



ALATER-WITTGENSTEINIAN CRITIQUE OF AI TRANSLATION
TECHNOLOGIES

FAYANG HUANG

I.D. No. 6119562

A Dissertation Submitted in Partial Fulfillment of the

Requirements for the Degree of

DOCTOR OF PHILOSOPHY

In Philosophy and Religion

Graduate School of Human Sciences

ASSUMPTION UNIVERSITY OF THAILAND

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Dissertation Title: A Later-Wittgensteinian Critique of AI Translation Technologies

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**Accepted by the Graduate School of Human Sciences, Assumption University in Partial
Fulfillment of the Requirements for the Doctor of Philosophy in Philosophy and
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ABSTRACT**I.D. No.:** 6119562**Name:** FAYANG HUANG**Dissertation Title:** A Later-Wittgensteinian Critique of AI Translation Technologies**Dissertation Advisor:** DR.MICHAEL CLARK

Wittgenstein's achievements in the field of philosophy of language are remarkable and irreplaceable. His early and later language thoughts had a profound influence on the development of philosophy and contributed to the "Language Turn" in philosophy. Wittgenstein's later language thought takes "meaning is use" as its core idea, which made him one of the advocates of the formation of the earliest pragmatic thoughts. Translation, as one field for practical use of language, is an important research object in pragmatics. The theory of meaning has a decisive influence on the confirmation and rationality of meaning in the process of translation. With the rapid development of the current translation industry, modern technological translation, with machine translation and artificial intelligence translation as its typical components, has launched a revolutionary impact on traditional human translation, which is worthy of our reflection and examination on modern translation. Therefore, Wittgenstein's later language thoughts can provide us with certain philosophical support, so that we can get closer to the essence and truth of translation more thoroughly from the perspective of language philosophy and clarify the current chaotic phenomena and rules of translation technologies.

This paper will focus on Wittgenstein's later philosophy of language, with language games, family resemblance, 'meaning is use', Wittgenstein's rule paradox as the main grounds of argument. First of all, it will analyze the current situation and technicalities of artificial intelligence translation, especially the content of natural language processing (NLP) technology. The third chapter mainly analyzes the core concepts of Wittgenstein's later thoughts and the development and extension of his successors' thoughts, and clarifies the influence and significance of Wittgenstein's later theory of meaning on translation. The fourth chapter mainly discusses the influence and significance of Wittgenstein's later discussion on meaning and rules on translation, which is the most directly related field of language use, from the perspective of pragmatics. On this basis, the development prospect, bottleneck and deficiencies of artificial intelligence translation technology are further discussed, to clarify the role and influence of creativity, intentionality and context in machine translation. Furthermore, from the perspective of Wittgenstein's later philosophy of language, This paper expounds the conflict and fusion between scientism and humanism in the field of translation, Through this research, two goals are achieved: the first one is to give a new interpretation of Wittgenstein's thought under the background of the information technology era; The other one is to clarify and reflect on artificial intelligence translation based on Wittgenstein's view of language meaning, so as to provide reference and new perspective for people to objectively evaluate modern translation technologies.

ACKNOWLEDGEMENT

First of all, I am sincerely grateful to my adviser, Dr. Michael Clark, for his careful guidance of my graduation dissertation in the past ten months, which greatly improved my knowledge in philosophy of language, as well as my understanding of academic writing. He taught me a lot of specific research skills, such as analyzing texts, interpreting primary or secondary sources, giving correct referencing, etc. Besides, Dr. Michael tried his best to share with me as much academic information and materials as he can with great patience and passion, and talked to me weekly to sharpen my thoughts, helping me to narrow my discussions to a much clearer structure. With his help, I did realize that knowledge of philosophy is a vast ocean, and I am only one of the small boats.

My thanks also go to all the professors from the Department of Philosophy and Religion, who have given me selfless help and care in my three years' study in Assumption University. Their suggestions and comments on my project have brought me a great chance to take a glimpse of the vastness of this ocean of philosophy and finally complete my dissertation.

