A Socio-technical-cultural System Perspective to Rethinking Translation Technology in Intercultural Communication

Li, Mei; Zhou, Chunfang; Henriksen, Lars Bo

Published in:
Communication & Language at Work - CLAW

DOI (link to publication from Publisher):
10.7146/claw.v7i1.123259

Publication date:
2020

Document Version
Publisher's PDF, also known as Version of record

Citation for published version (APA):
Li, M., Zhou, C., & Henriksen, L. B. (2020). A Socio-technical-cultural System Perspective to Rethinking Translation Technology in Intercultural Communication. *Communication & Language at Work - CLAW*, *7*(1), 100-110. https://doi.org/10.7146/claw.v7i1.123259

Communication & Language at Work (2020) Vol. 7(1), 100-110

COMMUNICATION &LANGUAGE at work

A Socio-technical-cultural System Perspective to Rethinking Translation Technology in Intercultural Communication

Mei Li
Ph.D., Northeastern University, China
1710477@stu.neu.edu.cn

Chunfang Zhou
Associate Professor, Aalborg University, Denmark
chunfang@plan.aau.dk

Lars Bo Henriksen
Associate Professor, Aalborg University, Denmark
lbh@plan.aau.dk

Abstract

As technology has radically changed language translation in the age of globalization, the research on translation technology should not only benefit current research on translation of languages but also have a long-term positive impact on technology in the sociocultural context. The focuses of this paper are twofold. Firstly, it discusses how translation technology drives the changes in intercultural communication that bring both bright and dark sides. Secondly, it explores how translation technology's involvement and interaction with human translator in practice of language translation from a socio-technical-cultural system perspective. Based on the discussion, this paper particularly addresses human translator's collaboration with translation technology should be regarded as a cultural mediator helping to realize successful intercultural communication; and meanwhile, the human translator' s subjectivity should be highlighted, and translation technology's cultural design should be explored in order to improve usability that further brings benefits to the future cultural mediator.

Keywords

Intercultural Communication, Translation Technology, Socio-technical-cultural System, Human Translator, Cultural Mediator

1 Introduction

'Translation' etymologically, means 'carrying across' or 'bringing across'. It is derived from the Latin word 'translatio' which comes from 'transferre', be made up of 'trans' means 'across' and 'ferre' means 'to carry' or 'to bring'. Translation is the communication of meaning from one language (the source) to another language (the target) (Poyatos, 1997). So, it is well known that the purpose of translation is to convey the original tone and intent of a message, considering cultural and regional differences between the source and target languages and has been used by humans for centuries, beginning after the appearance of written literature (Foster, 1958). In other words, to translate is to re-express a language in a second language when two people from two quite different sociocultural backgrounds meet together, eager to fully communicate oneself with the other.

Traditional translation studies focus on translation activities before the advent of computers, while modern translation studies focus on the diversification of translation techniques caused by a series of technological changes after the advent of computers. With the development of information technology and the popularization of network, multi-language and multi-culture network platforms have become people's daily communication. In this era of information explosion, the traditional human being's pure time-consuming mental work with pen and paper cannot meet the needs of translation because of its wide demands, heavy workload and urgent timeliness. Therefore, translation technology is becoming widely used in translation activities. To complete the communication between two languages with translation technology involving cultures behind them. As Poyatos (1997) addressed, translation is the language processing for the communication between two cultures, which involves understanding and resonance of cultural diversity. Hence, translation is not only an inter-linguistic exercise, but an intercultural one as well. Especially in the age of globalization, translation as a typical intercultural communication, to explore the diversity and nature of language, as well as the connotation of culture, the purpose of communication and the role of translation, etc. with a socio-technical-cultural system perspective can clarify the internal connection between language, culture, communication and translation, so as to stimulate translation technology's innovation and promote intercultural communication.

Given today's global atmosphere, it should be recognized that new technologies have radically changed ways of language translation. The progress of technology provides more possibilities and opportunities for the communication between different languages. Technology, as a tool, helps to facilitate the translation process by human translator. It helps to make translator's job much easier or replace part or overall duty that originally should be burdened on the translator's shoulder (Hutchins & Somers, 1992). However, there is also a dark side: in the globalization age, people's greater mobility, better communications, multicultural societies affect the translator's role, which in sociocultural context goes beyond traditional limits as a translator's subjectivity is receiving attention, whereas it is also facing challenge with the rise of information's explosion and technology's development, threatening human translator to have the danger of standing behind the machine, as a consequence human translator should be conscious of improving self-ability and collaborated with technology. In this sense, human translator-technology interaction brings both opportunities and challenges to translators. This further indicates the study of translation technology should endow cultural elements and explore in depth how technology can innovate in cultural diversity to drive its own improvement and satisfy translator's sociocultural and psychological identity, alleviate the cultural shock and contribute to the unity of cultural diversity.

