Perceptions of Machine Translation and Computer-Aided Translation by Professionals and the General Public:
A Survey Study Based on Articles in Professional Journals and in the Media

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ABSTRACT

This article examines perceptions of MT and CAT among translation professionals and the general public by surveying 124 articles published in the professional journals of ITI Bulletin and MultiLingual and in the Chinese media between 2017 and 2019. Through framing analysis, the following frames about MT and CAT are identified: progress, quality, threat, limitation, cooperation, economic factors, and ethics. Through qualitative analysis of prominent frames, it is also found that attitudes vary between the professional journals and the media about the role of MT as related to human translators. While ITI Bulletin holds a generally conservative attitude, MultiLingual takes a more positive stance towards the applications of MT, and the Chinese media generally hype MT as a potential threat to HT but promote human-machine cooperation as the way out. This study also shows that the ethical and legal issues involving MT and CAT have not been addressed adequately.

KEYWORDS

Computer-Aided Translation, Frame/Framing, ITI Bulletin, Machine Translation, MultiLingual, News Media, Perceptions

INTRODUCTION

With the advancement of translation technologies, Translation Studies are experiencing "a technological turn" (O'Hagan, 2013, p. 512). There are a large number of studies that describe the convergence between technology and translation (e.g. Bowker, 2002; Chan, 2015; O'Hagan, 2019). As Pym (2011) noted, "new translation technologies … are altering the very nature of the translator's cognitive activity, social relations, and professional standing" (p. 1). Against this background, it will be interesting to see how translation technologies are perceived by translation professionals in professional journals and by the general public in the media. Indeed, the media plays an important

role in reflecting and shaping people's perceptions and public opinions about an issue (Gamson & Modigliani, 1989). According to Viera (2020) and Viera and Alonso (2020), professional translators' attitudes towards Machine Translation (MT) are mainly negative. Hu (2018) also found that the majority of online posts in 2017 about MT on Sina Weibo, a major Chinese social media platform, is negative. As Tinsley (2017, p. 29) noted, "There has been a lot of media coverage on AI and neural MT. It's hard to separate the hype from the reality, unless you peek behind the curtain to see what's actually going on." Therefore, it will be useful for the current study to examine perceptions of MT and Computer-aided Translation (CAT) both in professional journals and in the media.

In recent years the debate has got heated over whether machines will replace human in translation. Some translation scholars suggest that machine translation and human translation cannot be separated clearly now. For example, Robinson (2003) argued that "all translation in the world today is already 'cyborg translation' – translation involving some significant interface between humans and machines" (p. 369). Similarly, Cronin (2003) identified that:

The notion of the machine fully replacing the translator or becoming a wholly adequate substitute for the translator is considerably less plausible than the emergence of translational cyborgs where the levels of interaction between humans and machines are deeper and more extensive. (p. 116)

In referring to the more recent debate, O'Hagan (2013, p. 513) posited that "the image of technology-averse translators treating MT as a threat has now largely been replaced by that of translators co-existing with an increasing integration of technology into their work environments". The American Translators Association (ATA) also issued a position paper on machine translation in 2018 stating that "the only way to use machine translation successfully is in combination with professional translators" (ATA, 2018).

There is no scarcity of previous literature on the historical development of MT and CAT (e.g. Melby & Warner, 1995; Chan, 2017), the review of which is beyond the scope of this paper. The objective of this study is to examine the current perceptions of MT and CAT by translation professionals and the general public against the background of recent new developments in Artificial Intelligence (AI). This study aims to answer the following research questions (RQs):

RQ1: How are MT and CAT perceived by the general public as shown in the Chinese media?
RQ2: How are MT and CAT perceived by the professionals as shown in English-language professional journals?
RQ3: Are their perceptions different? What are the implications for the profession?

This paper first gives an overview of the media representation of MT and CAT and elaborates on the relevant concept of media framing. It then goes on to introduce the collection and selection of data and the research methods, which is followed by a framing analysis of the articles in the media and in the professional journals. It finally discusses the research findings and summarises the implications and limitations of this study.

