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On Technological Turn of Translation Studies: Evidences and Influences*

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***Abstract*—With the rapid development of translation technology and globalized translation industry, there has emerged a great number of translation software, and the translation practice has been transformed hereby. The objective of this paper is to explore the technological turn of translation studies. This study finds that a technological turn of translation studies has occurred in translation studies. This paper defines the concept of technological turn of translation studies, demonstrates the evidences of the technological turn, investigates the reasons of the technological turn, and analyzes its great influence on translation studies. This paper suggests that the translation academia shall pay attention to the technological turn of translation studies, and make use of translation technologies, and conduct further research in this new field.**

***Index Terms*—translation technology, translation software, technological turn**

I. Introduction

With the rapid development in natural language processing and IT technology, plus the enormous and fast-growing market demand on translation services, the 21st century witnesses a great boost in translation technologies, which greatly enhanced the translation speed and efficiency, and brought great changes to translation practice and industry. Bowker (2002, pp. 5-9) defines translation technology as various types of technologies used in human translation, computer translation, and computer-aided translation, including word processors and electronic resources, and software used in translating, such as corpus-analysis tools and terminology management systems. Chan Sin-wai (2004, p. 258) defines translation technology as "a branch of translation studies that specializes in the issues and skills related to the computerization of translation." Choudhury and McConnell (2013) divide translation technology into four major components, translation memory, which enables translators to re-use and learn from previous work, translation management systems, which automate project management and publication, terminology management systems, which encourage the use of standard terms, names, and translations, and quality assurance tools. To summarize it, translation technology refers to computer-aided translation (CAT) technologies, which mainly fall into four subcategories, translation memory, translation management tools, terminology management tools and quality assurance tools.

II. Literature Review

Over the past few decades, translation studies has witnessed linguistic turn in 1960s to 1970s, in which scholars investigates translation issues by adopting linguistic theories, and cultural turn in 1980s to 1990s, as Bassnett and Lefevere(1990, p. 4) argued that the translation unit has moved from word or text to culture, which announced the cultural turn in translation studies. Both linguistic turn and cultural turn aim to examine translation studies from the perspective of other disciplines.

Hornby (2006) pointed out another two turns in translation studies, empirical turn and globalization turn. The former indicates that more empirical studies have been made in translation studies. The latter suggests "the rapid development in information technology that took place during the 1990s (and are still continuing today) have radically changed the daily life of the translator and interpreter"(Hornby, 2006, p. 56). Advertisement has become an important issue of translation in globalization. English has become a dominant language. Translation technology was not mentioned in three of the above turns, linguistic turn, cultural turn and empirical turn. Hornby (2006) did talked about translation technology in globalization turn, but she highlighted the impact of globalization rather than CAT tools. This paper thus will investigate a technological turn in translation studies.

III. Evidences of the Technological Turn

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With a globalizing economy, all global companies, either big or small, aim to sell their products to global markets, which results in a huge demand in multi-lingual documents production, such as software development, localization, product brochures, web pages and etc. Some global giants, such as IBM, Microsoft, Dell, Oracles,and etc, have huge demand and they require fast services. Thus the old and traditional translation service cannot meet their needs, as it largely depended upon human resources and was too slow. They require better and faster language services to meet the market needs. Therefore, CAT tools were invented, and was proved as well highly efficient. By and by, more companies require language service providers to adopt CAT tools. CAT tools were soon widely used in the industry. Due to the huge market demand, translation technologies have been developing very rapidly. In 1984, there is only Trados in Europe. Now CAT tools have been developed in all parts of the world. It is estimated that "about three computer-aided translation systems have been produced every year during the last 28 years" (Chan, 2012). In fact, to a certain degree, the emergence of translation technology and its fast development is originally triggered by the language service customers and the language service market. Up till now, drastic changes have taken place in the field of translation. Many evidences proves that a technological turn have occurred in translation studies

A. Translation Software Grows like Mushrooms

Chan (2012) divided the development of translation technologies into four periods: germination period (1981 to 1988), growth period (1988 to 1993), rapid growth period (1993 to 2003), and the period of global development (2003 to the present). The forerunner, SDL Trados, witnessed the whole development history of translation technologies. Table 1 shows its version history.

