

Aspects of human translation: the current situation and an emerging trend*

Aspectos de la traducción humana: situación actual y una tendencia emergente

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Abstract: The sharp rise in the use of technology tools in the translation process has rendered human translators more invisible than ever. The importance of the role played by human translators in translation, however, cannot be denied or understated. This paper aims to examine the primary factors influencing the work of human translation combined with translation technology tools. Therefore, the paper provides an overview of the translation and language industries and insights into translation industry standards, quality concerns and the most frequently used tools, as they are aspects that influence and condition the translator's work today. The final and main section in this work emphasizes an increasingly common trend in translation: a human-assisted machine translation model based on the post-edition of the output from machine translation systems. By analyzing market studies, surveys and papers on the aforementioned aspects, this article confirms that the role of human translators in technology-driven translation processes will be as central in the future as it is today.

Keywords: Language/translation industry; translation standards; quality assurance; translation technology; human-assisted machine translation; post-editing.

Resumen: El marcado incremento que se observa en el uso de herramientas tecnológicas en el proceso de traducción ha hecho que los traductores humanos sean más invisibles que nunca. No obstante, el papel que desempeñan estos traductores no puede ni negarse ni subestimarse. El presente artículo tiene como objetivo analizar los factores primarios que afectan a la traducción humana cuando se combina con herramientas de tecnologías de la traducción. Para ello, se proporciona un estudio somero de la situación de las industrias del lenguaje y de la traducción, así como información sobre normas de traducción, control de calidad y herramientas más

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empleadas, por ser aspectos que influyen en el trabajo del traductor hoy en día y lo condicionan sobremanera. La sección última y principal de este trabajo, por su parte, presta especial atención a una tendencia cada vez más frecuente en la traducción: una modalidad de traducción automática asistida por traductores humanos, consistente en la posesición de textos procedentes de sistemas de traducción automática. Mediante el análisis de estudios de mercado, trabajos estadísticos y contribuciones científicas sobre los aspectos mencionados, este artículo confirma que el papel de los traductores humanos en los procesos automáticos y automatizados de traducción será tan relevante en el futuro como lo es en la actualidad.

Palabras clave: Industrias lingüísticas/de la traducción; normas de traducción; aseguramiento de la calidad; tecnologías de la traducción; traducción automática asistida por humanos; posesición.

Summary: 1. The translation industry today: size, languages and pricing; 2. Translation industry standards; 3. Quality; 4. Tools; 5. An emerging trend in the human translation workflow: post-editing; 6. Conclusions.

Sumario: 1. La industria de la traducción: tamaño, idiomas y tarifas; 2. Normas del sector de la traducción; 3. Calidad; 4. Herramientas; 5. Una tendencia emergente en el flujo de trabajo de la traducción humana: la posesición; 6. Conclusiones.

1. THE TRANSLATION INDUSTRY TODAY: SIZE, LANGUAGES AND PRICING

The relevance of the translation market is beyond all doubt. Data from diverse market studies reveal some relevant facts: the results of a study by PricewaterhouseCoopers LLP revealed that there are 25,000 translation companies in the world (2012: 4, 12).¹ Financial figures are equally surprising: according to a study by the European Commission (Directorate-General for Translation of the European Commission [DGT], 2009: iv), the assumed value of the translation and interpreting service industry (which comprises software and website localization) amounted to 5.7 billion EUR in 2008 on a European scale and was expected to reach 16.5 billion EUR in 2015 (DGT, 2009: 20). One study conducted on a worldwide scale (DePalma *et al.*, 2013: 8) indicated that the world's language services market had a total value of USD 33.05 billion in 2012. More recent figures show an increase in this value: according to a study carried out by DePalma *et al.* (2016, as cited in Common Sense Advisory, 2016), the sector reached a total value of USD 40.27 billion in 2015, with a growth rate of 5.52% with respect to the

¹ A previous study, however, offered very a different figure: 3,000 companies (Boucau, 2005: 34). Both figures are given merely as illustrative examples, since they do not allow any conclusions to be drawn about the growth of companies in that period, given the fact that both studies offer estimated figures and do not indicate how they obtained those results.

previous year. This growth is expected to continue—or even rise—in the coming years (Damari *et al.*, 2017: 30).

Although these figures reflect a continued growth, and can therefore be considered relatively positive, the translation and language service market is still facing some difficulties: earnings are falling,² among other factors, as a result of price pressure (Pym *et al.*, 2014: 3; EUATC, 2016: 6; Rico Pérez and García Aragón, 2016: 35; EUATC, 2017: 8, 23)—with the average per-word rate decreasing by 41% in the period 2008-2012 (DePalma *et al.*, 2013: 9)—along with low or negative growth rates in the world's economies and recent advances in translation technologies (Sperandio, 2015: 156; Moorkens, 2017: 466).

The translation industry, “one of the most fragmented service sectors in the world” (Boucau, 2005: 24; see also Enríquez Raído, 2016: 975), was estimated to have 100,000 freelancers in Europe and more than 200,000 in the world, while Pym *et al.* (2014: 134, 137) estimated 333,000 translators and interpreters in the world. In this respect, DGT's study (2009: 23-24) found that, in a 700-participant survey, 43% of the total amount of language service providers (LSPs) from Europe were freelancers or sole proprietors,³ 36% had between one and ten employees and only 21% employed more than ten people. PricewaterhouseCoopers LLP's study (2012: 15) concluded that on an international level, 69.3% of LSPs employed five or fewer people, while only 0.6% had 100 or more full-time employees. DePalma *et al.*'s findings (2013: 13-14) are similar to those of PricewaterhouseCoopers LLP: 65.37% of the total of 1,022 survey respondents were translation service providers (TSPs) employing two to five full-time workers (with two being DePalma *et al.*'s minimum threshold for a TSP to be considered as such). One of the studies conducted by the EUATC on a European scale shows figures that are very closely in line with those that have just been mentioned: out of

² In this regard, the data offered by the latest EUATC study are quite striking: 35% of the language service providers obtained a sales figure of less than €250,000 (23% in 2016). On the other hand, “The segment €250k–€1 m, while individually the strongest, represents 31%,” down from the figure of 37% for 2016 (EUATC, 2017: 3).

