LUBLIN STUDIES IN MODERN LANGUAGES AND LITERATURE
Maria Curie-Sklodowska University Press
Vol 48, No 3 (2024)
E-ISSN 2450-4580

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DOI:10.17951/lsmll.2024.48.3.25-39

The Future of the Translation Profession in the Era of Artificial Intelligence. Survey Results from Polish Translators, Translation Trainers, and Students of Translation

ABTRACT
Technological advancements in computer science, particularly in machine translation (MT), have progressively transformed the translation profession. Recent developments in MT, such as neural machine translation tools and AI-powered chatbots, have improved translation speed and accuracy, shifting the translator's role more toward that of an editor or proofreader and expanding the scope of translator competencies. However, with the growing role of automated systems, professional translators have expressed concerns about the future of their profession. This paper aims to highlight the views of Polish professional translators, students of translation, translation teachers, and other language professionals on this topic. The findings presented are part of a broader international pilot study on perceptions of the future of the translation profession in the era of artificial intelligence. The analysis reveals that while the prevailing opinion is that human translators will always be necessary, the increasing influence of AI-powered tools cannot be underestimated.

KEYWORDS
artificial intelligence; neural machine translation; professional translation; translation studies

1. Introduction

"The mechanization of translation has been one of humanity's oldest dreams. In the twentieth century, it became a reality, in the form of computer programs capable of translating a wide variety of texts from one natural language into another" (Hutchins & Somers, 1992, p. 1). Indeed, machine translation (MT) was one of the first applications envisioned for computers (Russel & Norvig, 2010 p. 860). Initially seen as a "decoding problem, belonging to the area of cryptography" (see Weaver, 1949)[1], computer-performed translation was soon a research topic of many research teams, both in the United States and elsewhere in the world. The first report on the feasibility of MT was published as soon as 1951 (see e.g. Bar-Hillel, 1951). Throughout the decades that followed, MT research went through

[1] The document, seen by Weaver as a 'memorandum', is widely regarded as the work laying foundations for future developments in MT.

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The journal is financed by the Institute of Modern Languages and Literatures of Maria Curie-Sklodowska University.

times of rapid development and years of stagnation. Yet, the research has had a profound impact on subsequent MT systems, computational linguistics, and artificial intelligence (Hutchins & Somers, 1992, p. 6). Back in 1992, the authors noted that "For many observers of MT development, is has been the conventional wisdom that the most likely source of techniques for improving MT quality is the research on natural language processing within the context of Artificial Intelligence (AI)" (p. 313)[2].

Indeed, a significant breakthrough came with the introduction of neural machine translation (NMT) (Poibeau, 2017, p. 181–196). Advanced machine learning algorithms have provided increased quality compared to previous solutions. For example, deep learning systems based on artificial neural networks and vast textual databases implemented by Google in 2016, reportedly cut the error rate by 60% (Castelvecchi, 2016; Wu, 2016). This event was a pivotal moment for the translation profession, transforming it to a considerable extent (rather than rendering translators redundant). Not only did NMT become part of the translators' workbench, but it also increased the need for post-editing tasks (also called machine translation post-editing, or MTPE) (see Moorkens, 2022).

Yet, it was the release of ChatGPT in November 2022 that reignited the public imagination regarding the possibilities of the new technology and its novel applications. Based on large language models (LLMs) and an example of generative AI, or GenAI, the chatbot can perform a variety of language-related tasks, including translation. This is a result of the very nature of LLMs. According to Ray,

> LLMs are AI models that are trained on vast amounts of text data in order to learn how to understand and generate human language. These models use a combination of neural networks and machine learning algorithms to process language in a way that is similar to the way humans do. LLMs have revolutionised NLP [natural language processing] by enabling computers to understand and generate human language more accurately and effectively than ever before. (Ray, 2023, pp. 133–134; addition mine)

All LLMs on the market mention translation as one of their key capabilities (Ray, 2023, p. 134). Once again, a new technology has posed a threat to the translation profession. However, Pym (2024) suggests that any technological development has been successfully embraced by the translation profession, allowing the processing of ever growing number of translations. Also, none has led to job losses. As the researcher puts it,

[2] It needs to be noted that in their work Hutchins and Somers refer to only "semantics-oriented" approach, stemming from the fact that any MT system must be able to 'understand' the meanings of texts, since "translation is concerned primarily with conveying the content of 'meaning' of a text in one language into a text in another language […]" (Hutchins & Somers, 1992, p. 314).