All my classmates have given me good care and support in my life and study in Thailand, and I appreciate it. Because of you guys, my journey in a foreign country is more colorful. The diversity of culture you shared with me has greatly broadened my sight to the whole world, which makes me more rational and tolerant.

Finally, I would like to thank my family. Without their love and support, I cannot go this far. My father, who passed away earlier this year, has always been encouraging me to study harder and do not set limitations for myself. It is with regret that my father

cannot take part in my graduation ceremony as we agreed. I want to express my gratitude to my beloved father and wish him rest in peace.



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Chapter One Introduction

1.1 Background and Significance of Research

Translation is a quite old industry. Translating activities have been lasting for several thousand years, serving for communicative purposes among different tribes, or now we say, communities. In the Book of Genesis¹, the fallen Babel tower is considered as an etiology of language diversities and cultural differences, then presenting Babel as the cradle of civilization. What cannot be ignored is the role of translation in the establishment of civilizations. For philosophy and religion, we can easily take the Bible translation as a typical example, which was regarded by western world that the Bible was translated from Hebrew to Greek, finished by seventy translators separately in the 3rd century BC. It was also called “Septuagint”², being considered as the earliest translation works of great significance to human civilization. Translation activities also emerged in China since 2000 years before, which originated from the introduction of Buddhist scriptures to China, with the first peak starting from East Han Dynasty to Tang and Song Dynasty. From then on, translation were functioned as the bridge crossing over gaps among various cultures, offering people inside a window to see the scenery from the outside world. The power of language should never be underestimated for it shapes our thoughts and “draw the boundary of our world of thinking”. (Wittgenstein, 1952). Languages are not static and they are always growing and expanding in the process of being used, which makes translation an even more difficult task. Facing a

¹ Genesis is the first book of the Christian Bible, within which the story of Babel Tower was told.

² Septuagint is the pioneering work of Bible translation, which was a great step in the history of translation, witnessing the collapse of language barriers among ancient nations.

world with information explosion, the connotation and denotation³ of languages are greatly enriched and expanded. Therefore, the conveyance and transmission of the latest language ingredients also needs to be dealt with updated principles and guidelines. Obviously the use of languages changes a lot in the era of science and technology. Under the context of globalization, new translation demands also keep emerging to satisfy the development of different fields as well as individual acquisition of new knowledge from outside world.

On the other side, we benefit too much from science and technologies. It seems that we are quite addicted to scientific solutions and sometimes believe in them in a superstitious way⁴, heavily depending on them. With the development and new progress of new neuro-cognitive technologies, people seem to prefer to adopting technical methods to deal with languages obstacles, such as AI translation. People are being hindered and embarrassed by language gaps for too long time, in which situation they are not satisfied but cannot figure it out easily. We cannot ask everybody to learn or even master two or more foreign languages to reach our demands for our lives. So we keep trying to find shortcuts to overcome language obstacles. The shortcut nowadays is technology, to be more specific, machine translation, or AI translation. All these hi-tech

³Denotation is the literal meaning of a word. It is the definition you would find in the dictionary. Connotation refers to the emotions or ideas that you think of when you read or hear a word. On the other hand, connotation is much more subjective, as it refers to the emotions a word evokes.

⁴Failure to recognize the limits of science will lead to scientific superstitions. The limitation of science comes from the division of the whole into parts. With the neglect of external factors and internal secondary factors, the research objects from parts are greatly simplified, from where rules cognition can be extracted. But facts have proved that human beings cannot give the world the truest expression. Science is essentially a subjective assumption of human beings themselves, which is just in line with the world perceived by human beings at this stage. Therefore, there is never absolute truth in the world, and science is not beyond human assumptions. Absolute blind obedience to science is no different from the superstition of gods and ghosts.

giants, like Google from United States, Baidu from China, sniffed the strong demands and great potential in translation industry and put innumerable investment on projects relevant to translation, such as applications, online translate web pages, professional software, etc. Consequently, there appears a really weird and ridiculous fact. That is, it is now computer engineers and programmers that are providing translation products and services to communities wanting to understand foreign languages, instead of human linguists or translators. Commonly the programmers working on processing languages obtain output from software or other mechanisms being designed on the basis of applied mathematics and logic.