³ Coincidentally, this percentage is very similar to the appropriate proportion from a survey of machine translation competences: out of 438 respondents, 191 (*i.e.*, 44%) were self employed and freelance translators (Gaspari *et al.*, 2015: 339). Despite some degree of divergence, one study conducted at the same time as that of Gaspari *et al.* (Schmitt *et al.*, 2015: 23) reinforces the idea of just how fragmented the translation sector is: out of 2,813 respondents from nineteen countries, 64% are freelancers.

445 respondents, 293 (65.84%) belong to LSPs, while 107 (29.04%) identify themselves as individual professionals. In terms of the number of employees in these service providers, 56% state they have fewer than ten employees, while only 8% have more than 50 (EUATC, 2016: 3).

Regarding the languages that have a substantial economic impact on the industry, a study by Common Sense Advisory (2011) forecasted major growth in translation for the so-called six hyper-languages of the web (English, French, Italian, German, Spanish and Japanese) as well as in Chinese.⁴ Additionally, some contributions emphasize the overwhelming preponderance of English as a language for international communication at both the European (Extra, 2017: 11, 12) and worldwide levels (Heilbron and Sapiro, 2016: 381; Melitz, 2016: 585-588), albeit with some doubts as to its effective and, above all, efficacious use (Gazzola, 2016: 143; Melitz, 2016: 610-612). The findings of two more recent studies are in line with the data offered by an earlier study (DGT, 2009: 15): according to the study by Gaspari *et al.* (2015: 342), which analyzed 438 responses, the most frequent language combinations in translation involve English, French, German, Italian and Spanish. Moreover, although conducted on a local scale, the study by Rico Pérez and García Aragón (2016: 71) underlines the fact that of the 175 answers obtained, both companies and independent translators in Spain mostly offer translation services from Spanish into English, French, Portuguese and Italian. These same languages also account for the majority of the source languages in translations into Spanish.

As previously mentioned, in the last few years, prices have decreased in a market that is already very competitive. In fact, 77% of TSPs charge less than USD 0.15/word for their translation services (PricewaterhouseCoopers LLP, 2012: 18). As regards Europe, a study conducted by the FIT (Fédération Internationale des Traducteurs) referring to the year 2008 showed that the average price per word was between EUR 0.10 and 0.12 (FIT, as cited in Pym *et al.*, 2014: 97). A direct consequence of this decline in prices was observed on a European scale in the DGT study: the language and translation industries are

⁴ Heilbron and Sapiro highlighted the fact that, at least for book translation, the four main source languages are English, French, German and Russian, with the first of them accounting for 59.3% in the period 2005-2009, according to the Index Translationum (2016: 378, 381, 382). The relevance of English as the source language in book translation, although with certain limitations, was also stressed by Melitz (2016: 593-594).

experiencing economic growth in eastern European countries because they can “exploit their weak currencies and low salary structure by offering lower prices and hence beating the competition and attracting more clients” (DGT, 2009: 23-24).

2. TRANSLATION INDUSTRY STANDARDS

According to DePalma *et al.* (2013: 7), the existing certifications and accreditations for TSPs are awarded via different institutions, namely, the ISO, local LSP associations, local standards organizations, local government bodies, private or industry-specific certification systems and educational institutions. At a minimum, these quality management systems serve to monitor the following processes: project inquiry, feasibility and quotation; competence of human resources; adequacy of technical resources; translation project management; and project conclusion and delivery/added value services (Rueda, 2010: 2-4).

Although translation standards and quality requirements, which Gouadec considers to be a “welcome evolution of the translation professions” (2010: 272), do not truly ensure quality in the output, they are becoming a widespread need within the translation service industry. In fact, a number of standards have appeared in recent years, with the primary aim of maintaining the highest-quality criteria throughout the entire translation provision process (Gouadec, 2010: 271) to produce “a competent and flawless translation” (Rueda, 2010: 4). According to Drugan (2013: 74-75), the most recognized translation standards are the German DIN 2345 standard (Deutschen Institut für Normung, 1998), the American ASTM F2575 06 standard (ASTM International, 2006) and the Chinese GB/T19363 standard (General Administration of Quality Supervision, 2003). Drugan refers to an additional standard, the European EN 15038:2006 (CEN, 2006), which superseded the German translation standard.

In addition to the standards that Drugan mentions, two other more recent standards can be named: ISO 17100:2015 (ISO, 2015), which was published in May 2015, and ISO 18587:2017 (ISO, 2017), which was published in April 2017. EN 15038:2006 serves as a basis for the first of them, ISO 17100:2015, as demonstrated by the identical or almost identical wording appearing in it; compare, for example, the definitions provided for *quotation* (CEN, 2006: 8; ISO, 2015: 7) or the list of added value services (CEN, 2006: 16; ISO, 2015: 17). A more thorough

analysis, however, shows that the European standard should instead be considered a starting point for ISO 17100:2015, as significant advances can be observed. Among these advances, I would like to mention the following: ISO 17100:2015 adds a competence to the five professional competences that the EN 15038:2006 standard requires for translators—the so-called *domain competence* (ISO, 2015: 6). As a result, the ISO standard is in line with well-known works on the subject of translators' competence, such as the research of PACTE group (2003: 58-59), Gambier (2009: 7) and Göpferich (2009: 21)—see also Lehka-Paul and Whyatt (2016: 325) and Robert *et al.* (2017: 7-8)—because it adds a competence that is “well established in the literature and may be frequently found as a requirement in translation companies' vacancy postings” (Biel, 2011: 64). Translation processes are clear-cut and organized, as they are in ISO 17100:2015 divided into three main areas of processes and activities: pre-production, production and post-production (ISO, 2015: 7-12). By contrast, EN 15038:2006 only distinguishes between the preparation process and the translation process (CEN, 2006: 9-11). No post-production activities are identified in the European standard, and the so-called *preparation process* (substantially similar to ISO's pre-production stage) lacks some activities that are mentioned in other sections of the standard. Such is the case, for example, with “Enquiry and feasibility,” under the “Client-TSP relationship” (CEN, 2006: 8).