TABLE 1
TRADOS VERSION HISTORY

1984	Trados	2005	Acquired by SDL
1990	multiterm	2006	SDL Trados 2006
1994	workbench	2007	SDL Trados 2007
1997	WinAlign	2009	SDL Trados 2009
2001	Trados 5	2011	SDL Trados 2011
2003	Trados 6	2013	SDL Trados 2014

Table 1 shows Trados was first released in 1984, in its early stage (1984-2001), its development is still quite slow, with an average interval between versions of 3.6 years, from 2001 to 2011, its development speed increased significant, and it releases versions in about every two years, though it was acquired by SDL in 2005, which interrupted its development process. This indicates that translation technologies grow steadily and rapidly.

When Trados was first released in 1984, it was the first of its kind in the world. Now CAT tools have flourished, and its number has been greatly multiplied. Chan (2012) estimates that "about three computer-aided translation systems have been produced every year during the last 28 years". At the beginning period, only six countries were involved in the development of computer translation. However, by year of 2007, 30 countries have conducted research on translation technologies, including Canada, China, France, Germany, Hungary, the United Kingdom and so on. He also predicts that translation technology will maintain its momentum for many years to come. Hutchins (2009) listed 26 Localization support tools, 31 Translation memory systems/components, and 6 Translator workstations. Wang Huashu (2010) listed 23 CAT software, and 30 localization tools. This surely is not a full list. And new and amazing technologies continuously appeared in the market and the number of CAT tool is still growing. Here is a list of major translation tools.

TABLE 2
MAJOR TRANSLATION TOOLS

CAT		Localization tools	
Across	SIMILIS	Adobe RoboHelp	KeyTools
Déjà Vu	STAR Transit	Alchemy Catalyst	Lionbridge Logoport
Google Translator Kit	SDL Trados	Atril Déjà Vu	Localizer
Heartsome	Snowman	Html Help Workshop	Microsoft Helium
MetaTexis	Wordfast	Heartsome	Oracle Hyperhub
memoQ	Yaxin	IBM TM/2	SDL Passolo
			SDL Trados

In addition to this, at the beginning, CAT tools had only the standalone editions, such as Trados, Déjà Vu and so on. Now, there emerged CAT tools in different forms, such as online versions, cloud versions. Google translation toolkit[1] and Matecat[2] are two examples of the former, which are virtually web-based CAT tools, allowing translators to conduct translation tasks without installing any CAT tools provided there is internet access. XTM[3] is an example of the latter, which provides powerful translation memory, allowing the project team to take smooth collaborations.

[1] Google translation toolkit is an online translation platform, developed by Google Company.
[2] Its official website is: http://pro.matecat.com/
[3] Its official website is: http://xtm-intl.com/

B. Translation Softwares Are Widely Used

In 1980s, very few people knew computer-aided translation technology, or even heard of it. Now it is estimated that there are about 200,000 translators who use CAT tools in their translation, and also over 6,000 big companies require the use of CAT tools in the language services (Chan 2012). According to a survey on 391 UK freelancers made by Fulford and Granell-Zafra (2005), only 28% of them used CAT tools, such as Trados, Deja Vu, SDLX and Transit and etc. And about half of them were unfamiliar with them at all. Only 5% of them used machine translation system, and 75% of them were not familiar with them. Only 2% used localization tools, such as Alchemy Catalyst, Passolo and etc. Eight years later, Jared's (2013) survey on fulltime professional translators from Proz.com, shows that 88% of respondents use at least one CAT tool for at least some of their translation tasks. And even among the rest 12% who do not use a CAT tool, 68% had used or tried to use a CAT tool before, only 32% had never used one at all. From 28% to 88%, the dramatic change in number shows CAT tools have been getting more popularity in a short span of 8 years, and CAT tools are widely used now in translation market.

