately represented their working situation. Of the 229 respondents, 73% indicated that they had been in language professions more than 10 years, 14% for 6-10 years, 9% for 2-5 years, and only 3% for less than 2 years.

The majority of the respondents used language technologies in their professional work (79% of the 234 responses), 12% had never used language technologies (and thus did not complete the questionnaire), and 9% had previously but no longer used them.

Of the 181 respondents who answered the question, 69% reported having used language technologies to collaborate with others. Of the 121 who described their collaboration in more detail, 21% were nevertheless typically the only users of resources such as TMs, term banks and supporting documentation, 15% shared these with one other user, 28% shared with two to five other users, 12% shared with six to ten other users, and 23% shared with more than ten other users. Thus, slightly over half of the 181 respondents typically share resources with at least one other user.

Respondents were asked to indicate in their free-text answers the types of technologies that affected their perceptions. TEnTs (either in general or specific tools), and specifically the TM functions they include, were the tools most often mentioned. Others included MT systems, TMSs, concordancers, corpora, spelling and grammar checkers, term banks, and other lexicographical resources.

To sum up, the respondents tend to be experienced in language professions and most often (exclusively or partially) freelance workers, mainly in translation. They were overwhelmingly current technology users, but – although likely to have used language technologies to collaborate with others – were almost as likely to use their own dedicated resources such as TMs, term banks and documentation as to share with others in their typical work. The data gathered should thus provide a good picture of the perceptions of professionals who have experience working with language technologies, presumably for a variety of employers and/or clients (given both the length of experience and freelance nature of the work of most of the respondents). These perceptions should provide valuable information about the acceptance and use of technologies in the industry today.

3.2. Overall perceptions

To measure the respondents' overall perceptions of language technologies in general, the questionnaire asked whether they considered these technologies to be assets or hindrances to language professionals. The results were positive: of the 176 respondents, the largest category (39%) felt that technologies were assets, while almost the same proportion (38%) felt that they were overall assets, although they had their drawbacks. The remaining respondents either were ambivalent (with 17% considering tools to be both assets and hindrances to professionals), had negative perceptions (with 5% considering that technologies were overall hindrances, although they did have their advantages, and 1% considering that they were hindrances), or did not know (1%).

Respondents' attitudes towards technologies are thus clear (less than 20% ambivalent or unsure) and positive (as positive perceptions make up over 75% of the total). In fact, it may surprise some that the greatest proportion of the respondents stated that technologies were assets without feeling the need to explicitly recognize their drawbacks, although a similar proportion were more guardedly positive.

A minimum of 178 and a maximum of 203 respondents answered the questions about whether technology use affected their control over the amount of work they did, the types of tasks they performed, the quality of the work they did, their working methods, their relationships with employers and/or clients, and their remuneration. All of the data are shown in Table 1, while Table 2 presents the data from the complete responses only.

TABLE 1

Numbers of respondents in each category (all responses)

	Quality	Methods	Amount	Tasks	Client / employer relations	Remuneration
Total respondents	192	186	203	194	178	178
Yes (effect perceived)	160	129	140	99	85	90
No (effect not perceived)	24	41	36	61	60	53
Does not apply/I don't know	8	16	27	34	33	35
Total respondents (second part)	155	125	132	98	85	90
Much less in control	14	13	10	10	12	23
Somewhat less in control	27	36	20	22	28	26
Somewhat more in control	55	41	48	32	25	23
Much more in control	59	35	54	34	20	18

Table 2

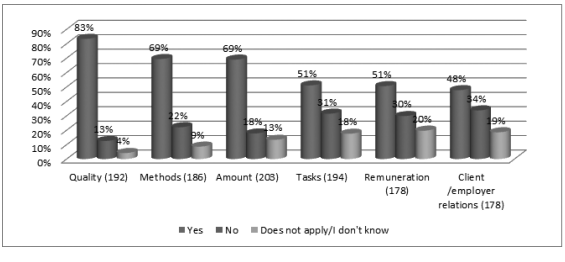
Numbers of respondents in each category (176 complete responses)