RESEARCH BACKGROUND

The term "computer-aided translation (CAT)" refers to "any type of computerized tool that translators use to help them do their job" (Bowker, 2002, p. 6). CAT involves a broad category of translation as Robinson (2003) argues that "*all* translation today falls in the middle category, computer-aided translation (CAT)" (p. 371, emphasis in original). Bowker (2015) also points out that "machine translation (MT) systems are now more widely accepted as a sort of CAT tool, which requires some interaction with a professional translator, such as in the form of pre- or post-editing" (p. 92). The

term "MT" might be misleading and unhelpful, but there is no better alternative since it is now widely used in the profession (Somers, 2003). Strictly speaking, no MT is fully automatic that does not require any form of human input, and no human translation (HT) can be carried out without the aid of computers nowadays. Despite some overlaps between the use of MT and CAT, this study uses both terms in their commonly known references.

Previous studies have suggested that translation technologies have attracted increasing attention in Chinese-language academic journals in the past two decades (e.g. Lv & Mu, 2007; Diao, 2017; Li & Chen, 2018). These journal articles examine various aspects of translation technologies. Lv and Mu (2007) surveyed journal articles on CAT published in core journals on foreign languages between 1996 and 2005 and found that a majority of papers actually focus on MT. Similar pattern was reported in Diao (2017) who found that MT becomes the most frequent keyword in the journal articles on translation technologies in the China National Knowledge Infrastructure Database (CNKI), almost four times the frequency of CAT. Li and Chen's (2018) comparative analysis of journal articles on MT published in Chinese Social Sciences Citation Index (CSSCI) journals between 2007 and 2016 show that the foci of linguistics journals and computer science journals are different, with the former more on CAT and on using MT to assist HT in relation to translation teaching and the latter more on how to improve MT in order to achieve higher accuracy and better user experience. However, it can be generally observed from previous journal articles that MT has received more attention than CAT in the Chinese journals in recent years.

There have been few investigations about how translation technologies are perceived by professionals and the public. Zhang and Wen's (2018) diachronic study of translation-related issues in the mainstream Chinese press between 2000 and 2017 is one of the few exceptions, which shows that, like in academic journals, translation technologies has received more attention in recent years in the Chinese press and that most newspaper articles on the topic have been published in professional computer newspapers, focusing on introductions of new software, tools and systems.

A relevant notion that will be used in the current perception study is "frame". Gamson and Modigliani (1989) suggest that "media discourse can be conceived of as a set of interpretive packages that give meaning to an issue" and each package has "a central organizing idea, or *frame*, for making sense of relevant events, suggesting what is at issue" (p. 3, emphasis in original). There have been framing studies enquiring how science and technology are represented in media contexts (e.g., Gamson & Modigliani, 1989; Zhou, 2006; Rivers, 2009). For instance, Gamson and Modigliani (1989) explored the media discourse on nuclear power in the US media between 1945 and 1989. They suggest that media outlets foreground different packages at different periods, which eventually shape public opinion on the issue. Zhou (2006) conducted a comparative study of how the internet is framed in the Chinese newspapers in the Chinese mainland, Hong Kong, Singapore, the US and the UK between 2000 and 2004. His study found that these newspapers deploy different generic news frames and emphasise various issues in relation to the internet in China. From a biological perspective, Rivers (2009) analysed how the US press frames the ecological risks of genetically modified organisms and reveals several dominant cognitive and cultural frames embedded in their coverage of the issue. However, few studies have investigated the perception and representation of translation technologies in the news media and its potential implications for professional translators.

DATA AND METHODOLOGY

This study examines perceptions of MT and CAT by translation professionals and the general public based on the data of news articles in Chinese media and professional journal articles in English. Chinese news articles on MT and CAT were collected through searches of the keywords of "机器翻译" (machine translation), "电脑/计算机辅助翻译" (computer-aided translation) and "人工智能翻译" (artificial intelligence translation) on the Google search engine. Altogether 50 news articles were collected from representative Chinese media outlets between 2017 and 2019. The English articles

on translation technologies were collected from the professional journals *ITI Bulletin* in the UK and *MultiLingual* in the US during the same period. These journals are selected because their writership and target readership are translators and interpreters and they cover a whole range of topics related to translation technologies, including MT software and CAT tools (Hartley, 2009). *ITI Bulletin* (https://www.iti.org.uk/about-iti/iti-bulletin) is the official journal of the Institute of Translation and Interpreting (ITI) published both in print and online for its members and subscribers with six issues a year and *MultiLingual* (https://multilingual.com/) is a professional journal based in the US and distributed in print and digital format six times or more per year to 40,000 readers in 109 countries.

