Pakistan Journal of Life and Social Sciences
www.pjlss.edu.pk

RESEARCH ARTICLE

Development of Translator Studies in the Era of Artificial Intelligence: Opportunities, Challenges and the Road Ahead

Ren Qingliang[1,2]

[1]School of Journalism and Communication, Sichuan International Studies University, Chongqing, China
[2]School of Foreign Studies, China Three Gorges University, Hubei, China

ARTICLE INFO	ABSTRACT
  *Corresponding Author: 873396054@qq.com	With the rapid development of digital technology and artificial intelligence, various kinds of artificial intelligence tools have brought more vitality and innovation into translation with their powerful ability of natural language understanding and multi-modal information processing. Future advancement will undoubtedly follow the thorough integration of the theoretical research and applied practice of translation with artificial intelligence. As a hot topic in translation studies, translator studies are also undergoing unprecedented changes in the era of artificial intelligence. This paper reviews the opportunities that artificial intelligence has for the field of translator studies, points out the possible challenges, and concentrates on the development path of translator studies in the AI era. As for translator studies, we think that while artificial intelligence has enriched research materials, improved research efficiency and broadened research perspectives, it has also triggered challenges, such as inconsistent data and quality, a lack of standardized research methodologies, unclear translator identity, and significant translation ethics. Therefore, in order to improve the integration mechanism of artificial intelligence and translator studies, and provide new perspectives and directions for expanding translator studies, the scientific research of translator studies should not only make full use of the positive role of artificial intelligence, but also attach importance to the domains of translators' translations, behaviors, groups, and translation teaching studies.

INTRODUCTION

Human civilization is a history of open communication and discovery among people around the world. Different as their linguistic, cultural, and physical customs may be, people have been making continuous efforts to deepen understanding and promote communication whether for religious purposes, business purposes, or cultural exchange. Translation has always functioned as a bridge between the two parties in this process and has been crucial in encouraging communication and cross-cultural learning. In the past, translation mostly depended on translators to interpret or translate from the source language into the target language. The medium of translation is the translator himself or herself. Later, with the emergence and wide application of paper dictionaries and online dictionaries, the requirements of being translators has been lowered, and an increasing number of people can also take up simple translation tasks with the help of dictionaries. Nowadays, the quick advancement of artificial intelligence technology has exerted a significant influence on people's lives, employment, research, and production, among other fields. According to Jiménez-Crespo (2020) and Wang Ning (2021), artificial intelligence is driving translation research into a "technology shift" that alters not only the nature and process of translation activity but also the identity and role of translators. This presents translation studies with previously unheard-of opportunities and challenges (Kirov & Malamin, 2022; Yu Jing & Liu Kanglong, 2024). Translation studies have witnessed at least three significant paradigm shifts since 1970s: the philological paradigm, the linguistic paradigm, and the

cultural paradigm. It was previously the primary criterion for evaluating translations under the first two paradigms, with equivalency serving as the criteria (Hermans, 1999). Beyond comparing source and target texts, the cultural studies paradigm expands the scope of translation study to include analyzing the influence and underlying constraints of the destination text in the target language society. The researcher, represented by Gideon Toury, uses the descriptive translatology approach to fully analyze the translator's translation choice and its effects on the translation process.

Today, with the onset of the artificial intelligence era and the rapid advancement of social and economic globalization, numerous new translators are continuing to enter the market as a result of the growing demand for translation in cross-cultural interactions and international trade. Nowadays, it appears like anyone can get work as a translator. Since then, translation quality has fluctuated, and research on translator identity, ethics, subjectivity, and criticism has steadily taken center stage in translation studies. Due to the limited quantity of available text materials, translation studies prior to the artificial intelligence-driven "technology shift" of translator studies primarily concentrated on the analysis of translators' translated texts, including the selection of translation materials, translation techniques, translation strategies, translation motivations, etc.. But there are few comprehensive studies on other creative activities, social interactions and cross-media translation thoughts of specific translators. The propensity toward isolated and fragmented research findings is partly caused by the current studies' lack of a thorough understanding of the translators' life stories and cultural trends. In addition, the emergence of artificial intelligence has completely subverted the traditional translation model, making translation from a human translation technology to modern information technology. In particular, the wide application of machine translation has reduced the workload and memory load of translators (Wu Meixuan & Chen Hongjun, 2023), and the academic community has always paid attention to whether machines will replace manual work (Ge Song & Wang Ning, 2024). We think it would be better to use artificial intelligence as the research background and examine the fundamental effects of AI intervention on the entire translation process, encompassing multiple dimensions like the translation process, product, function, and criticism, rather than arguing over whether or to what degree AI may replace humans and become the primary focus of translation. Thus, this study reviews the opportunities and challenges brought by artificial intelligence's intervention for translators and translator studies. It also aims at creative approaches to fully utilize AI's benefits and advance translator studies.