	Quality	Methods	Amount	Tasks	Client / employer relations	Remuneration
Yes (effect perceived)	146	122	117	87	85	89
No (effect not perceived)	24	39	36	60	58	52
Does not apply/I don't know	6	15	23	29	33	35
Nature of perceived effects						
Much less in control	12	12	8	8	12	22
Somewhat less in control	26	36	19	22	28	26
Somewhat more in control	52	39	43	28	25	23
Much more in control	56	35	47	29	20	18

Most frequently identified as being influenced by the use of technologies was control over the quality of work done (with 83% of respondents perceiving an effect). The next most influenced aspects were control over working methods and the amount of work done, both with 69%. Next were the types of tasks performed and remuneration for work, with just over half (51%) of the respondents reporting that their control was affected. Finally, nearly half of the respondents (48%) felt that their control over their relationships with clients or employers was affected. Details are presented in Figure 1.

Figure 1

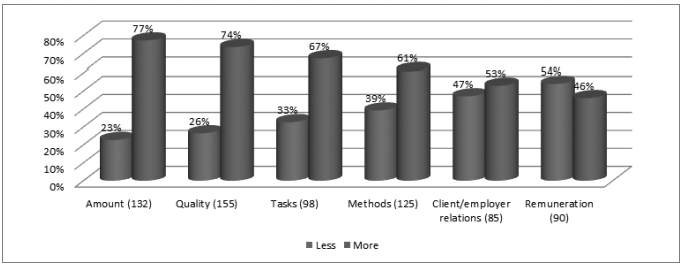
Respondent perceptions: effect of technologies on control over aspects of work and working environment



Having established that between approximately a half and four-fifths of the respondents felt that their control over these aspects of their work and working environment was affected by the use of technologies, the quantitative analysis next focused on whether those respondents who perceived an effect (between 85 and 155, depending on the aspect being analyzed) felt more or less in control over each aspect of their work. The details of the results are presented in Figure 2.

More than half of the respondents reported feeling more in control of all but one of the aspects of their work and working environment when technologies are used. Nevertheless, in each aspect a considerable proportion felt that they were less in control, which underlines the potential for various individuals to hold quite contradictory perceptions of technologies' effects, depending on personal situations. Over three quarters of respondents who perceived an effect (77%) felt more in control of the amount of work they were doing, and only slightly fewer (74%) felt more in con-

FIGURE 2
Nature of technologies' perceived effect on control



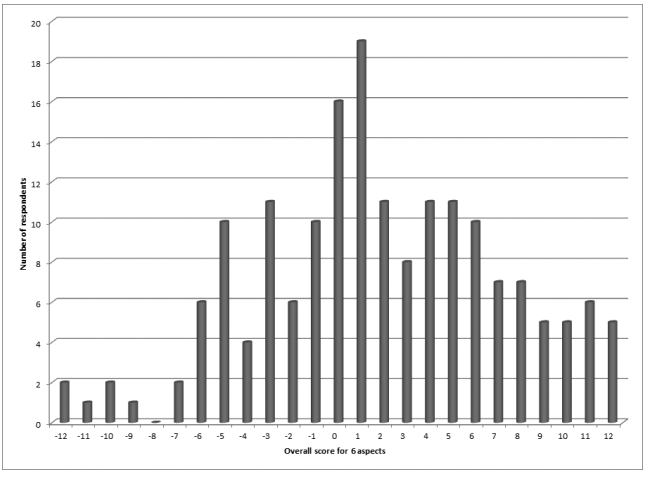
trol of the quality of their work. Approximately two-thirds (67%) felt more in control of the tasks they were called upon to perform, and slightly less than this proportion (61%) felt more in control of their working methods. Respondents were much more divided on the questions of the effect on control over client/employer relationships and on remuneration. Just slightly over half of the respondents who perceived an effect on their control felt that they were more in control of their client/employer relations (53%), while more respondents (54%) felt that they were *less* in control of their remuneration. A more detailed breakdown of the data, including proportions of respondents who felt much and somewhat less and much and somewhat more in control of each of the aspects, is included in Table 1 and Table 2.