> The translation industry survived neural machine translation in 2016, so why should it not also survive generative AI? The hopeful argument here is that, as long as the outputs are not always optimal, post-editing will be needed, and in order to post-edit you have to know how to translate, so it can be business as usual for all of us. (Pym, 2024)

The technology comes with some inherent limitations, and it is still a matter of debate what the future of the profession will be (see Gordon, 2024, p. 9). Admittedly, changes in the translation profession were envisioned as early as 1952. Bar-Hillel emphasised that fully automatic MT was not feasible (at the time) as there was "no method, for the time being, by which the machine would eliminate semantical ambiguities" (Bar-Hillel, 1952, p. 229). Accordingly,

> [f]or those targets in which high accuracy is a *conditio sine qua non*, pure MT has to be given up in favor of a mixed MT, i.e., a translation process in which a human brain intervenes. […] the human partner will have to be placed either at the beginning of the translation process or the end, perhaps at both, but preferably not somewhere in the midst of it, according to a well-known principle of electronic computer handling. (Bar-Hillel, 1952, p. 230)

Bar-Hillel directly outlines the roles of the pre-editor and the post-editor, detailing their tasks on the following pages of his seminal paper. In the era of AI translation, the latter role is seen as one of great significance, particularly in tasks requiring human-quality translation. However, according to Moorkens et al. (2024), "[p]redictions that 'post-editing will dominate translation production' (Lommel & DePalma 2016: 20) do not seem to have materialised in all segments of the market" (p. 2). One survey shows that 46.5% of translators taking part in the study never accept MTPE jobs, mentioning little or no satisfaction (including intellectual and financial ones) from performing the task and the time needed to complete a post-editing assignment as the main reasons (Farrell, 2023, pp. 54–55). There is, however, a 4% year-to-year growth in the number of post-editing assignments commissioned to translation providers (ELIS, 2024; data compared with study results from 2023).

Despite the above-mentioned assertions, the future of the translation profession, as reported/ perceived by the community in question, does not seem to be certain. According to a 2024 survey by the Society of Authors, the UK's largest trade union for writers, illustrators, and translators, 37% of translator respondents have used GenAI in their work, with 8% claiming that they had been asked to do so by the publisher or the commissioning organisation. The majority of translators (77%) think that AI will negatively impact future income from their creative work, with 36% pointing out that they have already lost work due to GenAI (SoA, 2024).

The European Language Industry Survey 2024 reveals a negative sentiment in the translation industry, despite a positive outlook noted in 2023 (ELIS, 2023, 2024). The report notes that "At current pace, it is expected that some form of

MT or AI will be used in more than 50% of professional translations by 2025" (ELIS, 2024). The proponents of the technology emphasise that AI translation will increase efficiency, will be a source of additional editing work, and will be a motivator for clients to choose human translation due to bad AI experiences. On the other hand, the opponents raise issues of the indiscriminate use of the technology, which may lead to quality issues, a fear that widespread acceptance by the general public [of the technology] will increase acceptance of machine translation – with or without post-editing – as a valid replacement for human translation, arguing that it will result in the reduction of appreciation, and therefore also the financial compensation, for human language work (ELIS, 2024, pp. 41–42).

Another survey conducted by the French Society of Translators (fr. Société française des traducteurs) in November and December 2023 prompted the Steering Committee of the Society to issue a Statement in which they emphasise that translators rank "competition from AI as their main concern" and list the major (negative) impacts of AI on the translation profession, including: the disappearance of the translators' role as experts in language and intercultural communication, the poor remuneration paid for post-editing tasks, which by their nature are time-consuming and non-intellectually stimulating, and the fact that machine-produced texts and speeches never attain a professional level of quality (SFT, 2024). The Statement concludes as follows:

> The Steering Committee of the Société française des traducteurs is expressing the significant concerns of the professions it represents to ensure that human beings remain central to this new technology. They aim to prevent the unsupervised development of generative AI solutions for translation and interpreting from diminishing the richness of language and critical thinking, which are fundamental to communication and our humanity.

Voices of concern have also been expressed by, for example the European Council of Literary Translators (CEATL, 2024)[3].