In early Wittgenstein's *Tractatus*, he asserted the strict logical structure of language and its relationship to the world with "the Picture theory of meaning" (Wittgenstein, 1921). The *Tractatus* had a huge influence on Russell's logical atomism and on the School of logical positivism⁵. Later, Logical atomism is further extended, with the view that every proposition can be analyzed into simple, unanalyzable and independent "atomic" propositions that correspond to facts in the world. It was developed in early 20th century by Bertrand Russell⁶, Early Ludwig Wittgenstein, and Rudolf Carnap.

The thoughts on language from early Wittgenstein were thoroughly examined by himself and language games were adopted to clarify his language philosophy in his posthumous works *Philosophical Investigation*. He tried to refute his previous ideas on

⁵ Logical positivism, or logical empiricism, is one of the schools of modern Western philosophy. It is so named because the core of its doctrine is the provability of logical analysis, Russell and Ayer are all among the representative scholars of Logical Positivism.

⁶ Russell's viewpoints that logic is the essence of philosophy and all scientific knowledge are formed based on atomic facts, are accepted by the School of Logical Positivism.

languages based on positivist standing. Instead, a new interpretation were given, which can be briefly summarized as “meaning is use; to understanding the meaning of a language is to know a form of life” (Wittgenstein, *PI*, 1953). There are many scholars making researches on both of his thoughts separately and raised arguments on meaning and rules, making the scope of meaning theories further expanded. Based on the two phases of Wittgenstein’s philosophical trends, I would like to start my own thinking on language meaning and then further on modern translation methods, which is also a major field that languages being used and functioned.

Without any doubt, artificial intelligence technology is the dominating trend for translation method innovation. It is widely accepted as the up-to-date solution for language barriers. The artificial intelligence translation technology is so popular that almost all language service providers are making their efforts to connect their services or products with it. It seems like that you are out of date if you still translate without AI. A very typical example is a Chinese translating company called iflytek, which makes itself a listed company in few years by promoting their advanced AI translating and interpreting system. However, when we go deeper about the working mechanism of artificial intelligence, we get to know that the output of the technology relies heavily on statistical-based methods, instead of understanding the language as human does. Here comes my consideration: when languages are logically and technically dealt with, are we sure that the meanings in languages can be fully conveyed and the function of recreation of language can still be maintained? Are we understanding and using languages in a better way or worse way when AI translation is adopted to help us

exchange meanings? How does meaning exist and what role does it play in our ways of using languages? I think these questions are leading us back to the arguments on meanings and remind us to examine the rationality and validity of machine translation. Technologies themselves cannot show the weakness for they are already restrained in the logically structured mechanism. We have to jump out of the scope and reach up to the philosophical level to consider the issue and dig out the potential dangers and concerns on language usages and translation.

As to the philosophical level, I would like to give more details about Wittgenstein, by whom the issue has already been raised. He was one of the most renowned philosophers in the 20th century, who gave deep and thorough thoughts on languages. He was an analytical philosopher, with Frege and Russell as his instructors and colleagues. In his early life, he tried to make philosophical confusions clear by analyzing languages with logic and mathematics, which brought the whole philosophy world into language, “the linguistic turn”⁷, as we called it. His works *Tractatus*, a short book, contained his early opinions which were so influential in that period that it was even chosen as the cornerstone of the School called Vienna Circle⁸. In his later life, a fundamental shift was made in his thought on language, trying to bring language back into ordinary life and explain it in games. “We should move from a smooth, frictionless surface back to the rough ground” (Wittgenstein, *PI*, 1952). His ideas on languages seem

7 "Linguistic turn" is a concept used to identify differences and the conversion between the 20th-century western philosophy and traditional western philosophy, that is, focusing on language is a significant feature of western philosophy in the 20th century; language is no longer an instrumental question involved in traditional philosophical discussion, but become a basis and a starting point for philosophical reflection on their traditions.