Similar patterns are noted in mean scores for these aspects. When perceptions of the effect on the 6 aspects of control over the work and working environment are scored on a scale from -2 (much less in control) through 0 (no effect perceived) to 2 (much more in control), the "I don't know/Does not apply" answers are set aside, and weighted means for the complete responses are calculated, the most strongly positive perceptions of technologies' effect were observed in the aspects of control over the amount of work and the quality of work done (mean 0.67 and mode 2). More modestly positive perceptions were observed in the areas of control over the tasks (mean 0.33 and mode 0) and working methods (mean 0.30 and modes 0 and 1), and finally perceptions of effect on control over client/employer relations and remuneration were respectively only very slightly positive and slightly negative (means 0.09 and -0.08 and mode 0).The observations of previous studies are further supported by this data; clearly, there it is not easy to generalize about the overall impact of technologies on the control language professionals have over their work and working environment, as considerable variation in the responses was observed.

Moreover, it appears that variability between individuals is high. A comparison of the 176 complete responses can help to inform us about the perceptions of technologies' effects on professionals' control for the set of aspects examined. When the scores are added to measure the overall reactions, the total maximum score is 12 (much more in control in all 6 aspects), and the total minimum score is -12 (much less in control in all 6 aspects). There were in fact 5 responses with the maximum score and 2 with the minimum score. However, the vast majority of respondents fell somewhere between the two values: the overall mean score was 1.79, while the overall median score was 1. The distribution of the responses is shown below in Figure 3.

Figure 3

Distribution of respondents between maximum and minimum overall scores for perceptions of effect on control of various aspects of work and working environment (176 completed responses)



The overall reactions thus support the hypothesis that technologies help many users to feel somewhat or much more in control in certain aspects of their work, and primarily those of the amount and quality of the work that they do. A lower level of support for perceptions of increased control in the area of the tasks performed and the methods used to complete those tasks was noted, while the overall perceptions relating to effects on client/employer relationships and remuneration were much less clear.

It is interesting, then, to compare these reactions to the answers when respondents were asked which types of effects were relevant for them in evaluating the usefulness of technologies overall. The top-ranked aspect of the work and working environment was quality, with 83% of the 176 respondents considering that control over the quality of their work was a factor in evaluating the value of technologies. This was followed by control over the amount of work and working methods, with 67% and 62% respectively. Less than half, 45%, considered control over types of tasks performed to be relevant in this evaluation, and only approximately one-third considered control over remuneration and client/employer relations to be relevant (33% and 30%, respectively). Thus, there is an apparent correlation between areas that are considered important in evaluating technologies and those in which tools were perceived to increase control.

3.3. Comments: Effects on control over work and work environment

With this overview in mind, it is possible to develop a more detailed portrait of the respondents' perceptions of the effects on their control through qualitative analysis.

3.3.1. Effect of technologies on control over the quality of work done

As discussed above, control over quality of work was the aspect most respondents perceived to be influenced by technologies, and those who did were very likely to perceive a positive influence. They also considered it most relevant for judging the value of technologies overall.

Among the reasons given for perceptions of increased control over the quality of work were that more access to data (for example from termbases, TMs, corpora and even MT) contributed to increasing available solutions, stimulating ideas and better evaluating options. Respondents noted that tools such as TM systems and term extractors helped ensure completeness and consistency in translation and terminology work. The quality assurance features within TEnTs were often considered to contribute to increased control over quality. Finally, increased time and cognitive energy available for "core" tasks of translating rather than auxiliary tasks (such as document formatting) were noted.

In contrast, while the features that reduced the effort required to perform certain tasks were praised by some users, others felt that in some areas an additional investment of effort was required in order to maintain quality, particularly in not being influenced by suggestions. In fact, the most numerous and also the most vehement complaints reported by respondents centred around the tendency – or, worse, the obligation – to use solutions stored in a TM, even if better solutions were possible. The effect might be insidious, at the level of a stifling of creativity or innovation, or might be linked to fundamental views of quality: "The technologies will often make consistency a priority and will flag any inconsistencies. The problem with this is that consistency is not automatically the same a [sic] better linguistic quality" (255).[7] Among other issues, respondents noted that time pressures resulting from the use of technologies contributed to the tendency to accept quick or easy – but not necessarily adequate – solutions. Perhaps most strikingly, situations in which the use of previously stored solutions is required brought out very strong negative perceptions of the effect on professionals' control over the quality of their work. Also noted were problematic effects of segmenting texts to be translated using a TM system into translation units (usually sentences), which often made it difficult to consider the context when translating. Users reported that the inflexibility of the segmentation and the lengths to which they had to go to adapt to the software's segmentation processes also interfered with control over the quality of the product. The restrictions imposed not only by a specific tool's functions and environment but also in the interactions between different tools (such as TEnTs and spelling and grammar checkers) were also a recognized negative factor.