Another noteworthy aspect is the more relevant role that ISO 17100:2015 assigns to project managers, given the special mention of the competences that these key stakeholders are required to demonstrate (ISO, 2015: 6-7)—an aspect that is absent from EN 15038:2006. Finally, translation tools play a greater role in the new standard, as indicated in the specific sections addressing technological aspects—section 3.2, entitled “Technical and technological resources” (ISO, 2015: 7) and, more remarkably, annex E (“Translation technology”: 16), of an informative nature, as both consider the use of a variety of technical equipment and translation-related tools to assist LSPs in the entire translation process. Comparatively speaking, EN 15038:2006 pays less attention to this issue, as indicated by the surprisingly small number of occurrences of key technology-related words and terms (*software* appears twice, while *computer*, *tool* and *translation memory* appear only once each).

Despite the positive effects identified by scholars—see, for example, Ehrensberger-Dow *et al.* (2016: 2), Englund Dimitrova and Ehrensberger-Dow (2016: 3), Ipsen and Dam (2016: 143-144)—some criticism has also been directed towards translation standards (see, for example, Schopp's comments on the European standard [2007]). EN 15038:2006 or ISO 17100:2015 compliance requires, for example, that the target text be checked twice—once by the translator him/herself (checking process) and once by a reviser (revision). This quality assurance (QA) model, however, does not always increase quality in the translation output (Gouadec, 2010: 271; Robert and Remael, 2016: 580), and it is not the only element on which translation quality should be based (Martin, 2007: 61). Moreover, as Martin notes, this “‘four-eyes [sic] principle’ is a good one, as any translator will attest, but it can't, in all economic honesty, be used indiscriminately” (2007: 59). Furthermore, these standards do not deliver quality metrics, as they are typically process oriented (Biel, 2011: 68). As a consequence, output quality falls outside some of the most important standards, as the DGT study observes in connection with EN 15038:2006:

[t]he standard [...] does neither indicate nor reflect the quality of the output of an LSP. Due to downward pressures and trends in pricing, many translation agencies need to operate with limited budgets in order to stay competitive. As a result, if low cost and low quality translation work is performed, the mere fact that such work is revised does not guarantee high quality ... It therefore seems that a modification of the standard is required (DGT, 2009: 25).

However, some of the claimed adjustments to the European standard do not appear to have emerged in the recently published standard, as the harsh words from GALA reflect: “17100 simply ‘ports’ the original EN-15038 requirements to the ISO framework. As a result, 17100 does not contain the revisions needed to reflect the changes that have taken place in the language services industry in the past ten years” (GALA, 2014: 5). With respect to the quality of translated texts, ISO 17100:2015 does not address the issue of quality metrics. As Safar explains in Moravia's corporate blog, this “would be a very tall order [for an international standard], given the number of parties involved”; while justifiable, its absence may convey the impression that this standard is a missed opportunity.

Additionally, although ISO 17100:2015 appears to be more receptive to technological advances than EN 15038:2006, some may not consider it to be the definitive solution. ISO 17100:2015 provides definitions for *machine translation* (MT) and *post-edit* and includes the first element as one of the possible technologies and the second in the list of added value services. However, the standard clearly states that “[t]he use of raw output from machine translation plus post-editing is outside the scope of this International Standard” (ISO, 2015: 1). A more recent ISO standard, ISO 18587:2017 Translation services—Post-editing of machine translation output—Requirements (ISO, 2017), is intended to undertake the task of standardizing MT usage and, more specifically, of post-editing, an activity that will be addressed at greater length in section five of this paper. On reading the new standard it immediately becomes apparent that it shares a number of similarities with 17100, as can be seen, for example, in the different phases of the process—pre-production, production and post-production (ISO, 2017: 5-7), although with some substantial changes—or as occurs with the competences the post-editor is presumed to have (ISO, 2017: 7), which only show some slight modifications in the way they are defined. Nevertheless, it can be said that the new standard is an advance in terms of regulating post-editing as a possible (and necessary) element in the translation workflow: as reflected in the standard, the use of post-editing makes it possible to save costs, speed up delivery times and, in short, translate documents that would otherwise be impossible to translate (ISO, 2017: v).

With regard to the scope of application of the new ISO standard, as reflected in the document itself, it is applied to what is called *full post-editing*, in which the resulting product is “comparable to a product obtained by *human translation*” (ISO, 2017: 2; see also Hu and Cadwell, 2016: 347). Although an informative annex is devoted to the other type established by the standard, *light post-editing* (a process by which the result is “merely comprehensible text” [ISO, 2017: 2]), it is stressed that it is not the subject of the standard (ISO, 2017: 5, 10).

The fact that this standard was only recently published means that few citations can be found in the literature—Koponen and Salmi (2015: 119), Koponen (2016: 35), Muegge (2016: 22)—and all of them appeared when the standard was still under development; consequently, they take its draft version as the basis for study.

3. QUALITY

The previous paragraphs imply that quality is a milestone for translation. Additionally, the number of studies that have been conducted by translation scholars on the concept of the quality of translated texts supports this assumption. Since the early studies by such eminent scholars such as Newmark (1988, 1991) or House (1977, 1997), and together with the contributions of other equally significant authors—some of the most outstanding, to cite just a few, being the work carried out by Lauscher (2000), Martínez Melis and Hurtado Albir (2001), Mossop (2001), Williams (2004), Colina (2008, 2009), Angelelli (2009), Reiss (2014) or House (2015)—we have come a long way in defining what is meant by translation quality and what parameters and factors are involved when it comes to measuring quality.

Although the relevance of quality in translation is widely accepted, at this point it is necessary to add a clarification. Quality in translation as a process is necessary and can be identified and measured, according to, among others, Chesterman, for whom quality assurance in accordance with standards like those mentioned in the previous section is based “on the assumption that if the process is OK the resulting product will also be OK” (Chesterman, 2017: 12). The case of translation as a product, therefore, is another matter, since defining quality becomes a more complicated task (Bontrone and Fry, 2004: 27). The difficulty arises because, contrary to typical beliefs, quality as it is currently understood depends more on the translator’s technical knowledge than on language capabilities (Meersseman, 2004: 35-37). Additionally, what quality is depends on the particular perspective of each stakeholder (Doherty, 2017: 131; Jiménez-Crespo, 2017: 481). As Gouadec (2010: 274) notes,

the translator’s performance is “rotten/lousy,” “poor,” “satisfactory,” “good” or “excellent” (for instance), and people and businesses have any number of criteria to judge and justify their judgement, ranging from “punctuality” to “proactivity” through “compliance with the style guide” and “initiative in upgrading the terminology.”