8 The Vienna Circle was the group of philosophers, including Carnap, Neurath, and Schilck, who developed logical positivism. Wittgenstein was an important influence on their views.

controversial but actually they are different analyses from different angles, giving a wider view to study languages in a philosophical way.

The philosophy of language from Wittgenstein focused on the imbalance of rationalism, scientism and humanism. Obviously, there is a trend that advanced technologies are dominating our way to use languages, in which AI translation can be taken as a typical example showing that the humanity part, the role human beings play as language users, is being detached and keeping shrinking. And meanings may be lost partially or conveyed incorrectly in the process of translating. That is where the significance of this research lies in. The paper will focus on the issues of meaning and give a deeper interpretation on language and translation in later Wittgenstein, especially his thoughts on language games, essence, use and rules, so as to make an examination and reflection on accuracy and efficiency of language and translation in modern life, especially in the field of AI translation. The topic is not innovative, but it deserves more attention when there is frenzy on AI translation. The concern that human translators are gradually rejected and eliminated irrationally is going to be the focus of this research.

1.2 Thesis statement

According to the philosophy of language in Later Wittgenstein, ideal language does not exist. The meaning of languages should be understood in various “games” of ordinary languages, which is also “a form of life” with rules working only within specific games, instead of being constrained in the world of rationality and logicity (Wittgenstein, *PI*, 1952). The role of Humanism and Contextualism are supposed be maintained and highlighted in language use. Language games are specific and diverse, only by

participating which can social communication and broader connection in spirit and culture be realized.

Kripke interprets Wittgenstein's *Philosophical Investigations* as raising a puzzle about the very idea of rule following - hence, of the very idea of meaning, since, in the later Wittgenstein, the meaning of an expression is closely tied to its use in a rule-governed activity. However, a new interpretation of the concept of *particular circumstances* (*contexts*) in Wittgenstein's later philosophy offered a solution to Kripke's paradox by putting words on the conception framework which was connected by similarities, also called family resemblance by Wittgenstein.

The main aim of this dissertation is to establish the following thesis: if the philosophy of language developed by the Later Wittgenstein is correct, then there are deep and in-principle deficiencies with the manner in which AI translation algorithms operate. Although Wittgenstein's ideas will be the focal point of this critique of AI translation, we will also consider related work by Kripke and Quine.

1.3 Research Questions

1. Considering the philosophy of language in Later Wittgenstein, can the statistical-based approach in AI translation fulfill tasks of comprehensive representation of ordinary language on the premise of formal logic mechanism?
2. What examination and reflection on modern language application and AI translation can be given from observing meanings and rules of AI translation according to *Philosophical Investigations*?

language philosophy in Later Wittgenstein by comparing his ideas with Frege's. Frege is, 1) an ideal language from pure logic and 2) a philosopher of language which illustrate a structural picture of his philosophy of language. Frege's ideas are clear and confusions. Then try to defend his theory of language by drawing on previous Logicism and Wittgenstein's philosophy. The indeterminacy of meaning and connecting to reality. Frege's philosophy of the meaning and rule-following in modern philosophy of language. Frege's philosophy of translation technologies under the above discussion. Frege's philosophy of language. *Investigation* and offering further guidance to Frege's philosophy of language in the translation field.