3.3.2. Effect of technologies on control over working methods

Slightly fewer respondents considered control over working methods to be affected by technologies than control over quality (approximately as many as perceived an influence on control over the amount of work), but the nature of the effect was less likely to be positive for those who did report an effect. However, this aspect also had a slightly lower relevance for evaluating the value of technologies in this group of respondents.

Among the reasons cited for feeling more in control of working methods was the fact that technologies could be called upon to take over some tasks, and more specifically tasks that did not require highly developed skills or judgment (such as preparing estimates, some quality assurance tasks), leaving the professional to concentrate on the more complex parts of the work. As well, tools' contribution to optimizing and stabilizing workflow and efficiency was also noted. Respondents noted that CAT tools may offer greater variety and flexibility in the working methods

available to users (for example, working on paper or on screen, with or without tools, choosing the tools and settings used, or changing the approach to the text). Overall, users appeared to find that workflow streamlining resulted in time savings and added convenience.

Interestingly, although many users praised the flexibility and efficiency of a workflow using technologies, many also felt constrained by the technical environment, including some of the very points others cited as evidence of increased control (such as the need to work electronically and with an Internet connection to take advantage of some tools). The efficient, streamlined workflow indicated by some users was perceived as rigid and restrictive by others, in part because of tools' limitations. It is likely that this reaction is linked at least in part to who chooses the tool. Quite reasonably, when the client made the selection, some language professionals reported feeling less in control of how they could work. At a more specific level, some respondents felt that their control over working methods was limited by the tool offering little context for making decisions as in the case of TM systems and their segmented approach). This lack of context might compound the problem of tending to (or being required to) rely on solutions from the tools rather than coming up with their own, potentially more creative ones.

3.3.3. Effect of technologies on control over the amount of work done

Technologies' influence on control over the amount of work done was frequently perceived, relevant for evaluating their value according to the respondents who perceived an effect, and most positively ranked in the nature of the change observed.

Some respondents who perceived increased control noted that using technologies enabled them to take on tasks that they otherwise could not (for example, large-scale corpus analysis) or would not have accepted (for example, repetitive work). However, the most common reasons given involved effects on productivity. Some noted that increased productivity offered more freedom to pick and choose jobs, while others felt more in control as they could choose whether to increase production or reduce working hours. In any case, the increase in productivity and ability to estimate this productivity contributed to users' perceptions of increased control. In some cases, the ease of assessing productivity was reported to result from the ability to better estimate the work required thanks to analysis features of TEnTs. Among other factors contributing to increased productivity were increases in original document quality resulting from greater uniformity and easier information exchange, as well as time savings in terminology research, quality assurance and consistency checking processes. Contributions were also noted in the management of the translation workflow, prioritizing tasks, and managing time.

Other respondents reported feeling less in control because they perceived that such an increase in productivity had come to be expected by clients or employers, who often had unrealistic expectations of the productivity gain that could result from using tools, and of the work required to use the data provided by these technologies. In particular, the perceptions of the work required might be particularly inaccurate when TMs were of poor quality or were poorly maintained. Another potential area of conflict was the fact that some clients required the use of specific tools, which were not always those that the language professionals would choose (if they would choose to use tools at all). While in some cases language professionals reported that they

might simply refuse work or drop clients, in others they reported choosing (or feeling obliged) to adapt to these requirements. While the sentiment of having one's hands tied was evidently frustrating, respondents expressed additional indignation over the lower remuneration for this more frustrating and often more complex work and the overall reduction in income that results – which in some cases meant that they were obliged to take on work they otherwise would prefer not to accept. Additional difficulties were reported from technical problems in the use of the software, ranging from the program freezing to the challenges of managing installations, maintenance and upgrades. Additionally, a number of respondents felt that the problems involved in the use of technologies (the limitations of working in the environment, of using others' translations, and of relying on functionalities such as document analysis tools) made it more difficult and therefore more time-consuming to achieve the text quality they required and/or to manage their time and work.