The changing landscape of the translation profession prompted an international group of researchers to study the perception of the role that AI plays in translation and the level of knowledge/ competence regarding the current affordances of GenAI (from the perspective of a translation task). The results of the study will be used to develop methods and draft materials that will aid modern translator education. In particular, this paper discusses the results of a questionnaire obtained from Polish professional translators, university teachers (translation trainers), and university students attending translation courses. The following paragraphs focus on the methodology adopted (Section 2), present the results with some

[3] See also CEATL survey reports on the use of AI by individual literary translators: https://www.ceatl.eu/wp-content/uploads/2024/04/CEATL_AI_survey_for_members.pdf

preliminary comments (Section 3), discuss the results obtained, putting them in a wider context (Section 4), and conclude with some guidelines concerning the new educational pathways that need to be followed (Section 5).

It is hoped that the results of the pilot survey will shed light on the current concerns of translation professionals in Poland and will facilitate the development of more effective and relevant curricula that address the evolving needs and challenges faced by translators in the era of AI-powered technologies.

2. Methodology

As mentioned above, the study aims to explore the views of the existing and emerging AI-powered translation tools on the translation profession, and to measure the level of knowledge/ competence regarding the capabilities of GenAI tools.

An international group of researchers designed a questionnaire, whose identical (localised) copies were distributed among the study participants (professional translators, translation trainers, and translation students) in Croatia, Italy, Poland, Romania, Slovenia, and Spain. The study was conducted in January and February 2024, with a total of 241 responses gathered. Full results are currently being processed for further analysis. The present paper discusses partial results gathered from participants registered on Polish professional translators' forums or studying/ working at Polish universities. A total of 40 participants took part in the survey, 21 of whom were professional translators, 12 were students of translation, 3 worked as teachers of translation, while 4 survey participants did not indicate their profession[4]. Table 1 summarises the working languages indicated by the respondents.

Table 1. Working languages of study participants

Language	No. of respondents
English	38
Polish	34
German	8
French	5
Russian	5
Spanish	2
Portuguese	1
Italian	1
Latin	1

[4] It is assumed that they were the representatives of the target groups, since the survey was distributed among the groups indicated.

The study aimed at both (1) the evaluation of the expertise of study participants in the application of LLM-based systems in a specific task related to translation activity, and (2) the elicitation of opinions on the future of the translation profession in the era of AI-powered tools. The questionnaire included the following questions:

(1) Evaluation of AI-related knowledge/ competence.
   1. Do you use any AI-powered chatbots (such as ChatGPT, Bard[5], etc.)? If you do, do you have a premium account?
   2. What AI-powered tools do you use in your studies/work?
   3. Do you use AI-powered tools such as ChatGPT in translation?
   4. Do you use AI-powered tools such as ChatGPT in terminology extraction?
   5. Do you use AI-powered tools such as ChatGPT in text fine-tuning for register?
   6. Do you use AI-powered tools such as ChatGPT in error correction?
   7. Is the use of AI in your work routine a breach of confidentiality?
   8. Does the use of AI-powered tools breach (in any way) your work ethics?

(2) Opinion on the future of the translation profession.
   9. Which statement is more viable in your opinion:
   – Human translators will always be essential.
   – I foresee a future where AI can fully replace human translators.
   10. Please explain your point of view on the future of the translation profession.

Question 1 aimed to elicit yes/no answers. Question 2 included a checkbox set (answers: ChatGPT, Bing Chat[6], Bard, Copilot, Other (an open-ended response option). Questions 3-6 were a multiple-choice set (answers: 'This is not possible'; 'I do not know how to do it'; 'I do it rarely'; 'I do it occasionally'; 'I do it often'; 'I do it on a daily basis'). Questions 7 and 8 aimed to gather yes/ no/ I do not know answers. Question 9 provided three options as answers: 'Human translators will always be essential'; 'I foresee a future where AI can fully replace human translators'; 'I have no opinion'; or 'Other' (an open-ended response option). Question 10 was an open-ended question.

The answers were gathered in a spreadsheet, with numerical data processed for quantitative summary and visualisation. The open-ended responses were analysed manually. The responses to Question 10 were also analysed manually, then rephrased, and arranged according to the target group analysed (here: professional translators and students of translation[7]).