A search in all the 18 issues of *ITI Bulletin* and 22 issues of *MultiLingual* between 2017 and 2019 for such keywords as "machine translation", "MT", "computer-aided translation" and "CAT" generated 40 articles from *ITI Bulletin* and 34 from *MultiLingual.* Along with the 50 news articles from Chinese media, a corpus including all the 124 article texts was created on the Sketch Engine for data analysis. Table 1 presents a brief overview of the three sub-corpora.

Table 1. Corpus information

Corpus	Language	Tokens	Words
ITI Bulletin	English	43,268	37,951
MultiLingual	English	70,381	61,906
Chinese Media	Chinese Simplified	81,267	68,317

This study employs a mix of quantitative and qualitative research methods. First, qualitative thematic coding will be done in close reading of the texts, which will be grouped into categories to identify frames emerging from the articles. Then a quantitative analysis will be done with the statistics of frames to reveal patterns. A qualitative discussion will also be conducted about the prominent frames, which will be elaborated with representative excerpts from the texts.
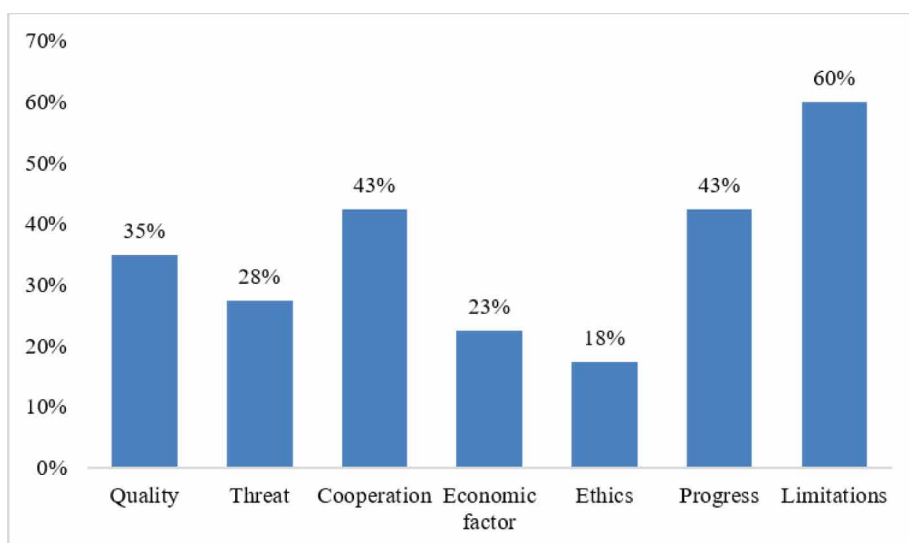
DATA ANALYSIS

Thematic coding is done in close reading of all the 124 texts, after which the codes are grouped into different categories so that frames are identified. Seven frames are identified from the journal and news articles including: 1) translation quality, 2) threat or challenge, 3) human-machine cooperation and coexistence, 4) economic factor (time and money), 5) ethics (confidentiality and security), 6) progress achieved and 7) limitations (problems and deficiency). Though the same theme might be coded for more than once in a single article, it will be counted only once in statistics. The following subsections illustrate how English professional journals and Chinese media framed MT and CAT and the next section will discuss how the same theme was framed in different media.

Perception of MT and CAT in *ITI Bulletin* (UK)

Figure 1 shows the percentage of different thematic frames used in the articles from *ITI Bulletin*. As seen from Figure 1, the limitations of CAT are the most significant frame, representing 24 out of 40 articles (60%). Human-machine cooperation and progress achieved in MT and CAT are the second frequent frames, each appearing in 17 of 40 articles (43%). The quality frame also features in 14 of 40 articles (35%). The frame of MT as a threat to human translators appears in 11 articles (28%), while around one fifth of articles raise economic and ethical issues of the technologies.

Generally, a conservative view towards the MT technology can be observed in *ITI Bulletin*, which presents various explicit and implicit problems in many articles. An event article in its July-August