OPPORTUNITIES FOR TRANSLATOR STUDIES IN THE ERA OF ARTIFICIAL INTELLIGENCE

Extending the research object of translator studies

One of the most notable aspects of the artificial intelligence era is the increased convenience, diversity, and efficiency of data acquisition, transmission, and application techniques. This allows the academic community to re-discover and study data that have been lost in the vast river of history in the past. Take the study of translators for instance. To collect first-hand materials regarding translators' translations, original texts, and sales, scholars used to mostly visit libraries, archives, bookstores, and other locations step by step. Researchers can only get in touch with the translator in person, via phone, email, or letter if they have any questions. Even though there are sometimes improvements or breakthroughs, it is almost impossible to prevent the deletion of crucial information, excessive wait times, relatively one-sided material acquisition, and other flaws. At present, with data, algorithms and computing power, artificial intelligence can perform tasks that usually require human intelligence to complete, including the positioning and inquiry of complex and even ancient translator materials across borders, languages and cultures, which has provided material support for expanding translator research content and exploring new research subjects.

Second, it is commonly recognized that AI can lead to unique and novel content by identifying patterns in data through sophisticated algorithms and brain-inspired learning techniques. Therefore, artificial intelligence tools can use machine learning, natural language processing, computer vision, and expert systems so as to quickly realize the search, matching, and even reasoning and application of research data. This has greatly improved research efficiency,

especially in light of the lack or insufficiency of translator data in the past. Lastly, there is a growing diversity in the kinds and quantity of translators that are available for research. It has long been stressed that translators should possess a strong multilingual background, a strict approach towards translation, adequate preparation before translation, sensitive cross-cultural awareness, and other attributes. As a result, only a minority of people can work as a translator, who consists of a stable and excluded circle of professionals. In the era of artificial intelligence, more and more Internet users now are in a position to express themselves, share information, and create knowledge as a result of social media, political division, and economic globalization. The "Everyone has a microphone" era has got started. The creation and consumption of translation in cyberspace is becoming increasingly popular, and online translation has developed into a regular cultural activity where anybody may express themselves (Mo Aiping & Hao Junjie, 2018). With Fan translation, amateur translation, user-generated translation, and crowd-sourcing, there are now many different types of online translation activities (Hu Anjiang, 2017). The increasing number of translators and the flexibility of translation activities have given rise to new requirements for the change of translator studies.

Accelerating translator studies' digital transformation

To illustrate the outcome, procedure, and purpose of translator translation, traditional translator studies mostly used qualitative text analysis techniques. But as artificial intelligence advances, researchers can now swiftly gather and analyze huge volumes of translated text and metadata from online databases, social media, and website content (Yu Jing & Liu Kanglong, 2024), and data collection is becoming much more intelligent and digital. The use of artificial intelligence not only makes it possible to study the previously unnoticed translators and their groups, but also contributes to exploring the more famous translators so as to provide a large amount of information resources.

Second, with the introduction of various digital tools and platforms, translator study is no longer just about the collation, comparison and analysis of isolated text materials. The translators' life stories, research achievements, academic activities, and foreign influence can be dynamically presented in the form of charts and videos with just "one-screen viewing" gesture. Not only can all types of translator data be thoroughly examined in classification, clustering, and visualization, but digital products like translator corpora, case databases, and pertinent software based on big data statistical results can also help readers and researchers quickly and accurately understand the overall picture of translators. Additionally, the digitization of translator materials can increase the accuracy and credibility of research.

Last but not least, translator studies in the era of artificial intelligence can find the essence of translation or the regularity of translation facts from the observation and analysis of massive data, including electronic texts, films, and television shows (Hu Kaibao & Heiyi, 2020). This significantly broadens the scope and meaning of translator studies.

Fostering the development of an integrative paradigm for research

Information is the primary focus of translators' study in the context of artificial intelligence. Researchers can comprehend the motive, procedure, and impact of translators' translation operations by gathering, analyzing, and reconstructing pertinent data. At the operational level of this process, artificial intelligence technology supports big data statistical results and operational procedures, allowing data to "speak" in addition to offering new research tools and technical assistance. By breaking the traditional qualitative research pattern that was restricted to literature reviews, the translator's work is quantitatively advanced to the empirical research paradigm, which helps promote the natural fusion of quantitative analysis and qualitative reasoning.