Following above lines, this drives this paper to highlight the increasing complexity in practice of translation by use of technologies that meanwhile indicates a systematic approach should be a necessity. The systematic approach means the practice of translation involves interactions of ideas, knowledge, skills, action, technology, and many contextual elements. While undoubtedly, this indicates those interactions should be located in a socio-technical-cultural framework. These points further lead this paper to fill in the knowledge gap and propose two research questions:

1) *How can we understand the impact of translation technology in intercultural communication? And*
2) *What can we improve intercultural communication based on an analysis from a systematic approach to translation technology?*

In order to answer these questions step by step, this paper will explore 1) understandings on language translation in intercultural communication with specific discussion on the diversity and nature of language, the connotation of culture, the purpose of communication and the role of translation; 2) an understanding on translation technology in intercultural

communication, and 3) an understanding regarding translation technology as a socio-technical-cultural system. These points further help to structure lines into the following sections.

2 Understanding on Language Translation in Intercultural Communication

2.1 Diversity and Nature of Languages

As mentioned, for the human translator, translation is a mental activity in which the meaning of given linguistic discourse is rendered from one language to another. Translation cannot be referred to without mentioning 'language', which usually arouses public attention with two fascinating questions, one is what language is and the other is how many languages there are in the world. According to Anderson (2010), until 2009, there had been 6,909 living languages worldwide. However, languages are not at all uniformly distributed around the world. Just as some places are more diverse than others in terms of plant and animal species, the same goes for the distribution of languages. For instance, only 230 are spoken in Europe, while 2,197 are spoken in Asia. One area of particularly high linguistic diversity is Papua-New Guinea, where there are an estimated 832 languages spoken by a population of around 3.9 million.

The wave of the 'fourth industrial revolution' in the era of information technology promoting industrial transformation has accelerated the process of global economic integration. The interdependence of economic development has promoted the multicultural communication and interaction among different nations, as the mirror of culture, language plays an important role for culture's transmission, exchange and development and likewise, culture provides fertile soil for language's nourishment. Language, as one of the most important media for the global communication and cooperation, its diversity and nature are worth of exploring. Briefly, the fact is that it is quite difficult to define what language is as it is far too complex and comprehensive to be captured in any single definition. Language is way too aporic in the same way as say life, self or love to be defined (Schanz, 1990). A Chinese scholar named Wenguo Pan (2001) once collected and sorted out more than 60 representative definitions of 'language' from the early l9th century till now. While over the past hundred years, there have existed at least more than one hundred representative definitions on language. This definition, 'Language is an arbitrary, spoken, symbolic system for human communication...', embodies the nature of language, has been accepted by most western linguists. (Runqing Liu, 2017) Many scholars have their own opinions on language, such as Husserl believes that language is the transcendental condition that makes cognition possible; Heidegger believes that language is the dwelling place of existence; Gadamer believes that language is the medium through which we meet the world……. (Qi Feng, 1992) We might propose that instead of counting diversity of languages in terms of external forms, we might try to rethink the natural roles of all the languages in the world. As Wittgenstein (1953) described, the language provides the doors to hold open when we want to describe and to understand what people are thinking and doing; to understand and describe their realities and their life worlds and the changes that are the results of all that. So, the term 'language-game' is meant to bring into prominence the fact that the speaking of language is part of an activity, or of a form of life. With language, we can do a lot of things to disclose what and who we are. (Henriksen, et al., 2004).

When reviewing the definitions of language, words like 'symbols, tools, systems……' are inevitably repeated. To reveal the nature of language has always been the constant exploration of scholars. In the long course of human evolution, language is constantly enriching itself not only in accordance with the needs of their own language communication, but also with the needs of other multicultural communication. With the development of language itself, the definition of language must be improved as well; symbolic, systematic, social and especially cultural features should be highlighted. In addition, as the meanings of words and sentences depend upon how they are used in context, so the translation practice regarded as a kind of intercultural communication involves two distinct sociocultural contexts, needs a systematic and comprehensive review.

2.2 Communication and Intercultural Communication

As mentioned, basically, language is the most significant factor of the process of translation. Moreover, translation is a kind of communication across language and culture boundaries. Similar with the concept of language, it is not easy to define communication. As the term is derived from the Latin word 'Communis' which means 'to share', so, communication is a two-way process wherein the message in the form of ideas, thoughts, feelings, opinions is transmitted between two or more persons with the intent of creating a shared understanding (http://businessjargons.com/communication-process.html). Straight from Wikipedia, communication is defined as 'a process of transferring information from one entity to another'. We can also see from the *Oxford English Dictionary* that communication is 'the imparting or exchanging of information by speaking, writing, or using some other medium.' Above all, communication is a dynamic process, involves a sender and a receiver's verbal or nonverbal interaction,

whereas both sides' background identity including knowledge, competence, experience and culture perceptions as well as the medium possibly used, etc., can be greatly impacted and contribute to an effective communication. Communication is the essence of human interaction and learning.