3.3.4. Effect of technologies on control over the types of tasks done

Just over half of the respondents considered that their control over the types of tasks performed was influenced by technologies, but two-thirds of respondents who did perceive a difference felt that their control increased. However, less than half of the respondents indicated that this was a key factor in evaluating the value of technologies.

In comments about how technologies increased the respondents' control over their tasks, the reasons given were very similar to many discussed above. Some respondents felt that they were able to take on tasks that they otherwise would not be willing or able to do (for example, work with heavily marked-up documents). Moreover, they felt that they were often able to do their work more productively (and perhaps more enjoyably) because they were freed of certain tasks, ranging from typing the translation to research and checking of quality/consistency. The flexibility offered in workflow, and particularly workflows that involve multiple participants (multiple translators, reviser, terminologist, etc.), was also a factor in respondents' evaluations.

Unfortunately there were fewer benefits noted when professionals were working with clients who insisted on choosing the tool to be used. While tools might allow some users to take on work they otherwise could not, other respondents again commented that they were losing work if they could or would not use the tools specified by clients or did not accept the conditions imposed on this work. Having a workflow and environment imposed on them also resulted in users feeling that they had less control over their tasks. Some users noted that the use of technologies added a number of preparatory and "housekeeping" tasks to their workload, which often took time away from what professionals considered to be their "real" work. Moreover, some respondents observed that these tasks are rarely remunerated. Some also commented that the types of texts received were not as stimulating to work with or were more challenging than average, because human translators were reserved for cases where technologies proved inadequate. Perhaps most fundamental in some respondents' perceptions, however, was the potential effect on the very nature of their task, including reuse of others' translations and an increase in editing/proofreading tasks rather than translation and research.

3.3.5. Effect of technologies on control over remuneration for work done

An effect on control over remuneration was identified by only half of the respondents, and the effects reported were also almost evenly split between increases and decreases. Nevertheless, this was the only aspect in which fewer than 50% of the respondents felt that they were more in control thanks to technologies. However, only one-third of the respondents felt that this was relevant for evaluating the usefulness of technologies.

Many comments about professionals' increased control of their remuneration revolved around increased efficiency and productivity and its various indirect effects. Several respondents noted more flexibility in their pricing, either different billing options (by the word or by the hour) or special prices for less labour-intensive jobs. Some noted that although they might charge less for a given client or job, ultimately they were making a choice – and a profitable one – in terms of building a client base and/or client loyalty, and this made them feel more in control of their income overall. Some noted that increased income allowed them to balance out down-time for tool-related "housekeeping" and maintenance tasks. Despite frequent comments on reductions in price associated with the use of technologies, some respondents noted that in some cases premiums for skill may be paid. Thanks to the statistics and calculations offered by the technologies, some respondents felt that they were better able to predict the time and effort required for a given job and make better use of their time, and to justify their fees to their clients.

Although some users praised the analysis and other features of CAT tools, others felt that these functions were inadequate for giving a true estimate of the work required, and that in fact there is a need to reform pay practices (for example, to switch to an hourly rate) when using technologies to put professionals back in control of their earnings. Another area in which improvements are required, according to many respondents, is client/employer expectations of language professionals who use technologies. Respondents reported that many clients showed little appreciation for the complexity of the task and the time required, leading to lower rates, and that clients perceived technologies as cost-saving tools rather than as tools for enhancing quality. Others reported being particularly unhappy with demands for reduced rates for work done using technologies, and the overall impact on income. Some considered this particularly unfair as they felt that technologies help improve quality, and they had personally made an investment in tools in order to offer this quality to clients. Moreover, some respondents were even more reluctant if their productivity – the focus of so many arguments for the use of CAT tools – either did not increase or in fact decreased with technology use.

3.3.6. Effect of technologies on control over client/employer relations

The aspect of client/employer relations bore a strong resemblance to that of remuneration. Just under one-half of the respondents felt that technology use affected this aspect, and just over one-half of those felt more in control. However, the fewest respondents (30%) found this aspect relevant for evaluating the usefulness of technologies.