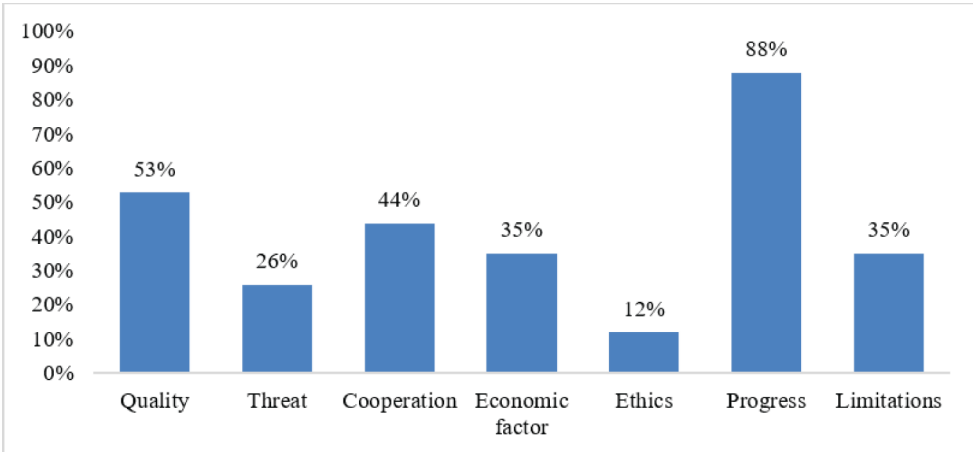Figure 1. Percentage of frames about MT and CAT in *ITI Bulletin*

2017 issue listed several limitations of MT, for example, "it struggles with homonymy, polysemy, ambiguity, idiomatic expressions, grammar rules and context, to name a few" (Walker, 2017, p. 30). Another feature article in the July-August 2018 issue demonstrates the limitations that MT "operates predominantly at the level of phrases and sentences" (Griffin-Mason, 2018, p. 11) but it lacks cultural background knowledge. The *Bulletin* also mentions some specific problems with the existing CAT tools, including the shortcomings of the Trados user interface and the mistakes made by DeepL over terminology. However, a few authors argue that "any problems with CAT tools are likely to be the fault of the users, not the tools themselves" (Downie, 2017, p. 24) because the users may have mismatched expectation between "instant, free and correct translation" (Ford & Haycock, 2017, p. 32) and the actual translation output. This view is also supported by Bassnett (2018, p. 28) in which she describes as "the failure of dreams of perfect translations being produced by machines".

Compared with a majority of limitation frames, *ITI Bulletin* contains fewer progress frames in its journal articles, though the latest progress made in MT is noticed. For example, three articles feature the development of MT systems for minority languages developed by Translators without Borders in helping refugees. MT has also developed specific algorithms to improve itself for better integration into other workflows. The *Bulletin* also praises two innovative MT systems, DeepL and Papago. There is only one instance of the progress frame in CAT which praises the new CAT tools, including Memsource and memoQ. Besides, several other instances of progress such as the morphology in translation technologies, cross-language interpretation system and terminology bases are also mentioned. As an official journal for the professional body, the *ITI Bulletin* notes the economic and ethical dimensions of MT and CAT though in a small number of articles.

Perception of MT and CAT in *MultiLingual* (US)

Figure 2 shows the percentage of each frame in *MultiLingual* articles. The progress frame prevails in 30 out of all the 34 articles (88%). Translation quality is discussed in more than half of the articles (53%). Humans and machines are believed to coexist and cooperate in 15 articles (44%), while nine articles (26%) mention the threat and challenges MT brought to human translators. 35% of the articles mention the economic factor and existing problems of the current technology. Only four articles (12%) brought up the concerns for data security or moral implications of the technology.

Figure 2. Percentage of frames about MT and CAT in *MultiLingual*

MultiLingual deploys mainly a progress frame in describing the development of translation technologies in its articles. The journal holds a generally positive view of the development in translation technologies. It is equally optimistic about the application of CAT tools, lavishing praise in a majority of its articles. With reference to quality assurance (QA), an important aspect of CAT tools, an article in the July/August 2017 issue reviews the "evolution of QA technology" in CAT tools (Korkas, 2017, p. 57). When talking about the latest trend in translation memory (TM), Boukhvalov and Jimenez (2017, p. 52) describe it as one of "the most valuable digital assets for the language technology industry". Another article in the October 2018 issue argues that "building up a TM has the advantage that the translation process becomes quicker and more efficient with each new translation" (Wetzel, 2018, p. 40).