Therefore, quality is not a monolithic variable that is either completely present in or absent from the text. As Gouadec remarks (2010: 273), three possible quality grades can be identified in connection with the translation market: translations can be rough-cut, fit-for-delivery or fit-for-broadcast products. Several contributions have explored quality

and translation and yielded optimistic insights—such as the work of Bonthron and Fry, who observe an evolution in LSPs moving from the “old triangular model of ‘quality/price/deadline—pick any two’” to the “consistent quality, value-added and time-to-market” model in which the three elements are indispensable (2004: 28). Bonthron and Fry’s opinion is that quality can be relativized by combining “cost and time to market, resource availability, and expertise and experience” (2004: 27). The general belief, however, is much more pessimistic: as stated by Gouadec, quality “nearly always comes second to economic considerations” (2010: 272), an opinion that is identical to Boucau’s (2005: 27) and that is seconded by DePalma *et al.*, who consider it to result from buyers having “less interest in less timely, more costly perfect output” (2013: 64). The findings of the DGT study suggest that the decrease in quality observed in recent years is partially the result of “unfair and fierce competition” in the translation market (DGT, 2009: 24). The study by PricewaterhouseCoopers LLP also reveals a customer preference for cost and speed over quality; surprisingly, however, the latter “is expected by clients and therefore not considered a differentiator” (PricewaterhouseCoopers LLP, 2012: 6). Additionally, according to a Europe-wide survey of 700 employers of translators, quality is the most important requirement sought in translators, followed by speed (Optimale, 2011, as cited in Gaspari *et al.*, 2015: 335). Nevertheless, this data must be taken with the reservations suggested by Pym *et al.* (2016: 34): on asking companies whether speed is the most relevant factor “when hiring translators, [...] they will all tell you that accuracy is far more important, since to say otherwise would mean signalling that the company produces translations with mistakes.”

4. TOOLS

Another key element of the language service industry is the usage of language technology, which is intimately related to computer science and general linguistics (DGT, 2009: 43). The DGT study estimates the investment in this technology at 10% of the total value of the translation and interpreting industry and reveals one of the reasons for this fairly important figure: LSPs operate primarily via the Internet, which makes it necessary for them to use “the most efficient productivity tools in order to meet speed, quality and cost requirements of customers with limited budgets” (DGT, 2009: 20). DePalma *et al.* (2013: 44-45) divided

translation software into four main categories: (1) translation tools (MT systems, translation memories and terminology management tools), (2) translation management systems, (3) authoring tools (editing environments, compliance checkers, controlled language verification tools, dictionaries and style guides, among others) and (4) engineering tools (which assist in testing the translation output).⁵

Recent studies allow interesting information to be obtained about the trends regarding the use of technology. The study conducted by Rico Pérez and García Aragón (2016: 34) reported that the two tools most commonly used by respondents of their survey are Computer-Assisted Translation (CAT) tools (85.7%) and quality control systems (48.1%). Schmitt (2015: 236) concluded that 25% of the survey respondents do not use any kind of CAT tools. The Language Industry Survey (EUATC, 2017: 13), on the other hand, noted that the use of CAT tools is much higher in companies than among independent translators (90% versus 77%), with a very interesting correlation: on dividing the companies up by turnover segments, it would seem that the segments with the highest turnovers are the ones with the highest percentage of use of CAT tools. A second trend is also observed: while online (mainly paid) CAT tools are widely accepted in companies (55%), the use of paid offline tools continues to be the most common option (71%). Independent translators, however, are largely reluctant to use online tools: only 22% said they use them. Although, as stated by Schmitt, it is significant that such figures are found “30 years after the introduction of personal computers to our workplaces” (2015: 235), it is no less notable that no great advances can be seen with respect to those from earlier market research (American Translators Association, as cited in PricewaterhouseCoopers LLP, 2012: 18, DGT, 2009: 152-153).

Little quantitative information is available about the most frequently used translation memories (TMs) within professional environments. In general, all the studies speak of the indisputable supremacy of SDL Trados (O'Brien and Moorkens, 2014: 135; Schmitt *et al.*, 2015: 31, Bundgaard *et al.*, 2016: 107), a situation which has remained unchanged since the publication of several market surveys, in some cases, over a decade ago (ACT, 2005: 50; SFO, as cited in DGT, 2009: 395; AITI, 2008; DGT, 2009: 51, 153). Of the more recent studies, the one that

⁵ An additional category mentioned by DePalma *et al.* is scheduling tools for interpreting, which has been omitted because it is beyond the scope of this paper.

provides the most detailed information is that conducted by Schmitt *et al.* (2015: 31), in which it can be seen that, of a total of 492 respondents, the most widely used TMs are the aforementioned SDL Trados (75%), followed by MemoQ (19%) and Wordfast (18%). Some way behind, with lower percentages, these are followed by Across, in-house TMs, Transit, Google Translator Toolkit, OmegaT, Déjà Vu and ONTRAM.

With regard to the use of translation memories by translators, PricewaterhouseCoopers LLP's study foresaw that TMs would be more frequently used, "as quality concerns around other technologies prevent widespread adoption," although the potential for significant growth remains (PricewaterhouseCoopers LLP, 2012: 18). This upward trend in TM usage was already suggested in a 2005 study conducted by the Localization Industry Standards Association (LISA) and later confirmed by the DGT study (2009: 50-51); nevertheless, as seen earlier, there is still a lot of work to be done. Moreover, a technological breach between the oldest and newest translation tools has emerged: while newer TMs run in web browsers, offer monthly subscription possibilities and are cloud based (Enríquez Raído, 2016: 979, 981; Doherty, 2016: 954), the providers of the TMs "first developed in the 1990s will rush to re-invent their solutions" (DePalma *et al.*, 2013: 65). Both classic and new TM suppliers must undertake additional modifications, such as support for newer media, compatibility with crowdsourced translation platforms (Garcia, 2015: 27) and the use of MT and TM tools as integrated packages (Schmitt, 2015: 249; Bywood *et al.*, 2017: 493), which, in contrast, entails possible issues regarding ethics, quality and security, as pointed out by Doherty (2016: 955, 958). Along with the use of proprietary tools for translation and language services, DGT's market study (2009: 43) observed an additional trend: it forecasted that non-commercial software (namely, FOLT, GlobalSight, Okapi, OmegaT, project-open and TinyTM) could play a particularly important role in the near future. Out of the six TMs and translation management systems mentioned in the DGT study, four are available to users at the time of the writing of this paper (GlobalSight, Okapi, project-open and OmegaT),⁶