In addition, there is also a change in translator's attitude towards CAT tools. Fulford and Granell-Zafra's (2005) study also indicates translators are less convinced of the value of CAT tools and the benefits to be derived from their use. Nevertheless, those who had already adopted CAT tools were generally more positive than those who had not. Jared's (2013) survey shows, almost all CAT tool users agree that the use of a CAT tool helps them translate more efficiently. This indicates that more and more translators get to know the value of CAT tools. This might predict a tendency that CAT tools will be more widely adopted by translators.

C. More Universities Offer CAT Courses, Master of CAT

In 2002, the first Master of Arts in CAT was established at the Department of Translation, The Chinese University of Hong Kong (Chan, 2012, p. 3). In March 2006, Peking University began to offer the MA program of CAT, the first of its kind in Mainland China. The program offers a wide range of CAT-related courses, such as CAT technology and its application, terminology, localization and globalization, translation project management and etc.

MIIS (Monterey Institute of International Studies) has long been offering computer-assisted translation courses in its MA programs of translation, translation and localization management, such as computer-assisted translation, terminology management, localization and etc.

Since 2005, EMT (European Master's in translation) has begun to offer CAT-related courses, such as terminology work, Information technology for translation (He Xianbin, 2009, p. 46).

In 2007, MTI (Master of Translation and Interpretation) was established in China, and now 158 universities in China offers MTI programs. Its objective is to train practical and professional translators and interpreters so as to meet the market demand and the globalizing economy. It is suggested that translation technology-related courses should be provided, such as application of CAT tools, terminology, translation project management, and etc., so as to meet the objectives of MTI program (Miao Ju & Shaoshuang, 2010, p. 66). This proves that translation technologies are winning more and more attention in translation teaching and training.

D. More Research on Translation Technologies

On May 2, 2013, the researchers searched, with CAT as the keyword in the title, on CNKI, the largest database for social sciences in China, and got 124 papers on CAT. The yearly distribution of paper publication is demonstrated by the following Table 3.

TABLE 3
YEARLY DISTRIBUTIONS OF PAPERS ON CAT

Year	1980	1981-88	1989	1990	1991	1992	1993-94	1995	1996
Number	1	0	1	0	1	1	0	1	1
Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
Number	1	0	3	3	1	8	2	6	6
Year	2006	2007	2008	2009	2010	2011	2012	2013	
Number	9	7	5	12	17	11	24	36	

The earliest paper, authored by Bruderer and Xu Zhimin(1980), appeared on 1980, which introduced the basic condition of computer-aided translation. The second paper appeared nine years later, which introduced a CAT software, developed by Transtar for the petrol industry (Guangtai, 1989). The table shows, from 1980 to 1998, only 7 papers were published during the period of 19 years. From 1999 onwards, the publication on CAT has never been interrupted and it grows steadily each year. The number also demonstrates a rising tendency, which indicates that research on CAT has obtained more and more attention in translation studies. The research topic of earlier literature are introducing either the development tendencies or CAT softwares, while those of the latest literature are more diversified, such as CAT in translation teaching, CAT in translation practice, building bilingual corpus via CAT tools and etc. This shows the research on translation technologies is getting more and more diversified and extensive.

E. More Translation Jobs Require CAT Use

At 15:14, May 8, 2013, the researchers browsed 50 translation jobs on Proz.com, a leading workplace of translation industry on the first and second page. Proz boasts to be the leading source of translation jobs and translation work for

freelancers. And it claims to be the home of over 300,000 professional translators and translation companies. The 50 jobs covers various language pairs, to name a few, English to French, Italian, German, or Estonian, Assamese, or from Chinese to Hindi, Sinhalese to English, Danish to Serbian, German to Russian and etc. 18 jobs required CAT use, which amounts to 36% of the total number. Among them 16 jobs required use of SDL Trados. As for the rest, one required SDLX, and the other Across. Besides SDL Trados, one poster listed as the preferred software SDLX, Wordfast, and memoQ as well, one listed Wordfast. Though 32 jobs did not specify the use of CAT tools, the investigation shows CAT use has been a prerequisite for translation jobseekers and a necessity for the translation industry.

These evidences cover major fields in translation studies, such as the translation industry, translation history, translation practice, translation research, translator training and etc. Thus it constitutes a fairly complete chain of evidence for the technological turn in translation studies.