The journal's attention to MT is mostly centred around the latest development in recent years. A column article in the October 2018 issue asserts that MT has become the mainstream in the translation industry. *MultiLingual* applauds the progress made in neural MT in particular and predicts a bright future of the technology based on its current performance. For example, in a white paper on the application of AI to MT in the November/December 2018 issue, the Memsource engineer Tamchyna (2018, p. 26) acknowledges that "it is true that with the recent advancements in neural MT, the output quality is inching closer to human translation". With regards to its future development, Tinsley (2017, p.30) expressed his optimism that "despite the fact that we are in the early days of neural MT, there is clearly cause for optimism based on initial performance." Another feature article in the January 2018 issue holds a similar view in predicting a bright future for the technology. *MultiLingual* also features statistical MT in one article which measures its benefits. The journal also highlights the impacts brought by AI to translation as evident in one business article in the November/December issue.
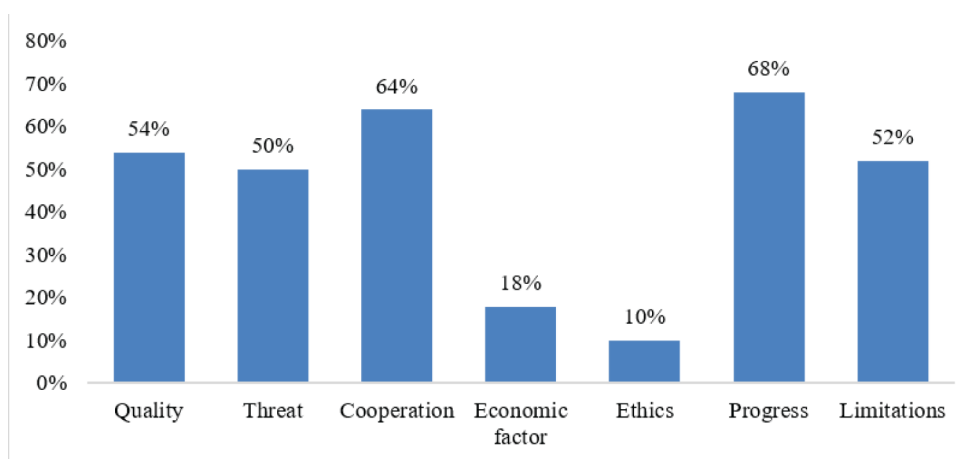
Most of the limitation frames in *MultiLingual* are associated with MT, including both statistical machine translation (SMT) and neural machine translation (NMT). It is pointed out that in general machines have difficulty in conveying "[c]ultural and emotional aspects such as humour and irony" (Wetzel, 2018, p. 40). A technical article in the January/February 2017 issue indicates that "[a] constant problem with SMT is the issue of out-of-vocabulary words" (Zydroń & Liu, 2017, p. 66). More recent NMT also falls short in dealing with unknown words and terminology, tagging and debugging. As a white paper in the November/December 2018 issue points out, "neural MT still makes serious mistakes and its quality can be upset by more complex sentences" (Tamchyna, 2018, p. 26). Additionally, *MultiLingual* addresses one of the challenges in relation to data protection, as identified by Boukhvalov and Jimenez (2017, p. 53), "the current state of language technology, including CAT

and machine translation, does not provide adequate support for translation and management of sensitive data, short of managing it in a classified or similarly protected environment."

Perception of MT and CAT in Chinese Media

The percentages of frames about MT and CAT in Chinese media articles are presented in Figure 3. A majority of the articles in Chinese media focus on the progress in MT (68%) made in recent

Figure 3. Percentage of frames about MT and CAT in Chinese media

years and considerations about human-machine cooperation and coexistence (64%). Around half of the articles express concern over its problems and limitations (52%), challenges or threat posed by machines to humans (50%) and discuss the quality issue (54%) in MT and CAT. Economic factors surrounding MT and CAT are mentioned in nine articles (18%). Only five articles (10%) mention ethical issues in relation to technology.

It seems that the Chinese media has devoted nearly most attention to the progress of MT and possibility of human-machine cooperation and coexistence. A close look through the articles reveals that Chinese media are generally excited about the recent breakthrough in NMT related to the development of AI technologies such as voice recognition and deep learning.