The concept of communication is very closely linked with culture, and usually we cannot discuss only one without considering the other. As Larry (Larry, et al., 2016) noted, 'whenever people interact they communicate. To live in societies and to maintain their culture they have to communicate.' We may try to understand the purpose of communication from the connotation of culture, as the two concepts are so inextricably bound that some anthropologists believe they are virtually synonymous. Just like American anthropologist Hall (1976) proposed that 'Communication is culture and culture is communication'. The concept of culture was first defined in 1817 by Taylor (2005), according to whom, culture is a complex overall, including knowledge, belief, art, morals, law, custom, and all the ability and habit of human got in the society. Since Taylor, linguists have tried to define culture from different perspectives. Culture is often compared to an iceberg by scholars, where a small part of the material culture just lies on the surface whereas the spiritual part hidden beneath the surface is the most mysterious and great part, and cultural barriers, conflicts or dislocation are often caused by this part during the intercultural communication. Then, in its most general sense, intercultural communication occurs when a member of one culture produces a message for consumption by a member of another culture. Most preciously, intercultural communication is the communication between people whose cultural perceptions and symbol system are distinct enough to alter the communication event. Frequently, the term intercultural communication is used when referring to communication between people from different cultures, which will be restricted by the 'trinity' of language, consciousness and culture at the same time. 'Intercultural' emphasizes the contact, transformation and interaction between different cultures. As the context to study the relationship between language and culture, intercultural communication is readily understood as the communication between 'carriers of different cultures'. The fundamental principle of intercultural communication is that it is through culture that people communicate (Padhi, 2016).

3 Understanding on Translation Technology in Intercultural Communication

3.1 On Translation and Technological Turn

No matter east or west, in the field of translation theories, there is no proper definition on translation except the entry or explanation in dictionary. The *Oxford English dictionary* defines 'translate' as to turn from one language into another. The United States *New Webster's Dictionary* (third edition) defines translation as to turn into one's own or another language. *Cihai* of China defines translation as to express the meaning of one language in another language. Some western scholars make descriptive definitions of translation from different perspectives, among which Nida's Equivalence Translation Theory (Nida, 1982) is famous as 'Translating consists in reproducing in the receptor language the closest natural equivalent of the source-language message, first in terms of meaning and secondly in terms of style.' Languages from different cultures need to communicate with each other through translation, which is a kind of intercultural communication. Newmark (2001) put forward the 'communicative translation' concept, he thought the essence of translation is to communicate. The task of translation is to communicate to achieve the real sense of 'cultural transmission and communication'.

The research history of translation studies has undergone several major changes. According to Snell-Hornby (1992), if it was the pragmatic turn of the 1970s that made the emergence of translation studies as an independent discipline possible, it was what later became known as the 'cultural turn' of the 1980s that largely established its basic profile. Then following closely by the empirical and globalization turn in the 1990s, there seem to have been two basic 'turns' in the discipline as a whole. The first is a methodological one, resulting from the call for more empirical studies in both translation and interpreting. The second was caused from without, by the breathtaking developments in technology and in the globalization process, which together radically changed the job profile of translators and, in part, of interpreters too. So, studies in areas like terminology and computer-aided translation have meanwhile come to occupy a world of their own. This is what we called the 'technological turn'.

Usually, translation technology involves the machine-aided technology and software as well as the emerging artificial intelligence used to assist human beings in completing transfer between two different languages for the syntactic and semantic understanding, aims at improving translator's efficiency and increasing their productivity (Bond & Smith, 1996). Moreover, along with the knowledge-based economy times, science and technology are becoming increasingly the key promoting elements of national economy development. The 'technological turn' in translation studies has made a significant figure, as the technologies of transport and communication radically stretch the intercultural situations in which speech acts are carried out, ultimately altering the configuration of cultures, never more so than in a globalizing age (Pym, 2011). Intercultural communication is inseparable from the exchange between language and culture, what need to be realized is language communication is external performance, while cultural

exchange is inherent requirement. The rapid developments in information technology that took place during the 1990s (and are still continuing today) have radically changed the sheer amount of the material, the speed with which translation must be processed, the remote or virtual character of the participants in the communication act, all of this has changed the way we produce and perceive language and interact with the world around us.

It is well known, just like a coin, any technology has its two sides. The technology, for better or for worse, but it can be seen that few societies are able to refuse the use of a technology once acquired (Fromm, 1968). The technical turn of translation study becomes more necessary than ever. Among all translation technology, machine translation has been discussed much in relation to its relations with human translator (Snell-Hornby, 1992). Accordingly, this paper will take machine translation as an example in order to deepen an understanding of both bright and dark sides of translation technology in intercultural communication.

3.2 Machine Translation: An Example of Translation Technology

3.2.1 Development of Machine Translation

According to *The European Association of Machine Translation* (http://www.eamt.org/mt.php), Machine Translation (MT) is defined as 'the application of computers to the task of translating texts from one natural language to another'. MT's working mechanism is the processing from one language to another and setting lexical, syntactic and semantic switches for each other. The multilingual translation requires a system and progress of the input of source language, and then recognition, transfer, synthesis and output as the target language.

In the paper titled *Machine Translation: A Brief History*, Hutchins (1995) introduced how MT's development history naturally attracts interests, how origins of MT offer a great account of its journey. Particularly, several landmark historical events on the history of MT should be highlighted.