⁶ As can be extracted from the appropriate corporate websites and download pages, the four mentioned software tools that are available are quite active in updating their open-source versions, and stable versions were released in 2017: Okapi launched its latest stable release (v. M33) in May 2017, whereas OmegaT's last stable version, 3.6.0 update 5, was released in March 2017. The most recent version of GlobalSight (8.7.3) was released in March 2017. For its part, project-open's Community edition (the only

with the last of them making a place for itself among the TMs that are more frequently used by translators (*vid. supra*). The two remaining tools are either discontinued (FOLT) or are no longer updated (TinyTM, whose only version, V0.1, was released in April 2008).

Some technology-related flaws have been revealed by researchers. On the one hand, technological skills should be better addressed to facilitate the hiring of more qualified translation professionals (DGT, 2009: 79; Gaspari *et al.*, 2015: 334). On the other hand, a slight but significant resistance to TM and MT systems and related tools has been observed (Pym, 2013: 500; Bundgaard *et al.*, 2016: 107; National Research Council Canada, 2016: 4); the use of technology within some organizations is sporadic and even optional, according to PricewaterhouseCoopers LLP (2012: 4, 6) and Lafeber (2012: 116, 119). This trend can be explained by both economic factors (these tools require large investment effort) and organizational factors (for TMs to be effective, large repositories of data are necessary).⁷ Despite these concerns, an LSP performing in a typical translation environment will scarcely be able to survive today without TMs. Even if an LSP wanted to avoid TMs, the market would force it to use them: although they were originally created for reasons of speed, customers soon realized that TMs could save money by having LSPs use them (Arevalillo Doval, 2012: 181; Moorkens *et al.*, 2016: 50). As De la Fuente and Palomares remark, “Translation Tools are not developed for translators, but for translation clients” (2011).⁸

5. AN EMERGING TREND IN THE HUMAN TRANSLATION WORKFLOW: POST-EDITING

Notwithstanding the revolution in the usage of linguistic technologies that has been naturally assumed by most translators and LSPs and therefore incorporated into the translation workflow, additional

open-source version, as both the Professional and Enterprise editions are commercial versions) released its latest version, 5.0.2.1.0, in May 2017.

⁷ Interestingly, similar reasons are given in the work by Lommel and DePalma (2016: 1) as obstacles hindering the adoption of MT by LSPs.

⁸ However, this “doesn’t mean translators cannot take advantage of [translation tools]” (De la Fuente and Palomares, 2011). Among the potential benefits for translators and LSPs, Arevalillo Doval (2012: 180-181) mentions the possibility of customization, enhanced productivity, and compensation for customer-imposed discounts for TM use.

advances have yet to increase their presence. According to the contributions by PricewaterhouseCoopers LLP (2012: 20) and DePalma *et al.* (2013: 49-51), some of the most relevant aspects of translation and localization in the near future include MT, hybrid translation or post-editing, community and crowdsourced translations, and transcreation. To sharpen the focus, the following analysis is limited to MT adoption in connection with human translation (HT) because of the crucial role that post-editing plays and will continue to play in professional translation environments.

Despite the increase in MT acceptance, its usage level can be considered relatively low as reported by market studies and research papers. The role of MT, as stated in a paper by Yanishevsky in 2009, was still “emerging,” whereas the study conducted by the DGT, from the same year, foresaw an increase in the demand for MT services (2009: 45, 52), an aspect confirmed by later research (Doherty *et al.*, 2013: 10; Doherty, 2016: 960; Lommel and DePalma, 2016: 6; Witzczak, 2016: 35). Only 10% of the participants in ACT’s study claimed to use MT (2005: 48), which is a figure that is almost identical to what Schmitt reported a decade later (2015: 236). A survey from 2010 shows that, out of 228 respondents, 28% “were using or planning to use MT” (SDL, 2010, as cited in Cadwell *et al.*, 2016: 225). However, a later survey of almost 500 respondents (Doherty *et al.*, 2013: 9) showed that 34% had already adopted MT, 35% were not using MT at the time but planned to do so in the near future, and 28% were neither using MT nor planning to do so. A survey by Gaspari *et al.* (2015: 345-346) revealed similar findings, also indicating a very low percentage of MT customization. One of the most recent studies found in the review conducted for this research (Lommel and DePalma, 2016: 7) does not offer figures that differ greatly: out of 530 respondents, 35% do not provide any post-editing services (MT + HT), and another 16% are preparing to adopt MT. Likewise, another tendency that is worth highlighting is also observed: the larger the LSP is, the more likely it is to offer post-editing services (2016: 1). Finally, the latest study carried out by the EUATC reports that 45% of companies and 33% of individual language professionals that took part in the survey are using “MT to some degree” (EUATC, 2017: 12). Nevertheless, as stated in one of the studies, “it is likely that linguists in their supply chains already use MT to improve their own productivity” (Lommel and DePalma, 2016: 7), and therefore perhaps the most reasonable thing to do would be to take these figures with due

caution, although they do provide us with a sufficiently illustrative overview.

Concerning the most frequently used MT systems, the survey by Doherty *et al.* (2013: 10) indicated that statistical MT is widely used (50% of MT adopters), followed by hybrid MT and rule-based MT systems⁹. As to the most frequently used MT programs, Systran and Google ranked in the two first positions, with nine and eight responses, respectively (DGT, 2009: 157). According to the study by Schmitt (2015: 236), conducted at a later date than that of the DGT, the most widely used software for MT is of the hybrid type, as Google Translate has an absolute predominance in the field, with 65%. It is followed by other tools and categories from his study, namely: In-house software, Other, Babylon, Systran Professional and Power Translator Pro. With regard to the modest ranking of Systran—as it reaches only 5% in Schmitt’s work—the author notes that it may be hidden within the second and third categories (In-house software and Other). Concerning the languages in which most post-editing services are requested, the study by Lommel and DePalma observed the existence of a very significant gap between the twenty most frequent languages in the translation sector (with a very high demand) and the others (2016: 2).