Second, a number of new study issues for translation studies have been introduced by the advancement of research instruments and methodologies. For instance, how can the identity of the translator and its rights and obligations be ascertained for a translation produced by artificial intelligence technology? How can the veracity of vast amounts of translated data be assessed? How can researchers evaluate the translation style of a translation that was done with both human assistance and artificial intelligence? Do AI translation tools have the same ideological inclinations as human translators do? In the context of the "which one is better or worse between machine translation and human translation" discussion, how can the teaching concept and talent training model of translation be updated? These subjects span a variety of disciplines, which can expand

the scope of translator research in the age of artificial intelligence and generate fresh research ideas.

Lastly, a digital information environment has been progressively created by the widespread use of the Internet, big data, and AI technologies. The ways that translators study, work, and live have changed significantly in the digital age, and they are gradually becoming more digital (Wang Huashu & Liu Shiji, 2023). This creates a realistic environment for multidisciplinary research. With the wide application of artificial intelligence, translation practice and theoretical research have gradually broken away from the single text analysis and cultural comparison methods in the past, and the research paradigm based on language science and integrated into social science and natural science has become an inevitable trend in the field of translator studies.

CHALLENGES FOR TRANSLATOR STUDIES IN THE ERA OF ARTIFICIAL INTELLIGENCE

The inconsistency between data quantity and quality

The efficiency of translator's research data acquisition and use has been improved significantly because of the rapid development and wide application of artificial intelligence. With artificial intelligence's intelligent writing assistance, personalized data recommendation, automatic typesetting, and other methods, it only takes a few seconds to solve the problem instantly, regardless of the subject matter—the translator's life introduction, translation opinions, translation experience, or social and cultural trends at the time of translation activities. Research materials are provided by translators with technical assistance from artificial intelligence. Information duplication, second-hand data, and dispersed information are some issues to be followed, nevertheless. After using artificial intelligence search results, researchers frequently need to sort, revise, and categorize study resources about particular translators or groups of translators.

Furthermore, the translator's work is a cultural action constrained by different aspects of the target language rather than being done in a vacuum (Lefevere, 1992). Similar to this, even though artificial intelligence is an objective reality, its creators have subjective initiative and understand its algorithm rules and content policies. As a result, artificial intelligence has its own political and value orientation, and the pertinent research data it provides is also influenced by a particular ideology. In this situation, researchers must uphold their own academic positions, increase political awareness, fortify their investigation and assessment of possible hazards in the advancement of artificial intelligence, and successfully distinguish objective and non-objective materials offered by AI technology.

Lastly, when facing the vast amount of data that artificial intelligence has made available, researchers should use this data to support their work, but they should also cultivate human initiative and creativity, by analyzing and sorting out the data thoroughly and scientifically. Simultaneously, it is also vital to constantly dig out new data and put forward novel ideas, nourish artificial intelligence tools with the latest research results, and promote the collaborative development and mutual benefit of human and artificial intelligence.

The disparity between technology's instrumental rationality and value rationality

Translator studies, as an interdisciplinary discipline, aims to explore the political, economic, ideological and social cultural context behind the translators' translation behavior through the investigation of the translators' translation activities, and then reveal the interactive relationship between the translator and culture concerned. Artificial intelligence can automatically produce text, images, and videos regarding translator groups by utilizing cutting-edge natural language processing technology. This significantly enhances the research's content and increases its effectiveness. It should be noted, too, that information about minority translators and their groups is frequently incomplete and only reveals a small number of traits of translation behavior. However, there may be disadvantages like a single research approach and a lack of discussion of the relationship between translators and their culture if researchers simply focus on research efficiency   and   over-depend   on   artificial   intelligence-provided   study   data. Second, the translator and his translation work form the basis of translator studies. But with the rise of artificial intelligence, new translation techniques like post-translation editing, machine translation, human-computer mutual translation, and machine-assisted human translation have

drastically altered the traditional translator's identity, pay structure, and scope of work. The main distinction between humans and machines has been exacerbated by the use of artificial intelligence; translators' thresholds are continuously being lowered, their identities are continuously being generalized, and machine translation's high efficiency and low cost are frequently praised. However, it should be acknowledged that there are still issues with processing high-context cultural information. Language "pollution" and blunt language sense might result from an over-reliance on artificial intelligence and a disregard for the meaning of human translation (Hu Jian & Fan Zirui, 2023).