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1991) and *The Blue and Brown Books* (Wittgenstein, 1958), were compiled and published by Rhess, the research on the philosophy of Later Wittgenstein gradually went further. Relevant researches are divided into two periods, before 1970s and after. Before 1970s, the research concentration was mainly on two aspects. Firstly, on the relation between his earlier and later philosophy, a number of philosophers believed that there was an obvious distinction, with the later thoughts as the denial and discard of the former ones, such as Wittgenstein's Later Philosophy by D.Pole and In Memory of Wittgenstein by G.H.Von Wright. Secondly, more discussions were raised on the new issues left by Wittgenstein in his later philosophy, with private language and rule as the key ones. There were many well-known works and discussions on them, such as *Is Private Language Possible?* by Ayer and Rhess, *Wittgenstein on Privacy* by T.Cool and *Knowledge on Others Mind* by Malcolm. Here one Wittgensteinian philosopher worth mentioning is Saul Kripke, who wrote *Wittgenstein on Rules and Private Languages* and developed a further discussion on rules out of the *Philosophical Investigation*. He found the paradox in rule-following, which was called Wittgenstein's Paradox, making a great contribution to revealing the deep philosophical thought on Later Wittgenstein. However, his solutions to the sceptical claims were still disputable, to which another philosopher John McDowell gave quite different views. And I will try to give a more specific interpretation on this point in this paper.

In China, no doubt the study on Later Wittgenstein is always in a prosperous trend. Take the biggest academic database CNKI⁹ as an example, by searching the key word "Wittgenstein", there shows 38900 results, mainly focusing on the famous

9 CNKI (China National Knowledge Infrastructure) project was proposed by the World Bank in 1998 as an information construction project with the goal of realizing the dissemination, sharing and

posthumously published work *Philosophical Investigation*, with more than eight Chinese versions. Currently the dominating Wittgensteinian scholars are Jiang yi, Chen Jiaying, Han Linhe, Xu Yingjin, etc. Professor Han Linhe, one prestigious Chinese scholar on Wittgenstein, authored *Interpretation of Philosophical Investigation*, giving a thorough and profound understanding of later Wittgenstein's philosophy of language. Besides the study on the original propositions, both background knowledge and writing thoughts are also involved based on Wittgenstein's views on world and mind. Professor Tu Jiliang, another Chinese Wittgensteinian scholar, wrote the book *Research on Philosophical Thoughts of Later Wittgenstein*, explaining Wittgenstein's thoughts from the perspectives of psychology, mathematics and Philosophy of language. There is still one more scholar that worth mentioning here is Professor Zhang Qingxiong, who gave his interpretation on intentionality in his works *Wittgenstein's Rethinking of Intentionality*, claiming that the arguments from Wittgenstein were against the phenomenological philosophers, with supporting views that intentionality must be combined with ordinary activities. Wittgensteinian philosophical thoughts are widely influencing generations of scholars working in this field and accumulating contributions are also made to keep the vigor and prosperity of Wittgenstein's thoughts, especially interdisciplinary researches, such as sociology, mind, translation, etc.

1.6 Definitions of the Terms Used

AI-complete: AI-complete in IT is used to describe problems or outcomes that would rely on having a strong AI system in place. In other words, it is able to put together a computer system that functions at as high a level as a human being. IT professionals

describe problems as “AI-complete” if they are too difficult to be achieved by the use of conventional algorithms.

Analytic philosophy: It is a 20th Century movement in philosophy which holds that philosophy should apply logical techniques in order to attain conceptual clarity, and that philosophy should be consistent with the success of modern science.

Contextualism: One can derive meaning from observable contexts which includes situational context and the linguistic context.

Distributional semantics: It turns semantics into vectors based on the distributional hypothesis from Harris, that is, semantically similar words occur in similar contexts. It is a totally data-driven method that can better represent semantics. However, its result of representation is the whole semantics without minor structures.

Essentialism: It is the view that “every entity has a set of attributes that are necessary to its identity and function.” (Richard L, 1968) An essence characterizes a substance or a form, which is permanent, unalterable, and eternal, and is present in every possible world, including language.

Form of life: The meaning of language expressions lies in its use and language games are part of human activities, or “part of form of life”. Human activities reflect a particular ‘form of life’, which gives our actions, ourselves, and the world meaning.

“Form of life is what makes meaning itself possible” (Wittgenstein, PI, 1953).