It was in the 20th century that mankind began to witness the realization of the dream of using technology to overcome translation barriers. The first public demonstration of a MT system was in January of 1954, a project collaborated by Georgetown University with IBM. Although with little scientific value, it was sufficiently impressive to stimulate the large-scale funding of MT research in the USA and to inspire the initiation of MT projects elsewhere in the world. In 1964, the government sponsors of MT in the USA formed the Automatic Language Processing Advisory Committee (ALPAC) to examine the prospects. Its famous 1966 report has concluded that MT was slower, less accurate, and twice as expensive as human translation and that there is no immediate or predictable prospect of useful MT. The influence of the ALPAC report was profound. It brought a virtual end to MT research in the USA for over a decade and MT was for many years perceived as a complete failure, directly resulted in the quiet decade from 1967 to 1976. Then the focus of MT activity switched from the USA to Canada and to Europe. At Montreal, research began in 1970 on a syntactic transfer system for English-French translation. One of the best-known projects of the 1980s was the Eurotra project of the European Community. Its aim was the construction of an advanced multilingual transfer system for translation among all the community languages. Whereas at the end of the 1970s, Eurotra was seen as representing the best 'linguistics-based' design. During the 1980s, MT advanced rapidly on many fronts. Many new operational systems appeared, the commercial market for MT systems of all kinds expanded, and research diversified in many directions. The most sophisticated commercially available system during the 1980s was the METAL German-English system in 1988, intended for translation of documents in the fields of data processing and telecommunications, which had originated from research at the University of Texas. During the latter half of the 1980s, there was a general revival of interest in interlingual systems. Much more important were projects in the Netherlands, Japan and the USA, some beginning to use 'knowledge-based' methods from research on artificial intelligence. The most important research on knowledge-based approaches has been undertaken at Carnegie-Mellon University in Pittsburgh. By the end of the 1980s, the Carnegie-Mellon team had fully elaborated its KANT prototype system and was ready to develop an operational knowledge-based system. Since 1989, however, the dominance of the 'rule-based' approach has been broken by the emergence of new methods and strategies which are now loosely called 'corpus-based' methods. Since the 1990s, new areas of research are that various groups have experimented with 'dialog-based MT' systems where the text to be translated is composed or written in a collaborative process between man and machine. In this way it is possible to construct a text which the system is known to be capable of translating without further reference to an author who does not know the target language, who cannot revise the output, and therefore needs assurance of good quality output. The 1990s progress makes it clear that different types of MT systems are required to meet widely differing translation needs.

Today, however, technology has made it possible to translate materials into many different languages the moment someone begins to put them into the computer. MT does in reality have some successful and commercially sustainable applications, most notably as assistants for human translators. MT is in fact very good for producing rapid, assimilation-quality translations in the online environment. With a human translator working at a pace of one page per

hour, the job would be a labor-intensive, time-consuming task. In a word, the key advantage of MT is to increase translator's effectiveness and productivity. However, this also brings a dark side, as discussed in the following.

3.2.2 Dark Side of Machine Translation

In a report for UNESCO, Holmström (1951) wrote that the resulting literary style would be atrocious and fuller of 'howlers' and false values than the worst that any human translator produces. He also claimed that translation is an art, something which at every step involves personal choice between uncodifiable alternatives; not merely direct substitutions of equated sets of symbols but choices of values dependent for their soundness on the whole antecedent education and personality of the translator. Accordingly, the question of whether MT will eventually replace human translator has been widely concerned and heatedly discussed.

Although human translator can never define the output of machine translation (full automation) as "professional", they do not want to be subservient to machines; few want to be revisers of poor-quality MT output. What they have long been asking for are sophisticated translation tools (Hutchins, 1997). Since the early 1990s, they can now have them in the shape of translation workstations. These offer translators the opportunity of making their work more productive without taking away the intellectual challenge of translation. To some extent, that human translators make use of MT will inevitably challenge their subjectivity in translation process, thus a competitive relationship is formed, and the ultimate victory will be achieved by the one who has more excellent performance at translation speed and quality, as well as the effectiveness of communication during this human-machine competition.

Undoubtedly, the efficiency brought by MT is unmatched by human translators. However, MT has a natural disadvantage, that is, it does not have the cultural genes unique to human brains, which also need to be transferred, affecting the quality of the translation and the effectiveness of intercultural communication. Creating a program to understand source text as a human being would and reproduce this in another language while considering cultural aspects is a huge task. It is important to recognize that being bilingual does not make someone a good translator. It takes years of experience and learning to be bicultural or multicultural and capable of fluently transferring meaning to a new language. The cultural transmission is the unique skill that keeps human translator in an invincible position to compete with MT, and not be replaced by it now and even in the future.

In other words, MT can only get the gist of the message's meaning, hence, much of the output is garbled and barely comprehensible, and undoubtedly, this process of repeated unfulfilled expectations which has caused many people to have a jaundiced view of MT's potential usability in everyday life. As Hutchins (1995) figured out, although the ideal may be to produce high-quality translation, in practice the output of MT systems is usually revised (postedited). Further to say, a tool can translate the words literally correct but produce a poor overall result by misinterpreting the context, especially the sociocultural context. While poor quality output is not acceptable to receiver and has not achieved the purpose of effective communication, inevitably there will be expectations of improvement. Melby (1997) pointed out that low-quality translation is coupled with low cost and high speed, whereas high-quality translation typically is the product of human translation and takes longer and costs more.

