

# Artificial Intelligence and Human Translator, Zero-Sum Game or Win-Win Cooperation

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## ABSTRACT

Artificial intelligence (AI) is indeed developing fast recently and thus worries, like they may replace translators someday, often spring up. However, translators actually shouldn't be hostile to the development of AI. Furthermore instead of getting stuck into vain competition, human translators should learn to adapt as well as embrace AI technology and manage to find a new way out. Based on extensive studies, the author provides insight into both the development history of and possible problems with machine translation. And this interdisciplinary work will exert a positive impact on the path for future translators.

**Keywords:** *Machine translation, Artificial intelligence (AI), Translation and translator, Creativity and flexibility, Humanity core.*

## 1. INTRODUCTION

In the context of a rapidly developing world, the constant progress of science and technology has brought great changes to people's daily life, especially in the aspect of manual and mental labor. And the same goes for the translation field. For instance, artificial intelligence is indeed developing fast recently and thus such concerns as they may take the place of translators one day have been proliferating. Moreover, the advent of ChatGPT, a new generation of artificial intelligence technology, in recent years has triggered new contemplation toward the relationship between machine translation and human translators.

## 2. BACKGROUND: ARTIFICIAL INTELLIGENCE AND MACHINE TRANSLATION

Being a branch of computer linguistics, machine translation is the process of automatically translating certain texts or speeches from one natural language to another through computer system, which involves computer, mathematical logic, linguistics, information theory as well as many other disciplines. And as one type of artificial intelligence, it also possesses important research and application value.[5] Machine translation traces

its history back to the 1930s. It was Peter Petrovich Troyanskii, a Soviet scientist, who first proposed the idea of machine translation model in 1933. And in 1954, Georgetown University, in collaboration with IBM, completed the first English-Russian machine translation experiment with IBM-701 computer. In so doing, they demonstrated the feasibility of machine translation to both the scientific community and the general public, thus opening the curtain of machine translation research. A diversity of well-known scientists and engineers around the world, like Warren Weaver as well as Alan Turing, also played a significant role in its long developing process of nearly 90 years, during which machine translation experienced several stages of development, such as rule-based one, example-based one and statistical one. Back then, such technology actually didn't attract much attention from language service industry due to its bottleneck of translation quality. However, things have changed a lot after entering the 21st century. Artificial intelligence has been developing fast recently in a variety of areas, which just gave rise to the neural machine translation based on deep learning. Let's take Google as an example, which launched the Google Neural Machine Translation System in September 2016. As a free translation service from Google in the United States, this system can not only provide instant translation

among 103 languages but achieve the translation of words, sentences and web pages between different languages. And by means of searching for various patterns in millions of documents to determine the optimal translation, Google claimed that the accuracy and fluency of its translation was already near that of manual translation.<sup>[1]</sup> And finally, with the introduction of ChatGPT by OpenAI, an American artificial intelligence lab, in 2022, human translators all over the world witnessed the greatest improvement in the quality of machine translation ever achieved so far, at least in the field of non-literary translation. Generative Pre-trained Transformer, short for GPT, is a deep learning model of text generation based on Internet available data training as well as long-term accumulation and innovative integration of intelligent technologies, which has found wider applications in such fields as Q&A, text generation as well as summary, machine translation, data sorting and so on. Through the engineering combination of big data, big model and big computing power, ChatGPT is not only able to understand human language and converse with us, but capable of generating “creative” contents, which enables it to undertake a great deal of work that could only be done through manual labor in the past and even finish those jobs more efficiently than human beings, such as translation activity.<sup>[6]</sup> As a result, worries, like they may replace translators someday as well as this year marks the beginning of end for manual translation, often spring up. But is there truly no turning back? In fact, just like a coin has two sides, machines, despite these unparalleled advantages they have revealed, still fall behind in certain areas compared with real person. And we humanity should never ignore the key value of human as the main subject of technology.