Humanism: It refers to humanism in language, which emphasizes the communicative function of language, as well as the significant role of culture and human value in language. The humanism referred here has gotten rid of Logocentrism, not aiming to reveal the static forms and rules of language. “Language is the house of being. In its home human beings dwell” (Heidegger, 1946).

Intentionality: It is the ability of the mind to represent or present an object, its property or state. A lot of mental activities are about the physical world, while intentionality is the “connection” between the two worlds. The term "intentionality" originally came from Scholasticism.

Language games: Wittgenstein believed that every word we speak is all part of a language game. Words have meaning only in the context of a rule-governed ‘game-like’ activity. If one does not understand the context of the language and the rules that are imposed upon the specific discourse, then essentially, one cannot understand the words in their truest form (Wittgenstein, *PI*, 1953).

Logical atomism: Logical atomism is the view that every proposition can be analyzed into simple, unanalyzable and independent “atomic” propositions that correspond to facts in the world. It was developed in early 20th century by Bertrand Russell, Early Ludwig Wittgenstein, and Rudolf Carnap.

Logical positivism: It is a 20th century philosophical movement holding that all meaningful statements are either analytic or confirmable/confoundable by observation; and that metaphysical theories are therefore strictly meaningless.

Meaning theories: It refers to a theory which “assigns semantic contents to expressions of a language, or states the facts in virtue of which expressions have the semantic contents that they have” (Jeff, 2010). In this paper, the focus is on two sorts of “theory of meaning”. The first one refers to the Picture Theory of meaning in Early Wittgenstein and the second sort is the Use Theory of meaning in Later Wittgenstein.

Ordinary language: The later Wittgenstein held that the meaning of words is determined by ordinary use and that philosophers tend to trip over words because they consider those words in artificial contexts, abstracted from their ordinary usage.

Ordinary language philosophers tackle philosophical problems by closely attending to the ways in which the relevant words – such as “free will” or “justification” – are used by ordinary speakers.

Parse tree: It is the graphical representation in the process of parsing, which focuses on actual implementation of grammar, including white spaces, braces, keywords, parenthesis, etc. It is also called concrete syntax tree, representing the syntactic structure of a string (or token stream) according to some context-free grammar.

Picture theory: The picture theory, also known as the picture theory of meaning, is a theory of linguistic reference and meaning articulated by Ludwig Wittgenstein in the *Tractatus Logico-Philosophicus*. Wittgenstein suggested that “a meaningful proposition pictured a state of affairs or atomic fact” (Wittgenstein, *TLP*, 1921).

Prescriptivism: It is the attempt to lay down rules defining preferred or "correct" use of language. These rules may address such linguistic aspects as spelling, pronunciation, vocabulary, syntax, and semantics. Such normative practices may suggest that some usages are incorrect, illogical, lack communicative effect, or are of low aesthetic value. Prescriptivism is also the attitude or belief that one variety of a language is superior to others and should be promoted as such, which is also known as Linguistic Prescriptivism and Purism.

Syllogism: It is known as a categorical argument or a standard categorical syllogism. The term syllogism is from the Greek, "to infer, count, reckon". In logic, a syllogism is a form of deductive reasoning consisting of a major premise, a minor premise, and a conclusion.

The Early Wittgenstein: The first phase of Ludwig Wittgenstein. He wrote the *Tractatus Logico-Philosophicus*, which tried to show the strict logical structure of

language and its relationship to the world. The *Tractatus* had a huge influence on Russell's logical atomism and on Ayer's logical positivism.

The Later Wittgenstein: The second phase of Ludwig Wittgenstein. He wrote the *Philosophical Investigations*, which attacked the *Tractatus* and emphasized the fluid nature of language. The *Philosophical Investigations* developed the Language-Game theory, which had a huge influence on ordinary language philosophy.

The linguistic turn: It was a major development in Western philosophy during the early 20th century, the most important characteristic of which is the focusing of philosophy and the other humanities primarily on the relationship between philosophy and language.

Theory of types: It is a theory in symbolic logic. The arguments for which a propositional function is significant are restricted to some one type.