Lastly, in the process of determining the ownership of the translator and his or her translation results, the legal subject status of the translation produced by embedded artificial intelligence has been the focus of academic debate. The scope of translators will continue to grow and the fundamental question of "Who is to be the translator?" will remain unclear if the academic community is unable to quickly develop reasonable evaluation criteria and a research paradigm. This is not conducive to the robust and long-term growth of academic research.
The division between the advancement of research practice and the use of technology

In addition to offering a vast array of resources, such as Internet web pages, books, papers, news reports, databases, documentaries, movies, and television shows, artificial intelligence may also offer individualized services based on user needs, which not only brings convenience to scholars engaged in translator research to quickly obtain materials from different regions, but also helps to promote the fair dissemination of local knowledge around the world and reduce information monopoly. However, we still need to be cautious of the algorithmic push mechanism of digital products, which means that the platform creates content based on the user's search history and research preferences. This means that some researchers ignore offline materials, other online channels, and different viewpoints in other fields, which may limit research's ability to be innovative and open.

 Second, a lot of research materials have been forced to the "front ground" of the Internet in the age of artificial intelligence due to the modernization and intelligence of translator research. An increasingly significant metric for gauging the breadth of translators' study is media literacy. Researchers who are unfamiliar with AI technology or who are not skilled at fusing their own research with big data statistics will be at a disadvantage in such a social setting. The academic community should pay attention to the phenomena of the intelligence gap in the researcher community, which is typified by the widespread usage of intelligent technology. Lastly, even if artificial intelligence has done a good job, including increasing the efficiency of translation, decreasing translation costs, and broadening the reach of knowledge sharing, an increasing number of people in society criticize translation and assert that "Translators are useless." The way society accurately views translators and their roles will be greatly impacted by this. The confidence of young translators who are new to the translation profession will be damaged, and future translator studies will not go smoothly, if such false claims are not promptly disproved. Naturally, this also demonstrates the urgency to emphasize the critical role translators play in social and economic development and to actively encourage the spirit of translators now. It is critical to develop translation and communication skills that are aware of language, culture, technology, and good governance, as well as to promptly enhance the training program for translators.

Suggestions for Translator Studies in the Era of Artificial Intelligence

We should also rethink the framework of translator studies and innovate the notion of translator studies in light of the advances artificial intelligence has brought about in the areas of translation accuracy, efficiency, and language inclusivity (Qodirov, 2023). Meanwhile, it is expected to enhance the scheme of research to better support the combination of artificial intelligence and translator studies. First, we should fully utilize the benefits of artificial intelligence in the following areas: professional knowledge search, subject knowledge base construction, large language model application, translation intelligent experience, real-time communication between translators and related groups, and expanding new translator research horizons. For starters, ongoing efforts should be made to support the work of renowned translators with significant scholarly clout, as well as to build upon the foundation already in place, innovate the old, strike a good balance between "new topics" and "old topics", and make strides in

research viewpoints, materials, and conclusions. Additionally, we should use artificial intelligence technology to investigate new subjects and concentrate on translators or groups of translators that have previously been overlooked because of a lack of data or outdated research tools. In order to increase the comprehensiveness of translator studies, researchers should prioritize textual research of primary data. They can also use artificial intelligence tools to communicate with authors of the source language, human translators, post-translation editors, other modern translators, translation sponsors, publishing houses, target-text readers, and translation educators.

Second, enhancing critical thinking skills and bolstering interdisciplinary research are essential. Translator studies include a systematic review and investigation of multifaceted and interdisciplinary elements like the historical background of translation activities, translation strategies, reception effects, and influencing factors, in addition to evaluating translators or groups of translators based on the translated texts concerned. Based on their knowledge of the technology, researchers should promote the growth of translator studies in the direction of digitalization, actively explore the application of AI in the exploration of translation theories, integrate the knowledge of sociology, history, ethics, political science, communication, cognitive science, and other disciplines, and fully utilize the benefits of current interdisciplinary research. Simultaneously, we can try to establish a global translator research community, encourage academic exchanges and data sharing among researchers in various nations, and create a more scientific man-machine collaboration by utilizing the all-weather, cross-regional, full-time dissemination advantages of artificial intelligence. Lastly, in order to promote the reconstruction of translators' capability structure and build an intelligent translator research ecology, translator studies will certainly show more intelligent and collaborative characteristics in the future with the application of artificial intelligence technology in translation practice, translation theory research, translation education and other aspects. Therefore, it is crucial to support the creative advancement of translation studies in the modern period, with artificial intelligence serving as the foundation and premise of the field. For one thing, researchers' digital literacy needs to be raised. Researchers should seek to balance science and technology and the humanities, humanistic literacy and technical ability, and theoretical analysis ability and scientific and technological competence, all while continuing to advance the theoretical accumulation and acknowledging the opportunities and challenges presented by artificial intelligence to the translator studies. In order to improve teachers' and students' access to information, use, and flexibility in application, the concept and model of translator research and talent training should also be modified. Additionally, artificial intelligence should be integrated with translation theory research in areas such as curriculum design, teacher-student training, educational cooperation, extracurricular activities, etc.. The academic community should, however, also set up a reliable evaluation and feedback system to guarantee the application effect of artificial intelligence in translation research. We should assess human-computer translation, translation ethics, translation criticism, translator behavior comparison, transmission and influence, translation ideas and style analysis, and so on. in the context of artificial intelligence. We should also promptly modify translator study methods based on the feedback findings. Besides, the research framework for translation studies is to be optimized and a fresh, clever paradigm for the field to be developed by creating a digital platform.