Notwithstanding the figures that have just been mentioned, it is necessary to point out that LSPs still do not generally consider MT alone to be an appropriate tool for simultaneously increasing productivity and achieving high-quality outputs:¹⁰ their view is that one indicator must be sacrificed (Doherty, 2016: 960).¹¹ Therefore, if a certain level of quality

⁹ For an overview of the different MT systems available, see Choudhury and McConnell (2013), Costa-jussá and Fonollosa (2015) and Lagarda *et al.* (2015).

¹⁰ An altogether different case is that of users, who do sometimes resort to MT without any kind of human intervention. As Doherty points out, some users settle for this solution, although the output is of a quality that can clearly be improved, because “it is simply better than nothing at all” (2016: 962).

¹¹ In this regard, this same author points out the possible advantages of resorting to MT—its output speed and volumes are unthinkable in HT or the fact that it makes it possible to deal with languages in which the translation would otherwise be unfeasible “due to perceived insufficient commercial viability and demand”—(Doherty, 2016: 962; see also Enríquez Raído, 2016: 972 and Bywood *et al.*, 2017: 494). Yet, he also displays a questioning attitude towards one of the possible consequences of repeated and free access to MT: the loss of quality. Thus, he claims that, in the case of “relatively easy-to-use and online MT systems that do not readily show users where their translations have come from and how good the quality is,” access to free translation services means that

is desired in a translation process, “its output must be reviewed by a qualified translator” (PricewaterhouseCoopers LLP, 2012: 19), which, according to O’Brien and Moorkens (2014: 131) and Moorkens and O’Brien (2015: 75), results in publishable-level quality texts (also known as *MT for dissemination*) as opposed to unedited MT output, which primarily focuses on the information in the source content (or *MT for assimilation*). PricewaterhouseCoopers LLP’s market study also observed that because of the time-consuming task of editing, MT is primarily devoted to large volume translation, resulting in accuracy rates of 75% to 85% (2012: 19-20).¹² Therefore, MT is not deemed sufficiently mature to produce accurate and reliable outcomes. Nevertheless, MT is viewed as an adequate process for informal translation needs (Hartley, 2009: 121, Schmitt, 2015: 239-240) and specific domains (O’Brien and Moorkens, 2014: 131) because of (1) technological advances ensuring more accurate and better-quality software tools and (2) its relatively low cost—many free MT tools are available (Garcia, 2015: 20; Lommel and DePalma, 2016: 7; EUACT, 2017: 12), with an estimated usage of at least 75% of Internet users (Reid, 2013) and 33% of the MT adopters from the almost 500 translation and localization vendors and buyers that participated in an international survey conducted by GALA (Doherty *et al.*, 2013: 10).¹³

“the presence of MT becomes much more commonplace and translation ergo becomes less valued and visible” (2016: 963). In this regard, Pym also thinks that the “potentially virtuous circle becomes a vicious one” when, by resorting to free MT engines, “uninformed users publish unedited electronic translations,” which represents an additional risk: that of feeding these incorrect translations back into the databases from which statistics are produced (Pym, 2013: 489).

¹² Perhaps surprisingly, these figures are quite similar to those provided in two studies of the cognitive effort of MT output by translators. O’Brien (2007: 196) suggested that MT matches “will take as much time and cognitive effort as a Fuzzy Match lying between the values of 80% and 90%.” A more recent study by Guerberof Arenas (2012: 90) claimed that the processing speed for 85%-94% fuzzy matches is very similar to the speed needed for MT segment edition.

¹³ An even more stunning fact is noted by Gaspari *et al.* (2015: 346): out of 190 valid responses from LSPs, freelancers, translator trainers and academics, a “vast majority” claimed to use free MT systems. The results of the study conducted by the EUATC (2017: 12), however, run in a different direction: of the 866 respondents, about 15% state that they use free MT systems. Yet there is also a particularly interesting piece of data: in contrast to what is usually claimed, according to the study their usage is as frequent among independent translators as in companies.

Notably, because translation quality levels may vary depending on the specific purposes, MT will not replace HT, as Groves (2008: 11), Reid (2013), Koponen (2016: 132) and (with some nuances) Pym (2013: 487) and Bywood *et al.* (2017: 493) observed, but rather will work along with it. The primary outcome is a process known as *post-editing*, “by which language professionals edit machine translation outputs to create human-quality translations” (Marcu, personal communication, 4 November 2016). One of its essential differences with respect to human translation, as pointed out in standard ISO 18587:2017, lies in the fact that it “involves three texts: the source text, the MT output and the final target text” (ISO, 2017: 5).

The presence and relevance of post-editing are intensifying, and its acceptance is growing, according to some studies: 57% of the respondents in the study by Cadwell *et al.* “said they would be more likely to adopt MT with post-editing” (2016: 225). This trend appears to be very common nowadays, since, as they claim, “[i]n general, MT output is rarely published without some kind of post-editing” (Cadwell *et al.*, 2016: 225). This coincides with the more recent study by the EUATC, which states that “[i]n general, the final [MT] output is the traditional human quality after full editing” (2017: 12).