[5] Now known as Google Gemini.

[6] Now known as Microsoft Copilot.

[7] The decision to include the answers of the two participant groups only was linked to the need of focussing on the respondents who are or will soon be members of the profession, and in this way

3. Results

(1) Evaluation of AI-related knowledge/ competence

Of all study participants, 50% use some kind of AI-powered chatbot (47.5% of professional translators and 58% of translation students). Additionally, 15% of the users taking part in the study have a premium account of the tool. The majority (70%) of the respondents who use an AI-chatbot use only one tool, followed by those who use two (25%), and three tools (5%). ChatGPT is the tool used by all those admitting to using an AI-powered chatbot, followed by 'other' tools at 25%, and Bard at 5%.

The following part of the study focussed on the respondents' self-assessment as regards their knowledge/ competence in the use of generative AI in translation or translation-related tasks (terminology extraction, register fine-tuning or error correction) and have been collated into one data set (Figure 1), a detailed discussion of which is presented below.

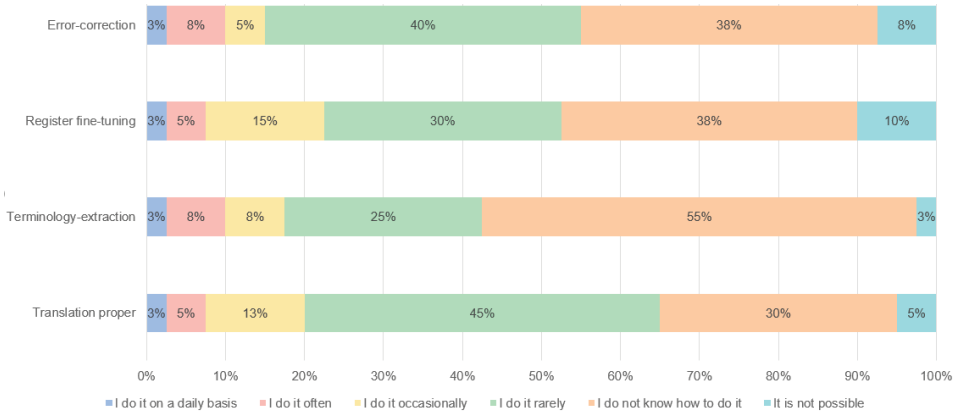

Figure 1: Summary of the answers linked to the responders knowledge of/ competence in using GenAI tools in translation and translation-related tasks (Questions 3–6)

The data presented in Figure 1 reveal that the majority of respondents use GenAI tools in the translation proper (66%), followed by those who use the technology in error correction (56%), register fine-tuning (53%), and terminology extraction (44%). Quite surprisingly, as regards terminology extraction, the majority of respondents (58%) lack the knowledge or skills to perform such activity. Overall, the competence gap is quite extensive, ranging from 35% to 58% across all tasks. Only 3% of all respondents use GenAI tools in all the translation and translation-related tasks on a daily basis. Of all those who use GenAI in the translation proper, 68% use the technology rarely, which may indicate a lack of trust in the tools.

obtain data that were aligned to the overarching aim of the entire international study.

In relation to the question of whether the use of AI in the work routine is a breach of confidentiality (Question 7), 30% of respondents have no attitude or knowledge on the matter, followed by those who confirm that it is in breach of confidentiality (25%), and those who overtly state it is not an issue (25%). Another 20% did not answer the survey question.

Regarding the question related to work ethics (Question 8), 55% of respondents claim that the use of AI-powered tools does not breach their work ethics, followed by those who claim that it does (22.5%) or do not know whether it does or does not (22.5%).

(2) Opinion on the future of the translation profession

The study revealed that 52% of all study participants foresee a future where human translators will always be essential, while 43% of the respondents think that in the future AI can fully replace human translators. The remaining survey participants have 'no opinion' (5%), with one overtly claiming that the future in this respect is difficult to predict (see Figure 2). The percentage breakdown for professional translators and students of translation is presented in Figure 3 and 4.