### **3. CONTEMPLATION TOWARD TRANSLATION PRACTICE AND TRANSLATOR**

To better explain this part, it's necessary to take both translation itself and human translator into consideration. Despite the great advance of machine translation brought by language-centric AI, nowadays the general public still calls for quality translations as is often the case. Well, just as a saying goes, the masses have sharp eyes. Frankly speaking, human translators are, to some extent, blinded by certain fear toward scientific progress and thus may strongly resist such tide of the time. After all, they're afraid of losing jobs, or losing the meaning of our efforts. Furthermore, ChatGPT may

even be considered a denial to the very existence of translators, triggering their radical idea of stopping technology. And some of them might really put such madness into practice, causing losses at both sides in the end. But in fact, translation work is never so easy as the average layman could imagine. As a study with strict threshold, it requires translators to obtain interdisciplinary knowledge. After all, global knowledge never comes as an isolated island but something interconnected like a network and those disciplines often intersect with each other. In addition, translation competence is more of an understanding, without which translators, no matter how erudite they are, will only end up arousing misunderstanding of the source material during translation. Specifically, rather than the simple mechanical correspondence between two languages often mistaken for, translation is, as a matter of fact, a complex cognitive conversion process based on translator's understanding of the cultural backgrounds of these languages. And due to the fact that different people may experience diverse cognitive processes, they undoubtedly will present their unique creativities and express various emotions through translation activities. Therefore, translation is always something animate and should not exist as some kind of template. And with such understanding of language culture and historical background as well as the ability to master complex language structures, it's only human translator who is capable of choosing the most appropriate language expressions according to the context and purpose of the translated text. In addition, Italian once said “Traduttore, traditore”, which means “The translator is indeed the contrarian” in English. Such proverb that is widely spread in both China and the West actually is trying to tell us one simple truth, namely because of the intrinsic restriction of translation, being absolutely faithful to the source text will only lead to deviation from the original meaning, while creative deviation somehow will pave the way for better comprehension of the source material, which interestingly strikes a chord with another popular saying among the translation circle that is “Translation is like dancing with shackles on one's feet”. The shackles here just refer to the restrictions brought by original text to the translation process. What a coincidence! After all, only those who manage to break chains can be seen as the rebels. Just as translators will never be able to convey thoughts within the original material to the target readers at will unless they break through such limitation.[3] Let alone, it's often said that translators naturally possess the ability to help their

own civilizations not only communicate with but learn from other civilizations, especially those great one throughout history. They were never mere porter of ideas for sometimes they even could inherit a whole civilization. And that's exactly what we mean by "translation", which is never meant to completely eliminate the barriers between different languages, but aims to manifest various colors with the ever changing contexts supported by human initiative.[8]

#### **4. DRAWBACKS OF MACHINE TRANSLATION**

While in terms of machine translation, although neural network does enable machines to commit self-learning, their functioning still heavily relies on the program and target set in advance by human. Hence, no matter how vividly it endeavors to mimic human brain, AI is ultimately controlled by computer language and operates in accordance with pre-programmed algorithm, resulting in only a limited range of choices rather than infinite possibilities. Even ChatGPT cannot escape from such Achilles' Heel.[4] And that's exactly the reason why that "creative" mentioned above was within double quotations. Creativity, the essence of human thought, can hardly be covered by digital operation or simply programmed through machine, at least not now. The current AI translation is, in fact, on the basis of millions of ready-made translated texts for reference analysis, most of which are from professional institutions, using mainstream languages. As a result, its translation works tend to be standardized in expression, limited in the scope of application and thus unable to meet the exposition need of multiple creations. In other words, machine translation so far may just be fine for non-literary translation, which emphasizes facts as well as specific information and mainly aims to achieve simple yet effective communications. However, when it comes to literary works, those Chinese literatures in particular, it's quite difficult for AI to comprehend the "humanity core" within these works, which consists of life knowledge, social understanding, historical information, cultural background, people's psychological state as well as emotional desire and other diverse external factors of language. Let alone, translation practice is such high-level intelligent activity of human beings that involves far more than mere internal structure of language and deep learning as well as neural network technology are established on the basis of both big data and pattern recognition. Therefore, neural machine translation often ends up