However, we cannot deny the advancements of MT, often an important factor in promoting technological improvement, which deserves a scientific and objective evaluation. In a narrow sense, the evaluation of MT generally refers to the evaluation of the translation quality by machine. Compared with human translator, we cannot use the 'Faithfulness, Expressiveness and Elegance' ("信、达、雅") put forward by a Chinese scholar named Yan Fu, which is the most famous criteria for judging whether a translation is good or not in China to evaluate MT, whereas the two most commonly used standards are derived from the ALPAC report, i.e., intelligibility and fidelity. The former refers to what extent the translation can be understood by those who do not know the original text and the latter refers to how much difference between the translation and the original text. When considering such standard, although MT is good, but not best for the translation solution. In the MemoQ Trend Report 2018: *The Most Important Trends in Translation Technology for 2018*, Zsolt Varga, Product Owner at memoQ, commented, 'MT works stunningly well in repetitive, machine-like translation projects where little cultural context and understanding is needed.' So, his prediction is 'machines will take over translation jobs only in certain areas'. Varga echoed this concern, 'although the linguistic quality of the output of neural machine translation often looks very much human-like, things can go wrong easily if the machine is left in the dark without cultural context, human experience and expertise' (https://slator.com/sponsored-content/important-trends-translation-technology-2018/).

Therefore, given today's global atmosphere, the study of translation technology should endow cultural elements, and explore in depth how technology can innovate in cultural diversity to drive its own improvement and satisfy user's cultural and psychological identity, alleviate the cultural shock and contribute to the unity of cultural diversity. According to the degree of human or machine's involvement in the translation practice, the relationship can be classified as 1) traditional human-independent translation, 2) human and computer-assisted translation, and 3) fully automatic translation by technology (Hutchins & Somers, 1992). Based on consideration of the social attributes of translation, as an interaction between human beings, machine and society, translation technology should be treated

sociologically for the evaluation and innovation. As Toury (1995) suggested, given the cultural significance of translation, the translator should play a social role that accordingly calls for a deeper rethinking of how human translator best collaborate with machine translation.

3.2.3 Collaboration as a Cultural Mediator

According to Hernández (1997), translation from the perspective of intercultural communication sees it as a fundamental element in the processes of social integration, and as an activity of an inter-semiotic nature that allows-preserving the linguistic-cultural identities of the parts-dialogue between them and facilitates mutual enrichment. Technical-cultural translator serves as a linguistic and cultural bridge to intervene in order to prevent communication breakdowns and to facilitate social integration. Therefore, a translator that possesses, apart from a deep knowledge of the languages, a high level of cultural sensibility which allows him/her to negotiate the meaning between both cultures and be able to transmit it to the members of the other community is also necessary. In this sense, we might make a proposal for a new breed of human translator's collaboration with MT as 'technical-cultural translator' and regard it as 'cultural mediator'.

As Taft (1981) addressed, it is a new angle to discuss mediation as a form of translation or, the other way around, translation as a form of mediation deserves discussion. If one is an 'inter-linguistic mediator', then he/she is a person who facilitates communication, understanding and action between people whose language and/or culture is different. His/her role consists of interpreting the expressions, intentions and perceptions of one group for the other in order to establish a balanced communication between them. With the support of machine and software, modern translation technology has a powerful corpus, which enables the comprehensive translation task be completed at a higher speed. However, just as we are in an age of knowledge explosion, machine does not have human translator's ability to learn, especially to learn the knowledge in the field of culture, which requires human translators to make their own choice in cultural context, and only when such cultural competence closely integrate with the modern information technology can both the speed and quality of translation be improved. It's worth noting that people's learning ability is limited, we can use translation technology's storage ability, expand the database of source and target language for a smooth cultural transformation and achieve a balance between machine and human beings' interaction.

Even though some scholars and practitioners still consider translators to be walking dictionaries more than cultural mediators; however, in some settings and under certain conditions translators participate more actively in the communication process, producing oral or written texts in which forms and words are manipulated to extend further understanding across cultures.

In one word, technical-cultural translator should function as a cultural mediator instead of linguistic mediator. As Hernández (1997) pointed out, we should not abandon this translation modality when it should be unnecessary and would go associated to a loss of the speaker's social image. Machine translation takes advantage of storage capability to facilitate the human translators to bring their intelligence into full play and the re-contextualization of culture to reproduce the original text closest to the source and the target language's sociocultural system in intercultural communication. The consideration of technical-cultural translator, whose role is to favor the understanding of the different groups involved, as an intercultural mediator filling the breach between two languages and cultures.

In order to foster the new breed of technical-cultural translator as the inter-linguistic mediator, on one side, the human translator needs to develop not only linguistic skills, but also cultural and anthropological abilities, and on other hand, the cultural-driven redesign and innovation of translation technology should be taking into consideration. This also indicates that a systematic approach to investigate technology as being embedded in a sociocultural context has become increasingly essential for the study on translation technology; and the socio-technical-cultural system should be considered as a whole, including different network elements.