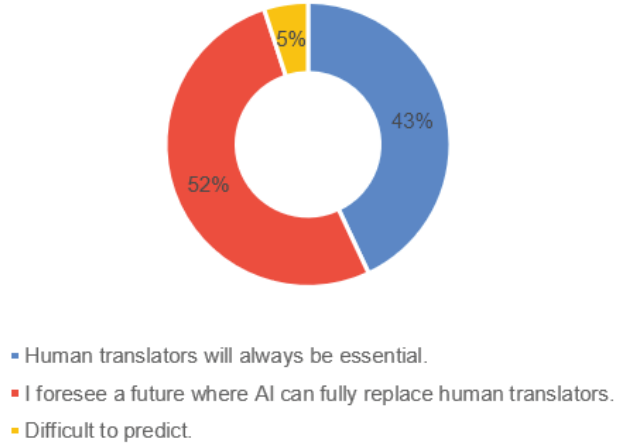

Figure 2: A percentage breakdown of the study participants' opinion on the future of the translation profession in the era of AI

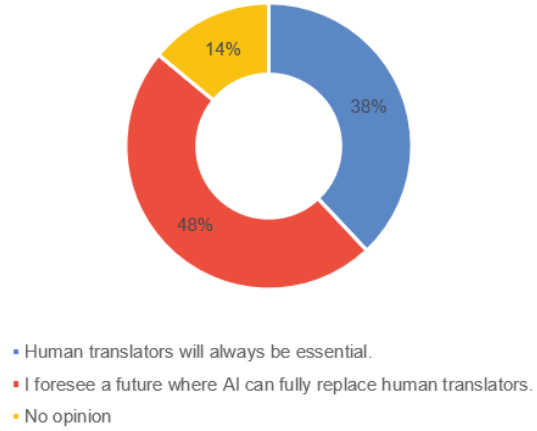

Figure 3: A percentage breakdown of the professional translators' opinion on the future of the translation profession in the era of AI

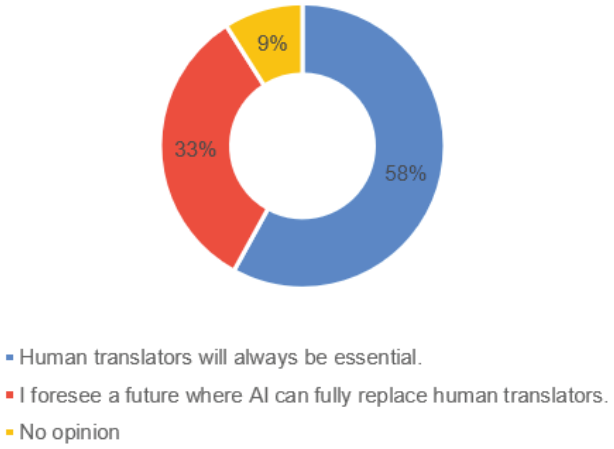

Figure 4: A percentage breakdown of translation students' opinion on the future of the translation profession in the era of AI

The data reveal that almost half of all translators taking part in the study predict the future in which AI can fully replace human translators. Conversely, the majority of students think that human translators will always be indispensable. This may stem from the greater awareness of professional translators of the capabilities of modern translation tools, and a potential knowledge gap regarding the technology in students (43% of the students who think that human translators will always be essential have not used any GenAI tool).

The qualitative part of the survey yielded valuable data, with more than 82% of study participants providing additional explanation as to the future of the profession in the era of AI-powered tools. The summary of the answers is presented below, while the discussion of the results is presented in the following section.

(A) I foresee a future where AI can fully replace human translators (professional translators)
   1. Although AI can fully replace HT, sworn translator's verification (and stamp) will always be necessary.
   2. Highly specialised AI tools will gradually phase out human translators.
   3. "I have worked as a translator for almost 20 years and during this time I have seen enormous progress in the field. Translations made by AI-powered tools are almost perfect today, even into Polish, which seemed impossible only a couple of years ago. Given the speed of the progress, I think we will soon all jobless".
   4. The job of the translator will be more of supervising the effects of machine/AI translation than the actual translation.
   5. AI will replace HT in spite of the fact that it is not fit for some types of translations, for example ones requiring creativity (fiction books, poems, specialist texts, computer games, movie/series dialogues).
   6. AI translation is cheaper.