in dilemma while facing the profound "humanity core" during literary translation for lacking the capacity to handle those external factors.[2] Especially when it comes to the so-called "Xing and Shen" in Chinese, "Shen", which is generally accepted as "spirit", refers to cultural factors and human interest. Of course, as the counterpart to "Xing", also known as "form", it certainly means more than that. And it's widely accepted that "Shen" derives from both the subjectivity and creativity of mankind. In fact, literary translation is indeed creative and sophisticated translators with creative thinking can always produce innovative works during translation activities in an unexpected way, which may be revealed by translator's emotional resonance as well as writing style.[7] Because of the diverse educational backgrounds and living environments, the emotional world of different translators actually differs significantly. As a result, in the process of translation, they often integrate their own style into the work and bring out unique resonance in readers, which actually draws forth the fact that translation itself, to some degree, is an "impossible" task.<sup>[9]</sup> As a well-known proverb goes: "there are a thousand Hamlets in a thousand people's eyes", in reality we can never find absolutely correct or perfectly good answers during the mutual translation between two languages, which just runs counter to the ultimate pursuit of machine translation for accuracy. What's more, machines are short of flexibility as is often the case. It's noted that the comprehension of grammar and linguistic thinking logic plays a crucial role in translation process. However, AI translators may not be able to accurately deal with these issues. Artificial intelligence, yet to obtain clear self-knowledge, may make rather stupid errors while committing translations without even noticing what's going on. For instance, specific words may have multiple meanings in different languages and cultural contexts, like jargons and technical terms. And AI may just fail to correctly identify the exact meaning of the word in the text, which undoubtedly will lead to translation errors. Such ironic act of smattering will only serve as man's laughingstock.

#### **5. CONCLUSION**

In a word, translators shouldn't be hostile to the development of artificial intelligence. And instead of getting stuck into useless competition, namely zero-sum game, translators and machines, which actually are in dislocation competition, should draw on each other's strength and contrive to achieve win-win cooperation for mutual benefits. After all,

on the verge of a new era when boundaries between professions become blurred, traditional translators who only good at translating materials in one or few specialized fields and even need to translate simple words as well as sentences over and over again is supposed to improve themselves and adjust to fit into local ground conditions by evolving into the so-called “translating engineers” with comprehensive knowledge reserve and mastery of various intelligent tools. If translators can take full advantage of these tools, chances are that the incredible translation efficiency they provide can not only help translators achieve more and do better but offer them opportunities to strive for further studies, which, in turn, will facilitate the improvement of AI in the long term. It’s estimated that with the continuous progress of technology, machine translation is sure to gradually dominate the low-end translation market that consists of stylized and repetitive translation work. However, due to both the strict requirements of translation accuracy and lack of creativity, something unique to translators, for machine translation, the high-end translation talents are still in great need. And CAT, short for computer-aided translation, is a pretty good way forward as a means of machine translation post editing. Being a powerful ally, it can assist translators to complete their translation practice with high efficiency as well as accuracy. And if coupled with AI, it is believed that their collaboration will bring a double bonus. With the primary translation and quality inspection of stupid errors being completed by artificial intelligence, human translators can carry out the subsequent professional polishing and modification with the help of CAT. And during such process, AI can not only automatically store the modified work but constantly learn from these materials in the background, thus gradually becoming much more “intelligent” and revealing more characteristics of “human nature”. Anyway, with the trend of the times being that people capable of mastering AI gradually replace those who cannot, the key point is people should make good use of AI rather than simply rely on such handy tool. And they must always remain vigilant in case the degradation of their learning ability over time due to the application of AI. As is known to all, if a translator frequently plays petty tricks with the help of machine while doing translations, he is very likely to end up being trapped in the information cocoon and eventually enslaved by man’s own creation. Moreover, we must be acutely aware that it’s never just a concern of translation industry, but a

challenge of growing interest faced by all walks of life.

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## REFERENCES

- [1] Cui, Z. H.. The quality comparison of different machine translations—the case of Google Translation and DeepL. *Overseas English*, 2021, 15, 182-183.
- [2] Feng, Z. W., & Zhang, D. K. Machine translation and human translation boost each other. *Journal of Foreign Languages*, 2022, 06, 77-87.
- [3] Huang, Y. Z. A contrastive analysis between machine translation and human translation from the perspective of translation shift theory. *English Square*, 2022, 09, 6-8.
- [4] Shao, H., & Yang, X. F. Current situation and development of language translation through artificial intelligence. *Electronics World*, 2018, 16, 28-29.
- [5] Song, S. Z. On the future relationship between machine translation and human translation. *Future and Development*, 2019, 02, 25-30.
- [6] Sun, W. P. Job competition between human and machine: challenges and solutions—from the world-famous ChatGPT. *Ideological & Theoretical Education*, 2023, 03, 41-47.
- [7] Tang, L. Y. On the literary translation study of Ta Kung Pao · Literary Supplement. *Social Sciences in Hunan*, 2013, 05, 60-63.
- [8] Wang, X. M. On the relationship between machine translation and human translation in the era of AI translation. *Technology Wind*, 2021, 36, 73-75.
- [9] Zhou, Z. Y. The reflection and innovation of translator’s subjectivity in literary translation. *JinGu Creative Literature*, 2022, 48, 66-68.