When asked why they felt that they had more control in client/employer relations thanks to the use of technologies, a number of respondents observed that their tech-

nological skills were recognized and valued. Some described a correlation between technology use and building a client base, while others ascribed their success to an appreciation of their professional training and ability to keep up with current technologies, as well as to adapt to clients' needs. Others highlighted a greater ability to meet clients' key requirements: a high-quality product on time (particularly when deadlines are tight). Respondents noted the importance of an efficient workflow in meeting these needs, and positive contributions of tools to streamlining this workflow. Some respondents noted that access to client data made it easier for professionals to adapt to clients' and employers' specific needs and preferences. Requirements for specific tools can be met in a variety of ways, respondents reported, particularly when tools have broad compatibility. In comments related to the issue of adapting to client needs, a number of respondents highlighted benefits that technologies bring to communication with employers and clients, both in assisting professionals in explaining procedures, choices and challenges, and in collaborating to find solutions to these challenges. Cited as particular benefits were easy access to data to help back up choices and options to allow the client or employer to more easily view the text in progress. One respondent even noted that tools can help to improve the quality of the source texts received. In addition to having language professionals meet needs for quality and timeliness, clients are certainly likely to be pleased with cost savings, which some respondents (somewhat interestingly) cited as a benefit of technologies. In addition to technologies' considerable contribution to the ability to meet client needs and maintain client satisfaction, respondents noted that they had one significant means of maintaining control over their working conditions: "If I don't like their conditions on the technologies, I can turn my clients down." (225)

Although some respondents were satisfied with the option of choosing clients who offered acceptable terms for technology use, others were frustrated by the feeling of decreased control over their working environment, the inability to offer certain services because of tool limitations, or the loss of clients who did not agree to satisfactory terms. Respondents did report frustration with the choice of tools and the need to acquire more than one in order to build or keep a range of clients, which entailed an investment of both money and training time. Also frustrating for many respondents were clients who expected faster service for less remuneration, particularly if they supplied resources such as TMs and termbases. Some frustrations were related to the calculations used to determine the usefulness of TMs and termbases. When clients expected solutions from the TM and termbases to be used consistently, the quality of these resources became an issue. Some respondents felt less in control of their relationships with their clients because they were forced to use solutions that they considered inadequate. Others noted that organization and maintenance of TMs were often lacking, and that language professionals often had little control over either policies or maintenance procedures. Frustrations in working conditions might also involve the sharing – or lack thereof – of information. Ultimately, some respondents reported feeling that they had little communication with clients, particularly about what they considered to be key, fundamental issues rather than estimates and deadlines. Interestingly, in some cases, respondents reported similar reasons for their evaluations, but opposite perceptions of effects on control.

4. Discussion

From these results we can make observations both about previously discussed human factors in technology use. We see numerous parallels with the discussions of technologies in the literature, which helps to establish that these known issues have remained unresolved and continued to be relevant for professionals. In contrast, some issues from the literature were largely absent from the data observed here.

Perceptions of technologies such as MT replacing translators entirely were very rare in the data (although concerns about the types of texts being submitted for professional translation were observed). The debate over issues of intellectual property rights and the ownership of TMs and other resources was rarely mentioned. This indicates quite a striking difference from some of the literature, in which this issue was considered to be of considerable importance. Evaluating this gap may reveal interesting developments, as but recent years have brought considerable developments in resource-sharing initiatives (for example, the TAUS Data Association)[8] that may have affected attitudes towards these issues. Monitoring progress in this area will contribute to managing expectations of both language professionals and their clients. In addition, concerns over basic computer skills and the learning curve of technologies were also relatively rare in the responses. This may be related to the profile of the respondents, who were largely well-established in the field and perhaps likely to have already gone through the initial period of intensive training and adaptation to technologies. It would be interesting to explore in future work whether the infrequently mentioned concerns were felt to be no longer or not yet key issues, or whether they simply did not come to mind.

There were numerous comments about the respondents' personal reactions to the technological and practical requirements and implications of technology use. It is abundantly clear that many language professionals feel extremely strongly about the effect of language technologies on their control over their work and working environment. Many of the responses demonstrate considerable (if low-key) appreciation, while others (often very eloquently) express intense frustration and dissatisfaction. These frustrations are very often linked to perceived changes in the standards and expectations of what being a translator means, including

> […] the (d)evolution of translation from an artisan to a corporate assembly-line activity. (197)

Some respondents' comments focused specifically on their own changing roles:

> [The technologies] determine the work method, and I become the trained monkey in the machine. It feels like slinging burgers at McDonald's instead of creating fine cuisine at a three-star restaurant. (114)