(B) I foresee a future where AI can fully replace human translators (translation students)
   7. In more or less 10 years the profession will be gone or marginal, maybe used only under certain circumstances/for certain texts that cannot be shared with any external servers (or maybe new AI tools will come with data protection safeguards).
   8. AI can replace HT because the technology has progressed a great deal. Nowadays AI can translate not only written, but also spoken texts. Even if today the translations come with mistakes, in 15–20 years this will no longer be the case.
   9. The capabilities of AI translation apps and web services should not be underestimated.
   10. The development of AI will only be expansive. AI translation is already good enough for scientific texts, and it will learn how to [properly] translate literary texts.

(C) Human translators (HT) will always be essential (professional translators)
   11. Humans have a unique ability to translate thoughts, notions, emotions and hidden messages. That cannot be done by AI.
   12. HT are irreplaceable but AI will be a very useful tool and powerful tool in this profession.

13. AI-powered translation systems lack the necessary depth and 'gut feeling' to properly translate certain nuances. A lot of development work is required for the AI translation systems to reach proper quality levels (if it is possible at all). This is especially true for localising art forms; literature and similar fields often require human experience to properly localise the text, something that AI will not possess no matter what the technology.
14. Human consciousness will always be essential.
15. The issue of AI hallucinations seems to be insurmountable, so verification will always have to be done by a human.
16. Human creativity is irreplaceable. However, there are already instances of texts in certain fields that AI handles perfectly.
17. AI is a machine without intelligence.

(D) Human translators (HT) will always be essential (translation students)

18. Translation has many facets and nuances, so proper translation can only be done by HT.
19. While AI-driven translators might become more popular, /HT have the ability to grasp the context and intent of the sentence.
20. AI-translated texts will be used as a sort of 'base translation' that will later have to be checked by human translators.
21. HT better at picking up the cultural and social cues needed for adequate translation. However, AI can be helpful in the process.
22. While it seems plausible that AI translators might eventually replace HT, this can only concern the translation of documents, legal and medical texts, etc. However, it does not concern the translation of the works of art. No amount of data-labelling will ever be able to train AI to be more effective or efficient at being human than the actual humans.

4. Discussion

The results of the pilot survey have shown that generative AI, such as ChatGPT, has not yet become a commonplace practice among Polish professional translators and students of translation. However, the overall share (50%), and the shares of specific respondent groups (see above) are higher than the one provided in the ELIS 20024 Report (running at 10% globally). The underlying cause may stem from the fact that GenAI is still a relatively new development, it has not been fully integrated with other translator's tools (such as CAT tools), and users have insufficient skills in using the technology. This is illustrated by a relatively wide knowledge gap (from 35% in the case of translation proper to 58% as regards terminology extraction). Indeed, the ELIS 2024 Report shows that 'technology' is the major training topic in all segments (=types of respondents; see ELIS, 2024, p. 48-49). The development of new translation technology has prompted the European Commission to make some revisions to the Competence

Framework (2023-2028) for the European Master's in Translation (EMT, 2022). One of the five areas of competence in technology assumes not only general MT literacy and knowledge of MT possibilities and limitations, but also a set of specific skills related to digital translation technology. And although the Competence Framework does not overtly relate to AI tools, it does point to the need for applying 'other tools in support of language and translation technology' (EMT, 2022).

Another issue is the relatively low quality output, requiring additional workload in the form of MTPE, which comes with its own problems (Farrell, 2023, p. 53–54; see above). Free answers gathered from the survey seem to confirm these observations, with hallucinations, the lack of creativity, and the inability to refer to the all-essential context listed as contributing factors. Additionally, the survey results point to the necessity of keeping the human in the translation loop, also on account of legal, data security and/or ethical requirements (sworn translation, and requirement of top quality output, such that required in the medical profession; see Patil & Davies, 2014). It also needs to be borne in mind that LLMs have been trained on large amounts of online data, which exist predominantly in English. This exacerbates bias by 'favouring' higher-resourced languages (see Łukasik, 2023).

An important element of the study was connected with the opinion on data security and work ethics. Interestingly enough, the knowledge on this matter is not universal, with 45% of professional translators having either no attitude or knowledge with respect to the matter (another 40% of professional translators claim that the use of the technology is in complete breach of confidentiality, while the remining 15% hold the opposite view). Quite surprisingly, more than a quarter of the respondents lack the knowledge on whether the use of GenAI breaches their work ethics, with more than a half claiming that it does not breach their work ethics at all. This may indicate the lack of in-depth knowledge of the commonly-cited issues connected with GenAI tools and, most importantly, with privacy policies of individual companies behind the AI tools (Ray, 2023, pp. 134, 140–142). This calls for more discussion among professionals, possibly concluded with the drafting of a code of good practices, as well as additional trainings.