IV. Definition of Technological Turn

A technological turn refers to an emerging field in translation studies, which featured with research on translation technology-related topics. It covers a wide range of research topics, such as teaching CAT, translation memory, terminology management, translation quality assurance, translation project management, translation industry, and etc., which tend to be ignored or never exist in traditional translation studies. Cronin (2010) comments that the turn is "the result of significant shifts in the way in which the translation is carried out in the contemporary world." Fundamentally, the technological turn is caused by the rapid development of IT technology and the ever-growing market demand on translation.

V. Influence of Technological Turn

It influence are far-reaching. First, it restructured translation studies. Based on Holmes' (2000) description, Toury (2001) made a map of translation studies as shown in Figure 1, which helps to establish translation as a discipline.

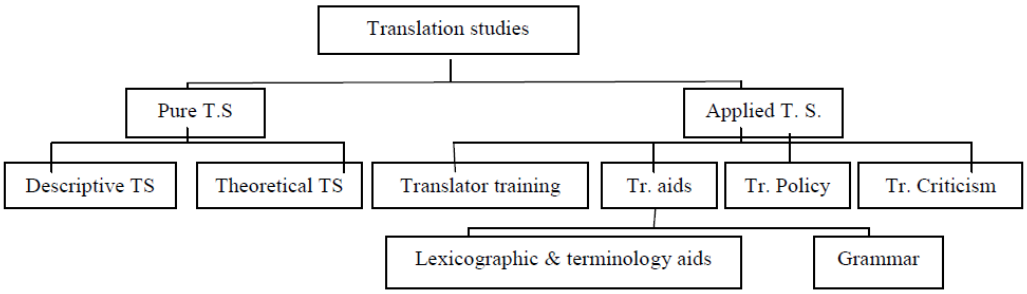

Figure 1 Toury's Map of Translation Studies

The map divides translation studies into two major branches: pure translation studies and applied translation studies. Neither of them includes translation technology at all. Translation aids sounds related to translation technology, but Holmes(2000) broke them into only two categories, lexicographic & terminology aids and grammar, which is quite different from translation technology that we use today. Quah (2006) extended Holmes' map of applied translation studies, with a special emphasis on translation technology, as shown in Figure 2.

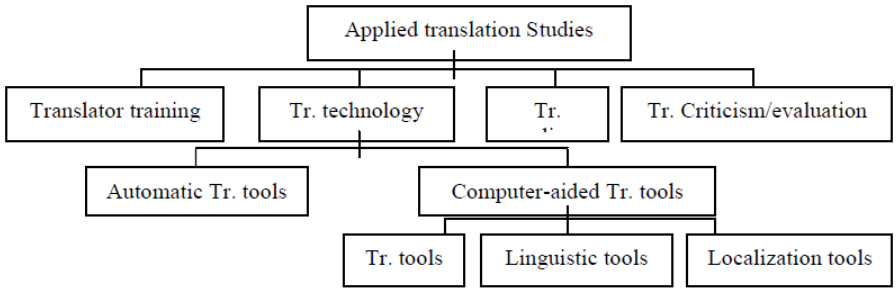

Figure 2 Quah's Scheme of Applied Translation Studies

One significant change is Quah replaced "translation aids" with translation technology, because translation aids are no longer limited to Lexicographic & terminology aids and grammar, as suggested by the sub-branches, which is supposed to reflect the contemporary developments in translation industry. In fact, it has expanded the scope of translation studies and brought in some new fields of study, such as translation industry, translation project management, translation quality assurance, research on CAT-related topics and etc. Translation technologies has brought some new terms into translation studies, such as translation memory, fuzzy match, match rate, localization, pre-editing, post-

editing, light post-editing, full post-editing, out-sourcing and etc. And it provides new angles on translation topics as well, such as translation quality, translation standard and tec.

Secondly, it has transformed in translation industry significantly. In current translation market, every step of translation work flow is facilitated by translation technologies. From quote, word count, pre-translation processing, translation project management, term extract, terminology management, translation quality assurance, post-translation processing and etc., translation technologies has made an essential role in contemporary translation industry. With the help of translation technology, translators, of any language pairs, at all corners of the world, could work for one translation project at the same time, and share their translation memory and terminologies. In addition, the development of translation technology has brought forth market giants, like SDL Trados, Lionbridge, HiSoft, and etc. What's more, for freelancers and translators, it has become a prerequisite for some job opportunities as mentioned in 3.6.