Equal attention is also paid to quality, limitation and threat or challenges in around half of the articles. There are still many technical difficulties in MT that need to be overcome, such as semantic ambiguity, word disorder, morphology which cause misunderstanding during communication. Translation and interpreting are not merely mechanical, linguistic transformation but involve emotions and feelings, which is particularly so in interpreting. An article in *Guangming Daily* on 16 March 2019 summaries four common problems with commercial MT systems: 1) errors, omission and repetition, 2) reference, 3) online optimisation capabilities and 4) tone, stress, intonation and body language in terms of interpreting. Several mainstream Chinese news articles highlight the disastrous errors made by the AI-powered simultaneous interpreting services provided by Tencent at the annual Bo'ao Forum for Asia conference and iFlytek at the International Forum on Innovation and Emerging Industries Development in 2018 respectively.
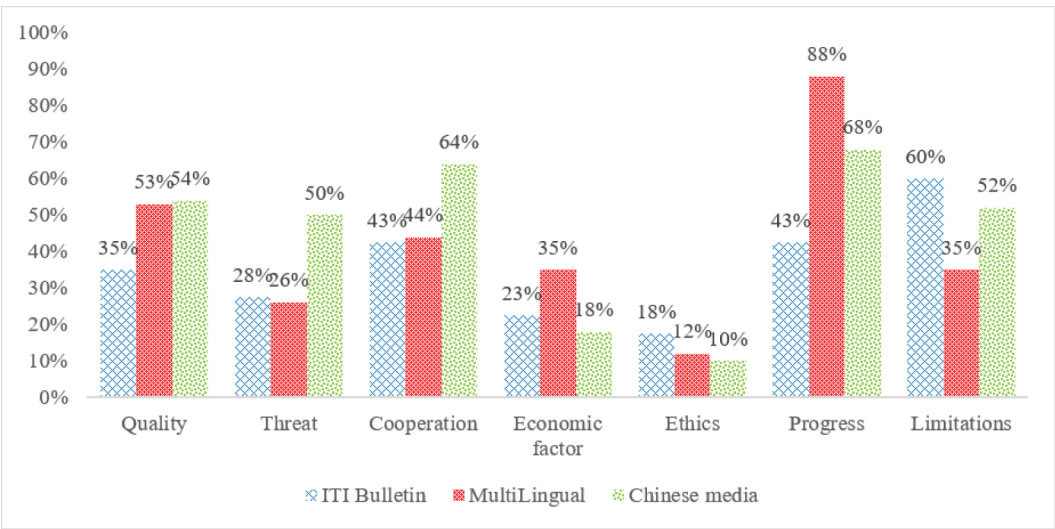
The economic factor frames in the Chinese media appear in nine articles (18%), much less than its English counterparts, which might be due to the fact that the target readership of the news articles are mainly members of the public as opposed to the professional journals aiming at professional translators

and interpreters. Similarly, the ethics frames appear in only five articles, though intellectual property, data security and copyright issues are mentioned about translation products produced by AI and MT.

DISCUSSION OF PROMINENT FRAMES

Figure 4 is a comparison of the frames among *ITI Bulletin*, *MultiLingual*, and the Chinese media, which indicates that some frames are more prominent than others in the perceptions of MT and CAT

Figure 4. Comparison of the frames among *ITI Bulletin, MultiLingual*, and the Chinese media

by both professionals and by the public though degrees of attention paid to each frame vary across them. The prominent frames include progress of MT and CAT in recent years, translation quality, MT and CAT as a threat and their limitations, and human-machine cooperation.

Progress of MT and CAT in Recent Years

Figures 5 to 7 visualise the thesaurus sketches of the core word "translation" and of its Chinese equivalent "翻译", as generated from each sub-corpus by Sketch Engine, which indicate that progress of MT and CAT in recent years is a prominent frame in the perceptions by both the professional journals and the media.

In thesaurus sketches, the closer the other words in the same sub-corpus are to the core word (translation) in the centre, the more similar the core word is perceived to them. The sizes of the dots around the words represent their frequencies in the corpus. As seen from Figure 5, although (human) translators are represented most frequently in relation to the core word "translation" in the *ITI Bulletin* sub-corpus, translation is perceived as synonymous to machine or MT in close relation to translation engine and translation tools.

As seen from Figure 6, like *ITI Bulletin*, *MultiLingual* views translation as synonymous to MT in close relation to translation technology, tools and systems such as SMT and NMT.

As seen from Figure 7, unlike the English-language professional journals, the Chinese media perceive translation predominantly as 技术 (technology) and 语言 (language), though it co-occurs with 机器 (machine) and 智能 (artificial intelligence) frequently and more specifically 识别 (voice recognition), 系统 (systems) and 翻译机 (translation machines).