Productivity, “the main concern of [the] commercial use of post-editing machine translation” (Koehn and Germann, 2014: 45), is crucial for the relevance of post-editing, as many studies have demonstrated. For example, a 2009 study revealed that post-editing output doubled HT and was 45% cheaper (Common Sense Advisory, as cited in PricewaterhouseCoopers LLP, 2012: 19). Moreover, a well-known study by Plitt and Masselot (2010: 10) reported having twelve translators perform both HT and post-editing tasks on texts translated from English into French, German, Italian and Spanish. Their findings were quite promising: all translators worked faster when post-editing than when translating from scratch—although the improvement in speed varied from 20% to 131% faster. The improvement was more noticeable in slower translators because, as the authors argue, fast translators “have already optimized their way of working” (2010: 11).¹⁴ This study presents an even more surprising finding: when performing QA on both

¹⁴ Nevertheless, the figures regarding improvements in work productivity of Plitt and Masselot must be taken with a great deal of caution, as pointed out by Pym (2013: 499-500).

post-edited and translated texts, the QA team was unable to decipher the circumstances under which each text had been produced (Plitt and Masselot, 2010: 10).¹⁵

Quality is also the central focus of many studies addressing post-editing, with nearly unanimous results: although some contributions have noted that texts translated with *traditional* computer-aided translation tools have better quality than post-edited texts (Skadiņš *et al.*, 2011: 39; Morado Vázquez, 2012: 245-250), other studies have observed an increase in the quality of post-editing output relative to HT output. This observation was made, for example, in the contributions by Fiederer and O'Brien (2009: 62-64), Green *et al.* (2013: 446) and Guerberof Arenas (2014: 177-182). However, it is necessary to consider that the results of post-editing in terms of both productivity and the quality of the outcome will directly depend on the quality of the raw MT material, as some scholars have noted (Garcia, 2011: 221-222; Karamanis *et al.*, 2011: 36; Koehn and Germann, 2014: 44; O'Brien and Moorkens, 2014: 133; Koponen, 2016: 132; Temizöz, 2016: 8).

As Reid (2013) noted, post-editing replaces the translation stage and therefore should not be considered simply a light review. However, post-editing also implies reviewing, "which not all translators like as a task" (O'Brien and Moorkens, 2014: 132). One of the reasons that post-editing is regarded as an unpleasant duty is that MT post-editing is very different from reviewing HT output: not only is it important to be proactive and to have knowledge of typical MT behavior (cf. Vasconcellos and León, 1988, as cited in Koby, 2001: 16; see also the "Professionalism" section in the new ISO standard [ISO, 2017: 8]), but the nature of the mistakes to be reviewed in MT output are also challenging for post-editors. In this vein, as O'Brien and Moorkens (2014: 132) affirmed,

¹⁵ Although only two studies addressing post-editing productivity are mentioned, this does not imply that the research field has not been fruitful. On the contrary, much concern has been devoted to measuring how productive the post-editing of MT output is compared with HT output. See, for example, the mixed results of Gaspari *et al.* (2014: 66-67), who found that post-editing was the faster option in two out of four translation directions, or the work of Krings (2001: 277-285), whose partially disappointing results Tatsumi (2010: 18) attributed to the not fully developed state of MT systems when the experiment was performed in 1989-1990. Studies reporting a productivity gain in post-editing tasks compared with HT output include the works of O'Brien (2006: 172-173), Federico *et al.* (2012: 6-8), Guerberof Arenas (2012: 93-97), Morado Vázquez *et al.* (2013: 255) and Sojnoczky (2013), among others.

[h]uman translation errors [as compared to MT errors] tend to come in a different form. For example, it's not uncommon for human translation to be inconsistent, whereas MT is generally consistent; it's also not uncommon for human translation to contain typos, but MT output does not suffer from this. The differences in the nature of errors in the two types of MT output leads to a dislike of the post-editing task.

Moreover, a balance between what to edit and what to retain must be achieved: under- and over-editing texts, with too many preferential changes (a trend that O'Brien [2006: 157, 180] observed in a study in which the incidence of cutting and pasting in post-editing was significantly low), will prevent MT post-editing from being productive, as Groves (2008: 16) noted.

Today, MT can be integrated into a computer-aided translation workflow (Guerberof Arenas *et al.*, 2012: 215-216; O'Brien and Moorkens, 2014: 132; Cadwell *et al.*, 2016: 224; Bundgaard *et al.*, 2016: 107; Bywood *et al.*, 2017: 503), which entails a series of improvements as regards the usability of the tools and achieving a technology that is "more empowering for end-users" (Moorkens, 2017: 471). This capability has made the use and visibility of MT more evident than before in a countless number of domains, not only of a technical nature but also in more creative texts and those from the field of marketing (Bywood *et al.*, 2017: 494). Furthermore, as Guerberof Arenas (2013: 75) and Doherty (2016: 963) observed, the invisibility of human translators is also increasing. Some studies have cited concerns related to MT adoption in HT workflows. Among others, Karamanis *et al.* (2011: 47) and Bundgaard *et al.* (2016: 113-114) mention the example of translators complaining about no longer being able to rely on the concordance feature of the integrated tool, which "can increase translation effort" (Karamanis *et al.*, 2011: 47) or considering MT to be a "black box" (2011: 45). Some researchers also observed that MT has been introduced too rigidly into a workflow whose load is sometimes divided among more translators than usual because MT-involved tasks are often regarded as "unpleasant" work (Karamanis *et al.*, 2011: 46; see also Cadwell *et al.*, 2016: 225 and Moorkens, 2017: 469). Guerberof Arenas (2013: 77, 92) noted that repetitive work can be exhausting for post-editors, which would negatively affect productivity, and echoed the general complaint that post-editors typically feel underpaid in MT matches. Moorkens and O'Brien (2015: 79) identify the same complaints

from translators and add the following: “lack of creativity, [...] limited opportunity to create quality, poor quality source text rendering MT unusable, and poor term management.” In a study about post-editing conducted with students on a postgraduate translation course, Witczak reported that some of them complained about “the lack of choice that [post-editing] introduced” (2016: 48).¹⁶ O’Brien and Moorkens, on the other hand, reported that translators often suggest corrective measures, such as better management of meta-data in post-editing tools. Additionally, a suggested improvement that would ease the work of post-editors would involve the propagation of corrections within the same text (O’Brien and Moorkens, 2014: 165; Alabau *et al.*, 2016: 102; Ortiz-Boix, 2016: 306). Nevertheless, translators and post-editors are especially critical to TM systems (Schmitt, 2015: 253). In this respect, O’Brien and Moorkens claim that it is “somewhat lamentable that [this situation continues] after so many decades of use of these tools” (2014: 137).