Thirdly, it has transformed translation practice as well. In the long history of human translation, translation had been done only manually, namely with pen and paper only. In 1990s, computers began to be widely used, and now nearly all translations are done on computers. Compared with human translation, computer aided translation is much more advanced, in terms of time-saving, quality control, process supervision, project management and etc. By entering the 21st century, CAT tools are getting increasingly popular. It has greatly enhanced translation speed and creatively helped to assure translation quality, which caters to the globalization of world economy and the increasingly huge market demand. In terms of the degree of human intervention, all translation nowadays is computer-aided translation (Chan, 2012, p. 2). Freelancers nowadays cannot do translation without the help of internet, online resources, computer software of many kinds and etc. Gone are the days when translation is made by man, pen and paper. And the days have come when translation is made by man and computers equipped with CAT packages and internet access.

Fourthly, team collaboration becomes more and more common. In the long history of human translation in all parts of the world, translation was mostly conducted by individuals. Cooperation between translators was also frequent, but it mostly occurred between two translators, such as Yang Xianyi and Gladys Yang, Lin Shu and Wang Shouchang, and etc. Translation team was rarely seen in the past as it raises the difficulty of quality control and project management and etc. However, due to the rapid development of translation technologies and IT technologies plus the requirement of the customers, translation practice requires more and more team collaboration. As translation projects tend to be bigger and bigger, whereas the time allocated become shorter and shorter, translation team become more and more common in the industry in order to finish the projects in time. Thanks to the rapid development in IT technology and translation technology, online collaboration became possible for translation teams, which allows them to share translation memories, terminologies, and to manage and supervise the translation projects as well. The development of translation technology also makes outsourcing possible in translation industry. Yeeyan[4] company is a leading outsourcing company in translation industry. In has accomplished many great translation projects. In 2008, after the Menchuan Earthquake, Yeeyan Company organized over 600 translators finished the translation of earthquake relief documents with a total count of 100,000 words in only one week. In October 2011, Yeeyan picked 5 translators via internet from hundreds of candidates. They finished the translation of Steve Jobs in only one month, with a word count of 500,000 words, which enables the synchronous publication of its Chinese version together with the original version (Yeeyan, 2014). To organize a number of translators, who have never seen each other before and even after the completion of projects, to collaborate for an urgent translation project, which is usually big in size. all these are beyond the imagination for traditional translators. With the progress in translation technology and IT technology, outsourcing has become possible in translation industry as well. In order to accomplish a big translation project, which has become the biggest share in the translation market, team collaboration has also become a necessity.

Finally, it also redefined translation competence. Previously, translation competence mainly refers to bilingual and cross-cultural competences of translators. As CAT becomes a dominant tool in translation industry, translator's competence in translation technology will be getting increasingly important. The future translation will be determined by two factors, how well you master translation technologies, and how far the translation technology develops. A qualified translator should possess bilingual competence, but translation technologies as well, which help them to improve both efficiency and quality in translation, therefore increase their productivity and income, and help their customer to save the cost as well. And this has a great impact on translator training and teaching in various aspects, such as teaching objectives, teaching methods, syllabus design, evaluation and etc.

VI. Conclusion

The technological turn is the result of rapid development of IT technologies and huge demand of market demand. Unlike other turns in translation studies, it not only brought in new angles on translation studies, but more importantly, expanded the scope of translation studies, brought in new terms, topics, enriched the content of translation studies, transformed the translation practice, greatly influenced the translation industry, and redefined translation competence. In addition to this, translation technology serves as a practical link between translation theory and practice, academic research and translation industry.

[4] Its official website is http://www.yeeyan.org.

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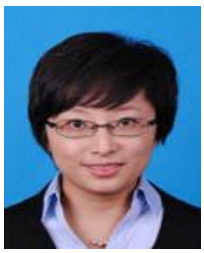

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