CONCLUSION

In addition to improving the framework and enriching research materials, the emergence of artificial intelligence has facilitated the digital transformation of translator studies, paved the way for the development of an interdisciplinary paradigm, and had a significant impact on the field's theoretical framework, practice path, and talent training model. However, this process of change is also accompanied by several challenges, such as the difficulty in distinguishing the authenticity of digital data, the ambiguity of the translators' identity, the widening of the intelligence gap among researchers, and the lack of diverse research methods. By increasing researchers' media literacy, expanding their research horizons, prioritizing the creation of translator databases, bolstering interdisciplinary research, and creating an intelligent translator research ecology, the academic community can better address the application of artificial intelligence in translator studies and the translation problems it causes. It can also improve the innovative practice, integration mechanism, and future development direction of artificial intelligence and translator studies, which is expected to offer both theoretical justification and helpful advice for the scientific advancement of translation studies. Of course, the discussion in this paper is only a preliminary stage as for the impact of artificial intelligence on translator studies. Future research can further expand the research horizons through industry observation, translator interview, corp-based

translation analysis, translator behavior criticism and other perspectives, so as to provide new thinking for promoting translator studies in the era of artificial intelligence.

Funding

REFERENCES

Jiménez-Crespo, M. A. (2020). The "technological turn" in translation studies: Are we there yet? A transversal crossdisciplinary approach. *Translation Spaces*, 9(2), 314-341. https://www.jbe-platform.com/content/journals/10.1075/ts.19012.jim

Ge, Song, & Wang, Ning. (2024). Literary Translation in the Era of Artificial Intelligence ：Challenges and Opportunities. *Foreign Language and Their Teaching*, 46(1), 94-101+149-150.

Hermans, Theo.(1999).*Translation in Systems: Descriptive and System-oriented Approaches Explained*. Manchester: St. Jerome Publishing.

Hu, Anjiang. (2017). Crowdsourcing translation in the Digital Age. *Foreign Language Education*, 38(3), 86-90.

Hu, Jian, & Fan, Zirui. (2023). Nature of Translation from the Perspective of Machine Translation. *Contemporary Foreign Language Studies*, 44(2), 90-96.

Hu, Kaibao, & Hei, Yi. (2020). Translation Studies in the Digital Humanities: Features, Research Areas and Implications. *Chinese Translators Journal*, 41(2), 5-15+187.

Kirov, V.,& B. (2022). Malamin. Are translators afraid of artificial intelligence? *Societies*, 12(2), 70. https://doi.org/10.3390/soc12020070

Lefevere, Andre. (1992). *Translation, Rewriting and the Manipulation of Literary Fame*. London and New York: Routledge.

Mo, Aiping, & Hao, Junjie. (2018). The Cultural Space of Crowdsourced Translation. *Chinese Translators Journal*, 39(5), 71-76.

Qodirov, Xalilullo. (2023). AI IN TRANSLATION: BENEFITS, CHALLENGES, AND THE ROAD AHEAD. *Лучшие интеллектуальные исследования*, 6(2), 122–126. https://web-journal.ru/journal/article/view/787

Wang, Huashu, & Liu, Shijie. (2023). Research on the Translators' Digital Literacy from the Perspective of Digital Humanities: Connotation, Problems and Suggestions. *Foreign Language Learning Theory and Practice*, 42(2), 70-79.

Wang, Ning. (2021). Translation Studies from the Perspective of New Liberal Arts. *Journal of Foreign Languages*, 44(2), 75-79.

Wu, Meixuan, & Chen, Hongjun. (2023). Ethical Issues of Machine Translation in the Era of Artificial Intelligence. *Foreign Language Research*, 46(6), 13-18.

Yv, Jing, & Liu, Kanglong. (2024). Reshaping Translation Studies: Paradigm Shifts and Future Directions in the Age of AI Technology. *Journal of Foreign Languages,* 47(4), 72-81.