4 Translation Technology as a Socio-technical-cultural System

4.1 On a Systems Perspective

Socio-technical systems theory was originally developed by the Tavistock Institute of Human Relations in the 1950s. The new theoretical perspective aimed to explain how new technology impacted primary work systems (Trist et al., 1963; Rice 1958). As the Tavistock socio-technical approach addressed, the systems comprised both technical elements and social elements and that both could be developed in parallel, this arisen in response to the challenge of understanding complex technical systems that are embedded in a human world (Trist, 1981). Within a socio-technical systems perspective, any organization, or part of it, is made up of a set of interacting sub-systems, as shown in the diagram below. Thus, any organization employs people with capabilities, who work towards goals, follow processes, use technology, operate within a physical infrastructure, and share certain cultural assumptions and norms.

We can also learn from some studies on 'systems' in the field of linguistics to explore the relationship and interaction between language, culture, communication and translation in the intercultural communication system to extend the study of translation techniques to the sociocultural context. Saussure (1916) once pointed out that 'in order to fully understand the function of linguistic signs, it is necessary to leave personal behaviors and go to social facts'. According to Wittgenstein, referential signs should be completed in a system, and this system includes conventions, which cannot be completed through internal definitions, but through communicative practices (Jiaying Chen, 2003). Halliday (2015) further proposed that the language system is the projection and embodiment of the social system, as well as the lexical and grammatical system.

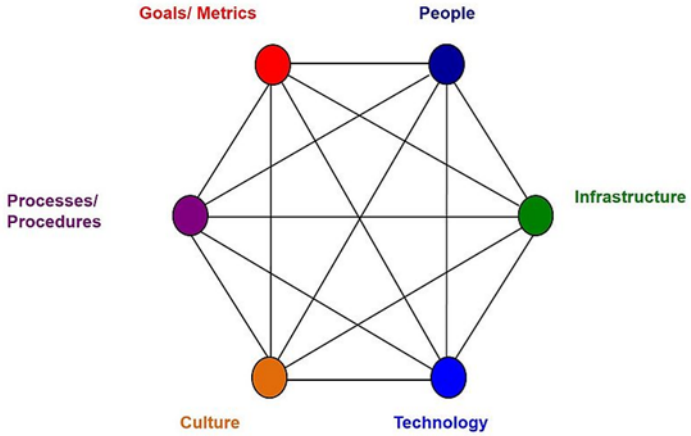

Figure 1 Socio-Technical System (*from https://business.leeds.ac.uk/research-stc/doc/socio-technical-systems-theory*)

From this perspective, translation can be treated as human translators use translation technology as infrastructure during the translation process to communicate between cultural contexts with the goal of successful intercultural communication. In this interactive process, human translators using translation technology forms a socio-technical-cultural system in which the network elements in the system collaboratively interdependent on each other. As socio-technical system has the core idea of any system can be improved if the 'social' and 'technical' aspects are brought together and treated as interdependent parts, so the technical-cultural translator should innovate and enhance themselves respectively, i.e., translation technology should make culture-driven innovation whereas human translator should enhance subjectivity to improve the translation accomplishment in the socio-technical-cultural system.

4.2 Human Translator's Technology Appropriation and Cultural Identity

As mentioned above, the human translator should undertake the responsibility of cultural transmission and recontextualize the culture of source language to the target language's sociocultural context for successful intercultural communication. The recontextualization phase is accompanied by user activities known as technology appropriation (cf. Orlikowski, Yates, Okamura, & Fujimoto, 1995). According to Dourish (2003), appropriation is the process by which people adopt and adapt technology, fitting them into their working practices. The circumstance of MT's introduction into a use context - or recontextualization - is crucial for its successful usage. The human translators play an active role in this process. They appropriate the technology, that is, they explore a new technology and choose how to integrate it into their practices.

With the perspective to view translation in a socio-technical-cultural system, human translators consciously or unconsciously realize their own cultural identity in the communication between source language and target language, making their 'meme' rooted in the translating system. 'Meme' is a concept from sociobiology. It is Dawkins (1976) who presented it as a parallel term to 'gene' to describe the evolution of cultural phenomena, defining it as: a unit of cultural transmission, or a unit of imitation. Examples of memes are tunes, ideas, catch-phrases, clothes fashions, and ways of making pots or building arches. Just as genes propagate themselves in the gene pool by leaping from body to body via sperms or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain. And it is Vermeer (1997) who continues his discussion of meme structure and its relevance for translation theory, as cultures can be considered 'meme pools' where memes are (considered to be) interdependent. And in a later article (Vermeer, 1998), he applies it to translation in general as 'the translator is a meme-transmitter'. The transfer of 'memes' makes human translators have a position that machine translation cannot replace. 'Meme' is a kind of human-specific ability, resulting from imitation. As machines cannot imitate and store memes in the dynamic sociocultural context, so only by collaborating with human translator can MT truly help to facilitate the realization of culture transfer and diversity in intercultural communication.