However, the positive effects of post-editing are also evident. In addition to a potential increase in productivity and quality, as mentioned above, and speed, as markets can be reached faster (Guerberof Arenas, 2013: 87, Doherty, 2016: 959-960), scholars have identified advantages such as consistency, “maintaining an appropriate quality level in bulk localization projects” (Karamanis *et al.*, 2011: 40), and facilitating the translation of repetitions (Guerberof Arenas, 2013: 84).

In any case, and over and above the drawbacks of post-editing, it is obvious that post-editing skills have become a necessity. Not only is there now an ISO standard that sets out the essential procedures and requisites (see, for example, the section “Professionalism” [ISO, 2017: 8], but it is also considered to be a very important aspect by LSPs. An example of this can be found in one finding from the study by the EUATC (2017: 18), according to which 40% of the companies that participated in the study rate knowledge of post-editing skills as “good to have.” Even more relevant is a piece of data concerning trends and concerns for the future of the industry in the same study (2017: 24): CAT/Automation is the fourth reason for concern for companies, the first

¹⁶ One outstanding fact is that many of the reasons why translators are dissatisfied in the post-editing process appear to reproduce the same complaints that the use of translation memories aroused over a decade ago (Austermühl, 2006, as cited in De la Cova, 2016: 255; Cadwell *et al.*, 2016: 224).

of them being MT, which is becoming increasingly more commonly understood as being associated with human translation in general and post-editing in particular, as pointed out in a number of studies (Cadwell *et al.*, 2016: 224; DePalma *et al.*, 2016: 14; Doherty, 2016: 953, 962; Koponen, 2016: 132; Moorkens and Way, 2016: 142; Moorkens, 2017: 470).

It is obvious that it is necessary to provide suitable training in the use of tools that allow post-editing to be successfully accomplished. For example, in the work by Schmitt *et al.* (2015: 39), the authors point out that, when asked about which elements should be granted more importance in translators' academic training, the most common answer (given by almost 50% of the 2,461 respondents) was "Computer and CAT tools." In a highly relevant study conducted in the year 2002, O'Brien advocated the teaching of post-editing to trainee translators and stressed the fact that "few trainee translators receive training in machine translation postediting" (2002: 99). The situation does not appear to have changed much since then: in an article about MT competences, Gaspari *et al.* (2015: 333) claimed that "the largely informal relationship between industry and academic translator trainers often creates a distance between teaching and professional practice that needs to be addressed in contemporary translation training programmes." Other studies uphold this opinion in one way or another and highlight the advisability of teaching trainee translators to use technological tools (Doherty, 2016: 954, 963) or, more specifically, including MT in the teaching of translation (Pym, 2013: 497) or post-editing as an integrated element of human translation (Sánchez Gijón, 2016: 161). In this last assumption, even Witczak considers the need to agree on how to teach post-editing and proposes these two options: "either combined with TMs and other tools utilised in a CAT programme, such as SDL Trados, or as a standalone [post-editing] course which would allow to diversify the exercises and make students more comfortable with MT" (2016: 49).

6. CONCLUSIONS

In this article, I have reviewed the main aspects characterizing the profession of translators today and in the near future. By briefly analyzing the market of translation services in terms of size, pricing and the languages involved, this study concludes that the deeply fragmented translation market is undoubtedly and unsurprisingly dominated by

English. Pricing is one of the main drawbacks of the market, with a downward trend that DePalma *et al.* (2013: 9) originally noticed in 2008 and that still continues today.

The study of what level of quality is expected in a translation revealed interesting conclusions: first, quality, as is currently understood, is a movable concept that directly depends on customer expectations; second, employers prefer quality over speed, whereas customer preference is exactly the reverse, although quality is sometimes simply expected *de facto* by customers. The interest in and relevance of quality in translation have materialized in the rise of translation standards—the latest additions of which have been ISO 17100:2015 and ISO 18587:2017. The first of them, despite meeting with criticism, better delimits roles for other stakeholders in the translation process and pays more attention to terminology management. The more recent incorporation, however, although focused on a single type of post-editing, makes it possible to lay the foundations of a trend that is becoming increasingly more frequent in professional translation.

Insights into translation technology tools hint at the near future of translation: while translation memories are widely used and accepted (with SDL Trados ranking at the top of all surveys), another technology resource, machine translation, is not new and cannot be overlooked. Likewise, and as pointed out by a large number of authors, the boundaries between translation memories and machine translation (and between human translation and automated translation) are becoming increasingly less clear. Clearly, an effective approach to machine translation and, more specifically, to the post-editing of machine translation output will be a safe bet for language service providers and freelancers (Doherty, 2016: 960, 962): an increasing demand for high-quality post-edited texts is expected (Doherty *et al.*, 2013: 10; O'Brien and Moorkens, 2014: 131; Lommel and DePalma, 2016: 14), and the further development of machine translation systems will affect post-editing.

In this vein, automatic post-editing, which currently has a low incidence rate (Gaspari *et al.*, 2015: 348), will likely have a “major impact in the following years” (Guerberof Arenas *et al.*, 2012: 213). The use of automatic post-editing, however, does not mean that there will be less work for translators (Moorkens, 2017: 466). On the contrary: because of the new type of cost optimization workflow, web and mobile content producers will need “to generate fast and low-cost translations”

(Choudhury and McConnell, 2013: 43), and, as stated by Pym *et al.* (2014: 102), the “availability of free online translation memories and machine translation services, together with [crowdsourcing], means that generalized translating can be expected to expand, whether we like it or not.”

If the situation truly becomes dire, let us recall that, as Kelly mentioned in 2012 in her speech at the Authors@Google talk series, only 0.00000067% of all the digitized information created every day is professionally translated. In other words, there is still room to grow, and translators should be prepared for such growth. As stated by Doherty, “the need for technological competencies for professional translators to remain on top, if not ahead, of change has never been more evident than it is now” (2016: 962). In short, it is necessary to have a good training, to have a more than adequate command of the tools and to be receptive to machine translation: although it is a technology that can be improved, vouching for it in the future seems to be a safe bet. The rising demand for translations, with increasingly shorter deadlines and more competitive prices, together with the development of translation technologies, will “turn most translators into post-editors one day, perhaps soon” (Pym, 2013: 488). All of us, translators, teachers and the other stakeholders in the translation industry, have been warned. And it is not a threat.

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