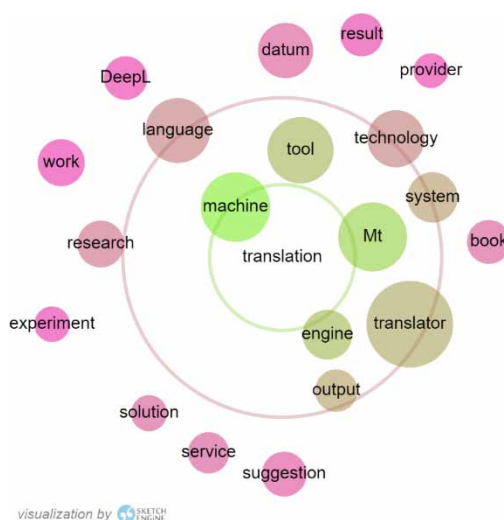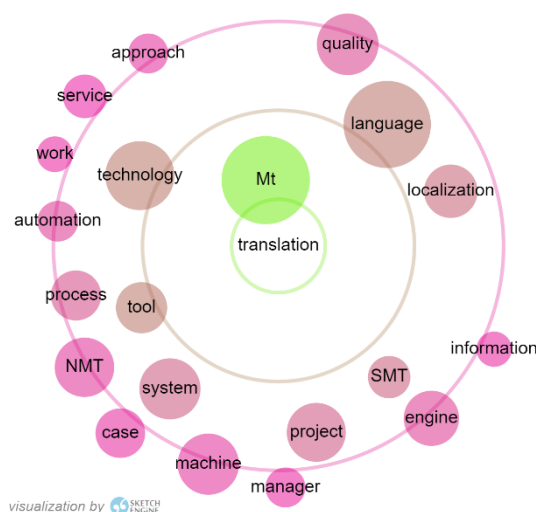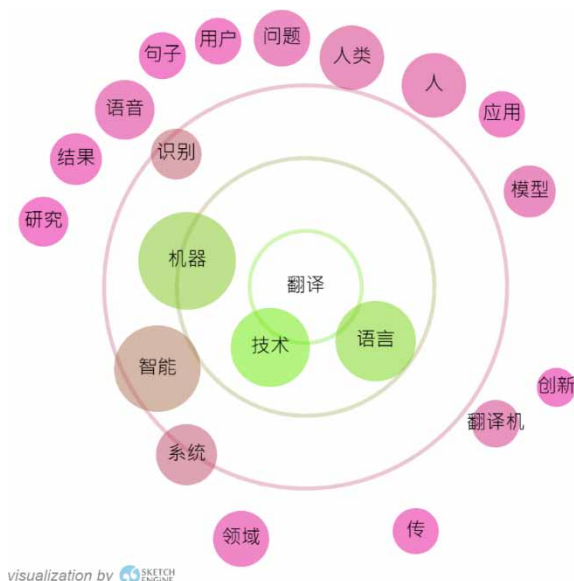**Figure 5. Thesaurus sketch of "translation" in *ITI Bulletin***

Figure 6. Thesaurus sketch of "translation" in *MultiLingual*

Translation Quality of MT and CAT

The quality frame has been used by both the journals and the media as a benchmark to evaluate fluency and adequacy, two measurements of translation output produced by MT systems and CAT tools. It is discussed in over half of the articles in *MultiLingual* and in the Chinese media, and in over a third of the article in *ITI Bulletin*. As seen from the following representative excerpts of the articles, people feel excited about the new improvement of quality in MT but they don't think it is ready for use now. Excerpt 1 and 2 from the *ITI Bulletin* suggest that quality is improving with the aid of neural systems. Similarly, *MultiLingual* maintain that the quality of translation produced by NMT is better and the errors are fewer, which can be seen from Excerpt 3 and 4. They also voice reservations about the quality of MT, as shown in Excerpt 5 and 6 from the Chinese media:

Figure 7. Thesaurus sketch of "翻译" (translation) in the Chinese media

1. "We've seen that there are various quality improvements, particularly with the advent of neural MT" (Moorkens, 2019, p. 8);
2. "I found that the quality of MT improved as the amount of training data was increased" (Haycock, 2019, p. 15);
3. "The production engine was better at producing perfect output due to its refinement over time" (Tinsley, 2017, p. 31);
4. "Furthermore, Google has stated that MT errors between English and Chinese have been reduced by 60% through the use of their NMT compared to their previous phrase-based system" (Hu, 2018, p. 33);
5. 机器翻译的质量远没有达到令人满意的水平 (The quality of machine translation is far from satisfactory) (*Guangming Daily*, 16 March 2019);
6. 但根据《2019中国语言服务行业发展报告》调查研究显示, 目前机器翻译质量满意度总体仍然偏低 (However, according to the survey and research in the "Chinese Language Service Industry Development Report 2019", the overall satisfaction of machine translation quality is still low) (China.org.cn, 24 December 2019).