> Translation memory systems reduce me to the role of proofreader to a dumb machine. (102)

Many of these very strong reactions are also linked to perceptions that clients' and employers' expectations (both in terms of productivity and of remuneration) are unrealistic given the skill and judgment required to work well with translation technologies such as TMs, as demonstrated by the following comments:

> Really, this nickel-and-diming on the part of the agency is appalling. I find the stature of the profession is declining; when you have an agency mandating the work method, we will deduct for this, we will deduct for that--really, now. Would you ask this of an engineer? Are we not engineers of the written word? (152)

> When the market is full of serfs owning their direly paid [software] shackles, negotiating decent conditions is a constant fight against that other side of the market dragging prices down through mock quality mimicking and abusing technology to push prices without making good on the quality promises. When any monkey with a [software] license can pre-translate a complicated document using the hard professional work somebody else put down into the TMs supplied by the agencies, and produce translations that *look* the part, the market will suffer, as will translation quality and (worst of all?) the reputation of the whole profession and industry. (214)

Unrealistic expectations are key in the study of how CAT tools influence the industry. The question remains: what factors are contributing to the apparent impasse that has had language professionals and clients/employers at odds for over a decade?

The idea of transferring from charging by the word to by the hour appears still to be relevant for some users as a solution to some of the problems. However, with the considerable discussion of discounting based on matches and only rare references to having implemented hourly rates, these responses indicate little progress in this area (despite a gap of at least ten years since the solution was suggested). This apparent "stalling" is a subject that merits further investigation.

In their comments, some respondents reported feeling that their ability to use cutting-edge tools was recognized and welcomed in the market, while others felt that the expectations that technologies are able to take charge of the work entirely – or at least enough that remuneration could be considerably decreased – were doing considerable harm to their status and the valuing of their work.

One of the key factors in the apparent, long-standing conflict between the perspectives of employers and clients and the language professionals who work for them may be the differing priorities accorded to motivations for the use of technologies. It is interesting to see that the effect on control over quality was the highest ranked factor in evaluating technologies for language professionals (an observation that echoes that in Taravella 2011). Overall, the perception of the effect on control over this aspect of the work and working environment was fairly consistent and language professionals felt that the use of technologies gave them more control over the quality of their product. Control over the amount of work done was ranked lower, suggesting that this is not quite as high as a priority or as significant as a benefit for the respondents. This likely suggests a fundamental disconnect between the impressions of clients and employers, who may focus largely on cost-efficiency, and those of language professionals.

5. Conclusions and future work

Inspired by growing interest in studying human interactions with language technologies, sometimes referred to as *translator-computer interaction* (O'Brien 2012), this study complements others using more in-depth and focused methodologies such as contextual inquiry, shadowing and interviews (for example, Désilets, Melançon *et al.* 2009; LeBlanc 2013). The survey has addressed many of the themes identified in

other studies (not the least of which being the issue of control also discussed in LeBlanc 2013), but adds to our knowledge by revealing the prevalence and strength of perceptions in a larger sample of respondents.

We can conclude from the results discussed above that most of the respondents – largely technology users and freelance translators with considerable experience – do feel that the use of technologies affects their control over the quality and amount of work that they do, and that they are largely satisfied with the increase in control the technologies offer them. While there is much more ambivalence about the nature of changes observed in language professionals' control over client/employer relations and remuneration, fewer respondents perceived an influence of technologies in these two aspects, and fewer still found them critical in evaluating technologies. The positive influence perceived in the key areas in users' perceptions of technologies' usefulness helps to explain the strongly positive reactions of users towards technologies.

The results do nevertheless show considerable variation in all areas, with approximately one-quarter to one-half of participants who perceived an effect of using technologies reporting having less control, and one-half to three-quarters reporting having more control. Individuals showed a wide range of opinions and overall scores, highlighting the fact that the impact of technologies can be extremely variable, likely depending largely on the user's profile and working situation.

Despite technologies' drawbacks, the quantitative data establishes that these issues – although they may lead to frustration – have nevertheless not prevented respondents from using and being satisfied in general with the contributions of these technologies in their work and working environment. Nevertheless, progress may still be made.