However, there are requirements for human translators. First, the person has a great capacity to mediate; and second, he/she should have sensibility and capacity of observation and study of the involved cultural systems, and in the complex socio-technical-cultural system, maintain cultural identity and achieve cultural adaptation in the collision of multiculturalism. As Snell-Hornby (1992) admitted, the fundamental components of translation competence can be specified as proficiency in the language(s) concerned, basic knowledge of the relevant theoretical approaches in translation studies, subject area expertise, and cultural competence.

4.3 On Translation Technology's Culture-driven Design

As mentioned, by taking machine translation as an example, innovation in translation technology has progressed with breathtaking speed during the last decade. This drives us to recognize that practitioners worldwide are facing numerous challenges in innovation design for the translation technology in specific sociocultural context.

As communities all over the world have established their own value systems which do not necessarily correlate with the intrinsic values of technology, so the innovation design of translation technology should follow the source and target languages' culture model. Culture shall be seen as an orientation system including values, beliefs, and behaviors of a group sharing genuine or virtual reality. An important aspect of our debate is to consider culture as much as a structure and a process. As defined by intercultural psychologist Boesch (in Eckensberger, 1997), culture represents the field of action which it induces and controls and is also continuously transformed by it. Thus, considering culture in relation to the action of translation technology development implies that culture induces and controls the development but is at the same time transformed by it. The dynamic and mutual interdependence of culture and translation technology has become apparent through manifold experiences of technology transfer, internationalization and localization efforts and intercultural design.

It has to be recognized that for any socio-technical system to be workable and sustainable, the culture of the technology and the community must be synchronized. The more we understand that almost all systems are socio-technical, the more likelihood there is that we will be able to design and evolve systems to support real people living real lives (Whitworth, 2009). All above has demonstrated the mutual interdependence of culture and technology as well as the impact of culture on translation technology's development. We are aiming at a culture-driven design attempt which can inform socio-technical design of translation technology for usability and acceptance. Yet we are only at the beginning of a new era of socio-technical-cultural system development for translation technology.

5 Conclusion

Language is one of the most outstanding creations of mankind. The easiest way to communicate between two languages is to translate. Language translation is a complex human brain activity involving language, communication, technology and culture. The communication between different languages is actually the communication between different cultures. Language and culture are inseparable, and the close relationship between them determines that translation cannot be separated from culture. Translation is a cross-language, cross-culture and communicative activity that transforms the meaning carried by one language and culture into that of another language and culture. The biggest obstacle to translation is the cultural difference. Culture is like a mirror, reflecting the comprehensiveness of different national cultures. In modern society, translation should be considered in the sociocultural context, in which language, culture and communication are closely related.

To sum up, first, translation is a bridge between two languages. Second, translation is the communication between two cultures. Thirdly, translation is a communicative act to spread information and exchange of ideas as its own responsibility. From this perspective, translation is essentially an act of 'intercultural communication'. Therefore, any translation cannot be separated from culture. In fact, translator should be an 'intercultural person' and strive to improve the intercultural 'sensitivity', so as to become an excellent cultural communicator. The study of translation must be placed in the context of intercultural communication, so as to break through the boundaries of language, culture and communication and carry out creative bilingual-cultural transformation. In this process, translators' subjectivity should be highlighted, constantly understand the cultural differences in two different cultural contexts and seek for correspondence to realize communication and exchange.

What's more, the technical turn on the research of translation has put translation process into the socio-technical-cultural system, while using the systematic approach to inspect translation practice and always considering translation and translators in context. In sum, this paper tries to explore understandings on translation technology in the sociocultural context in intercultural communication that addresses collaboration between human translator and translation technology as a cultural mediator working together to fulfill the task of intercultural communication between different sociocultural backgrounds. Adopting a systematic approach to study the contextual elements of the translation process has important significance for better facilitating intercultural communication. And the sustainable development

of cultural diversity and integration will attribute to the outpouring of human creativity and innovation of translation technology that might be a promising direction in future studies.

References

Anderson, S. R. (2010). Retrieved from *https://www.linguisticsociety.org/content/how-many-languages-are-there-world.*

Bond, R. & Smith, P. B. (1996). Culture and Conformity: A Meta-analysis of Studies Using Asch's Line Judgment Task. Psychological Bulletin, 119(1), pp. 111-137.

Dawkins, R. (1976). The Selfish Gene. Oxford University Press, 4 edition (2016).

Dourish, P. (2003). The Appropriation of Interactive Technologies: Some Lessons from Placeless Documents. Computer Supported Cooperative Work, 12(4), pp. 465-490.

E. B. Taylor (2005). Primitive Culture (re-translated version by Shusheng Lian). Guangxi: Guangxi Normal University Press.

Eckensberger, L. (1997). The Legacy of Boesch's Intellectual Oeuvre. Culture & Psychology, 3(3), pp. 276-298. London: Sage Publications.

Edward T. Hall (1976). Beyond Culture. Garden City, NY: Anchor Books, Doubleday.

Eugene. A. Nida (1982). The Theory and Practice of Translation. Leiden: E. J. Brill.