MT and CAT as Threat and Their Limitations

Most of the texts frame a competition between machines and humans or even MT systems as a threat to human translators. However, the professional journal and news articles deploy the frame slightly differently. The professional journals employ words such as *conflict*, *competition*, and *challenge* to describe the relationship between man and machines, putting them in two opposites (Excerpt 7). And at the same time they also provide a firm answer that machines will not replace humans (Excerpt 8). In contrast, MT and CAT are hyped as a threat that will replace HT in half of the Chinese media articles, almost double the frequency in the professional journal articles. These articles suggest that MT has brought a significant impact on the traditional model of HT and raise the question whether machines will replace human translators in the era of AI. Ten out of 25 (40%) of these threat frames are embedded as interrogative questions, which arouse an immediate sensation among the general public. This result may be explained by the fact that many media outlets try to create eye-catching

effects. For instance, *Hubei Daily* published a news article on 17 December 2018 titled "机器翻译会取代人工吗?" (Will MT replace humans?) in which it quotes He Enpei, the CEO of Transn, saying that "机器翻译还无法代替人类译员" (MT cannot replace human translators) (Excerpt 9).

7. "This year's Translating and the Computer (TC38) conference focused on the conflict between man and machine" (Ford & Haycock, 2017, p. 32);
8. "Neural MT will not be a replacement for human translation" (Tinsley, 2017, p. 33);
9. 在可预见的未来, 机器翻译还达不到专业译员水平。(In the foreseeable future, machine translation will not reach the level of professional translators) (*Hubei Daily*, 17 December 2018);
10. 因此机器翻译不会取代人工翻译 (Therefore, machine translation will not replace human translation) (*Xinhuanet*, 1 March 2019).

Human-Machine Cooperation

As the framing analysis shows, the human-machine cooperation frame is particularly prevalent in the Chinese media articles, and it is slightly less frequent in the English-language professional journals. The human-machine cooperation is mostly provided as a solution to the previous question of whether humans will be replaced by machines. Excerpt 11 and 12 from *ITI Bulletin* and *MultiLingual* reveal the professionals' attitude that human should play the primary role in determining the translation tasks while machines provide assistance in achieving better accuracy and efficiency.

11. "Machine translation (MT) is not a replacement for professional translators, but it can be a helpful technology for the professional translator, if used appropriately" (Zetzsche, 2017, p. 25);
12. "MT will remain dependent on human translation for its training data for the foreseeable future" (Lommel et al., 2018, p. 30).

The cooperation frame is the second most prominent among all frames in the Chinese media, appearing in 64% of the articles. A search of "人机" (human-machine) in the Chinese media sub-corpus results in 61 instances throughout the texts. These articles generally believe that machines and humans should complement each other and humans should work with the aid of machines. This even results in the creation of new Chinese expressions in the media articles, including "人机耦合" (22), "人机交互" (9), "人机共译" (4), "人机结合" (4), "人机协作" (3), "人机协同" (2), "人机合作", "人机共舞", and "人机合一", which all share a similar meaning of the cooperation between humans and machines.

CONCLUSION

This study has shown that the English-language professional journals and the Chinese media use the following frames in their perceptions of MT and CAT, including *progress, quality, threat, limitation, cooperation, economic factors* and *ethics*. It is also found that degrees of attention paid to each frame vary across them and attitudes vary between the professional journal and the media on the role of MT as related to human translators. While *ITI Bulletin* holds a generally conservative attitude, *MultiLingual* takes a more positive stance towards the applications of MT and the Chinese media hype MT as a potential threat to HT but promote human-machine cooperation as the way out. It must be pointed out that the Chinese media hype about MT often deploy the threat frame that MT will soon replace HT in the era of AI, which has cast a negative influence on professional translators and interpreters. This study has also shown that the ethical and legal issues involving MT and CAT have not been addressed adequately.

Although the researchers have tried to conduct a systematic coding of the data, there might still be the limitation of the inter-coder reliability which generally requires more coders. Another limitation lies

in the comparability of data because the English journal articles collected in this study are written by scholars or professionals, whereas the Chinese media texts may not always be so. In future studies, it might be useful to include more Chinese articles written by scholars and professionals. Further research may also assess the implications of the perception study to professional translators and interpreters.

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