By bringing to light the continuing conflict between clients' and employers' perceptions and those of language professionals, open communication between parties can be encouraged and the gap between these two perspectives may be reduced. Certainly, this can only be a first step, but the strength of the respondents' convictions should spur discussion of the potential for rapprochement among all parties.

Much remains to be learned from a deeper analysis of the data. The scope of this article unfortunately precludes the analysis of all data gathered or the comparison of data for sub-groups of respondents. However, analyses of data from these sub-groups will no doubt prove informative. Among the topics of particular interest is the comparison of data from respondents with varying levels of experience, in different working situations (freelance or salaried, working in collaboration with others or independently, etc.), and in different occupations, as well as from those who use different types of technologies. (Some of these more detailed analyses can be found in Marshman 2012.)

Extensive research is still required to gather in-depth information about factors that influence implementation of and satisfaction with language technologies among language professionals. Among the topics for further investigation are the expansion of information gathered about respondents, their background and their practices (age, location, rates, specializations and text types they work with, as well as the amount of experience with and use of specific tools, etc.). In addition, it will be essential in further study to include non-users and former users of technologies in order to determine how their feedback compares to that of the other respondents in this survey. Finally, although it appears evident that control over work and the work-

ing environment is a significant factor in respondents' evaluation of technologies, the data suggest that other factors are likely to be involved in the decisions of whether, when and how to use technologies. These should also be investigated.

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APPENDIX

Appendix I: Excerpt of the questionnaire

In this excerpt, questions that were displayed only if the respondent answered "Yes" to the preceding main question are marked with an asterisk. Questions that were displayed only if the respondent answered "No" to the preceding question are marked with a double asterisk. For all explanations of reactions, respondents were also asked to indicate if they were referring to the use of a specific type of technology. The demographic questions on collaboration with technologies originally appeared later in the survey and have been moved to the first section here in order to consolidate the questions about the respondents' working situation and practices.

Demographic questions

What is currently your primary occupation?

- Translator
- Terminologist
- Interpreter
- Writer/Technical Writer
- Editor/Reviser
- Other language profession
- Other (non-language) occupation
- None

Which of the following best describes your current working situation?

- Salaried worker
- Freelance worker
- Salaried worker who also does freelance work
- Student
- None of the above

How many years of experience in language professions do you have?

Less than 2 years
2 to 5 years
6 to 10 years
More than 10 years

Do you currently use language technologies in your professional work?

Language technologies include translation environment tools (TEnTs) (including translation memory systems (TMs)), terminology management systems (TMSs), concordancers, term extractors, localization tools and machine translation systems.

Yes
No

**Have you ever used language technologies in your professional work?

Yes [Survey continues]
No [Survey terminated]

Have you used language technologies to collaborate with other language professionals?

Yes
No

*How many people typically share the resources (e.g. translation memories, term banks, supporting documentation) that you use?

I am the only user
I share with one other user
I share with two to five other users
I share with six to ten other users
I share with more than ten other users

Perception questions

NOTE: A common framework was used for most of the perception questions, and each of the following aspects in turn was inserted into the blank in the question.

1. the amount of work that you do
2. the kind of work (i.e. the types of tasks) that you do
3. the quality of the work that you do
4. how you do your work (i.e. your working methods)
5. your relationship(s) with your client(s) and/or employer(s)
6. your remuneration for your work

Do you feel that the use of language technologies affects how much control you have over _____?

Yes
No
I don't know (in the case of aspects 5 and 6: I don't know/Does not apply)

*How do you feel that the use of language technologies affects how much control you have over _____?

I feel I am much less in control.
I feel I am somewhat less in control.
I feel I am somewhat more in control.
I feel I am much more in control.

*Please explain why you feel that the use of language technologies affects your control over _____.

Do you feel that language technologies overall are assets to language professionals?

Yes, I strongly believe that they are assets
Yes, I believe that they are overall assets, although they have their drawbacks.
I believe that they are assets in some ways and hindrances in others.
No, I believe that they are overall hindrances, although they have their advantages.
No, I strongly believe that they are hindrances.
I don't know.

Which of the following factors do you feel is/are important for you in deciding on the value of language technologies?

Control over the amount of work done
Control over the kind of work done
Control over how work is done
Control over the quality of work done
Control over the relationships with clients/employers
Control over remuneration for work
Control over the value placed on work
None of the above