The qualitative element of this part of the survey provided invaluable insight into the respondents' opinion on the future of the translation profession in the AI era. Among the reasons for the eventual replacement of human translators by AI, the dominant ones revolve around the rapid advancements of AI, which can perform ever more difficult translation tasks, even for complex languages. This means that AI tools may finally overcome limitations, such as human-grade creativity. Currently, human creativity excels (at least when considering most creative people), although AI chatbots on average outperform humans in the

Alternate Uses Task (AUT), which is the most typical test of creativity (Koivisto & Grassini, 2023).

Additionally, according to the survey results, AI translation is cost-effective. This, however, may be illusory, since the low quality of the output and the need for the time-consuming post-editing limit its efficiency. At stake here is not only the cost-effectiveness, but also the issue of sustainability of the translation activity as a whole (not only the profession) (Moorkens et al., 2024, p. 2). This argument is also raised by the Société française des traducteurs, who warn that

> Environmentally, AI's phenomenal consumption of energy and natural resources (electricity to power data centers, water to cool them, etc.) is a direct violation of both the UN sustainable development goals and the Paris Agreement on Climate Change (SFT, 2024).

Accordingly, the translation industry should strive to also evaluate the sustainability of automation technology in translation, as opposed to its performance parameters only (Moorkens et al., 2024, p. 2). These goals may be achieved through the optimisation of GenAI, for example by way of fine-tuning LLMs and the application of efficient prompt engineering techniques (Nexla, 2024).

5. Conclusion

In just a few years since the NMT revolution, the translation profession is once again at a crossroads, facing another transformative wave with the advent of GenAI. As with many transformative shifts in the past, it may take some time for the profession to fully integrate and adapt to these new technologies, particularly in navigating the evolving landscape of ethical and legal considerations, such as those related to copyright, data protection, and the inherent problems exhibited by the technology, such as bias and 'black box' phenomenon. However, this transition may occur faster than anticipated. Recent advancements in generative AI have the potential to significantly boost productivity and reliability. Its gradual integration into CAT tools has only accelerated the process.

This study has shown that the overall use of GenAI in the translation profession is rather modest. This may be due to the low quality of the output generated, but also due to a knowledge gap observed in professional translators and students of translation alike. This calls for modifications to existing study programmes in translation and a wider availability of training sessions for key stakeholders. The content of such training sessions should not only encompass the latest advancements in AI, hands-on practice, and case studies demonstrating successful integrations. They should also focus on legal and ethical issues connected with the use of AI in the translation profession, and address all other known limitations of the technology. The content should discuss general as well as specific legal

provisions, such as the EU's AI Act[8] and the so-called AI Liability Directive[9]. Surprisingly, academics consider the implementation of GenAI in the university study programmes as the major challenge connected with the technology (ELIS, 2024, p. 27). Meanwhile, the development and testing of such programmes as well as of upskilling courses and workshops, are the aim of the international research group behind the design of the survey study.

A more general conclusion concerns the scientific discipline of translation studies, which has been affected by the recent developments. In particular, the constitutive elements of the translation system have changed: the human translator can now be replaced by a machine translation tool, and even if the translator is envisaged as part of the system, they become the agent who prepares (if at all) the text for machine translation (pre-edition), operates the translation tool, and undertakes the correction of the text produced by the translation system (post-edition). Sometimes, the translator's work is limited to post-editing, which marks a new trend on the translation market (see Beßler, 2021). It is also worth mentioning that a lot of machine translation is done beyond any professional translation setting, calling for extensive studies of this phenomenon.

Accordingly, if in the past it was the translator and the translated texts that were the central research elements of translation studies (Grucza, 1981), it can be argued that currently more and more focus is on the technology (MT, AI) and the tools (e.g. corpora, localisation tools). Also, the scope of translator's competences widens, and includes ever more advanced digital systems (see Krüger & Hackenbuchner, 2024). New research areas produce new research questions, and these often require new methods. Most probably, translation studies will become even more interdisciplinary, incorporating methods previously reserved for the technological domain.

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