F. de Saussure (1916). Course In General Linguistics, translated by Mingkai Gao. Beijing: Commercial Press, 1999:29.

Foster, M. (1958). Translation from/in Farsi and English. Retrieved April, 2007, from *http://www.parasa.ts.com/index.htm*.

Fromm, E. (1968). The Revolution of Hope: Toward a Humanized Technology. New York: Harper.

Gadamer, H. G. (1960). Truth and Method. Bloomsbury Academic; Reprint (2013).

Halliday (2015). Language as Social Semiotic, translated by Xingwei Miao. Beijing: Peking University Press, pp. 85.

Henriksen, L. B., Nørreklit, L., Jøregensen, K. M., Christensen, J. B. & O'Donnell, D. (2004). Dimensions of Change: Conceptualising Reality in Organizational Research. Copenhagen: Copenhagen Business School Press.

Hernández, S. (1997). Traductor, traducción y mediación intercultural. In Hernández Sacristán, C. and R. Morant Marco. Lenguaje y Emigración. Valencia: Universitat de València, pp. 247-260.

Holmström, J. E. (1951). Report on Interlingual Scientific and Technical Dictionaries. Paris: UNESCO.

Hutchins, W. J. & Somers, H. L. (1992). An Introduction to Machine Translation. London: Academic Press, pp. 362.

Hutchins, W. J. (1995). Machine Translation: A Brief History. Concise History of the Language Sciences: From the Sumerians to the Cognitivists, pp. 431-445.

Hutchins, W. J. (1997). Translation Technology and the Translator. Proceedings of the Eleventh Conference of the Institute of Translation and Interpreting (compiled by Catherine Greensmith & Marilyn Vandamme), 8-10 May 1997. London: ITI, 1997, pp. 113-120.

Jiaying Chen (2003). Philosophy of Language. Beijing: Peking University Press, pp. 199.

Larry A. Samovar, Richard E. Porter, Edwin R. McDaniel, Carolyn Sexton Roy. (2016). Communication between Cultures (9th edition). Cengage Learning.

Melby, Alan K. (1997). Should I use machine translation (MT for me?) The Translation Research Group Retrieved from *http://www.multiling.com/mt/article/mt4me.html*.

Newmark, P. (2001). Approaches to Translation. Shanghai: Shanghai Foreign Language Education Press.

Orlikowski, W. J., Yates, J., Okamura, K., & Fujimoto, M. (1995). Shaping Electronic Communication: The Metastructuring of Technology in the Context of Use. Organization Science, 6(4), pp. 423-444.

Poyatos, F. (1997). Aspects, Problems and Challenges of Nonverbal Communication in Literary Translation In: F. Poyatos (ed.) Nonverbal Communication and Translation, pp. 17–47. Amsterdam: John Benjamins Publishing Company.

Padhi, D.P. (2016). The Rising Importance of Cross-Cultural Communication in Global Business Scenario. Quest Journals. Journal of Research in Humanities and Social Science. Volume 4 ~ Issue 1 (2016) pp. 20-26.

Pym, A. (2011). What Technology Does to Translating. Translation & Interpreting, Vol 3, No 1 (2011) pp.1-9.

Qi Feng (1992). Dictionary of Philosophy. Shanghai: Shanghai Lexicographical Publishing House, 1992:1268.

Rice, A. K. (1958). Productivity and Social Organization. The Amadabad Experiment. London: Tavistock Publications.

Runqing Liu (2017). School of Linguistics (revised edition). Beijing: Foreign Language Teaching and Research Press.

Schanz, H. J. (1990). Foranding og Balance: reflectioner over metafysik og modernitet (Change and Balance: reflections on meta physics and modernity). Aarhus: Modtryk.

Snell-Hornby, Mary (1992). The Professional Translator of Tomorrow: Language Specialist or All-Round Expert?. in Cay Dollerup and Anne Loddegaard (eds) Teaching Translation and Interpreting: Training, Talent and Experience. Amsterdam: John Benjamins Publishing Company, pp. 9–22.
Taft, R. (1981). The Role and Personality of the Mediator. In S. Bochner. (ed.) The Mediating Person: Bridges between Cultures. Cambridge: Schenkman, 1981: 73.
Toury, G. (1995). Descriptive Translation Studies and Beyond. Amsterdam: John Benjamins Publishing Company.
Trist, E., Higgin, G., Murray, H., and Pollock, A. B. (1963). Organisational Choice. London: Tavistock Publications.
Trist, E. (1981). The Evolution of Socio-Technical Systems. Occasional Paper No 2, Ontario Ministry of Labour.
Vermeer, H. J. (1997). Translation and the 'Meme', Target, 9 (1), pp.155–166.
Vermeer, H. J. (1998). Starting to Ask What Translatology Is About, Target, 10 (1), pp.41–68.
Wenguo Pan (2001). Definition of Language. Journal of East China Normal University (Philosophy and Social Sciences), Vol.33, No.1, January 2001.
Whitworth, B., 2009. A Brief Introduction to Sociotechnical Systems. IGI Global.
Wittgenstein, L. (1953). Philosophical Investigations (translated by G. E. M. Anscombe). Oxford: Basil Blackwell.