Wittgensteinian Paradox: “No cause of action could be determined by a rule, because any course of action can be made out to accord with a rule; if any action can be made out to accord with the rule, then it can be made out to conflict with it”(Wittgenstein, 1953,p7). Kripke regarded it as a new form of philosophical scepticism.

1.7 Scope of the Research

Firstly, the research mainly focuses on the philosophy of language, and discusses the meaning, application or confusion in languages in a philosophical level, instead of in a linguistic level. Be clearly noted that we do not study specific language usages but language and its interrelation with philosophical study in general. Secondly, the research only concentrates on the language part of later Wittgenstein and its influence. Surely there will be some comparison with his early opinions on languages but his study

in other fields such as ethics or metaphysics will not be discussed here. Finally, I would like to clarify that even the thoughts from Later Wittgenstein are still too large a scope for one thesis research and writing. So I focus on the views and interpretations on meaning and rules in *Philosophical Investigation* and compare opinions among certain scholars concerning this part such as Kripke, Quine, Hart, etc, and further engage in the interdisciplinary researches between AI translation and philosophy of language, highlighting the influence and value of language philosophy to translation practice.

1.8 Research Methodology

Research approaches adopted:

1. Qualitative Analysis Method. Specifically speaking, by adopting methods of induction and deduction, analysis and synthesis, and abstraction and generalization, various materials can be obtained and then processed in thinking, to discard the dross and the false, finally to reach the intrinsic principles of the object.
2. Interdisciplinary Study Method. Apply the theories, methods and outcomes of disciplines among Linguistics, Translation and Philosophy of language to form a holistic study on the thesis.
3. Text Corpus Research Method. Corpus refers to a large collection of well-sampled and processed electronic texts, on which language studies, theoretical or applied, can be conducted with the aid of computer tools. A large amount of corpus is needed to explain and demonstrate translation behaviors and phenomena in the study of translation theory in order to seek for differences and universal laws. However, the author is not capable of collecting enough supporting materials by himself. So by means of existing text corpus, the efficiency and accuracy of the research can be greatly improved.

4. Literature research method. Literature research method mainly refers to the method of collecting, identifying and sorting out literature, and forming scientific understanding of facts through the study of literature. Literature research is an ancient and vigorous scientific research method.

1.9 Expected Results

1. An interpretation of thoughts on meaning and rule-following in Later Wittgenstein, comparing with several philosophers that developed relevant opinions and arguments in this field.
2. A justifiable defense on the philosophy of language (language game) in Later Wittgenstein, arguing against logical positivists and their thoughts on language in philosophy.
3. A reflection on modern language technologies and translation applications and try to extend the influence of the language philosophy in Later Wittgenstein.

Chapter Two Perspectives on Translation Technicalities

2.1 Introduction

“Some philosophers fly; others struggle to crawl. Wittgenstein flew, then crashed to earth and crawled thereafter” (David Pears, *Fontana Modern Masters: Wittgenstein*, 1999). This is a quotation extracted from one of the lectures of David Pears, which, in my opinion, is a perfect description of the development track of Wittgenstein’s philosophical thoughts about language. In *Tractatus*, he flew his mind in the world of logic, with an ambitious goal to end philosophy, claiming that all confusions in philosophy were caused by the misuse of languages. Obviously, this is a very condensed summary of the *Tractatus*. “Most of the propositions and questions of philosophers arise from our failure to understand the logic of our language.... All philosophy is a ‘critique of language’” (Wittgenstein, *Tractatus*, section 4.003). It is one of the conclusions of the *Tractatus* that philosophical puzzlement rests on a certain kind of linguistic confusion. The reason that I introduce it prematurely to my readers is that it can be adopted as a clue to introduce my aim of writing this chapter. I just mention its name and leave the more specific interpretation of the content to the next chapter. When Wittgenstein experienced more and suffering in his later life, he crashed back to “ground” (further interpreted in the following paragraph) and claimed that it is not possible to walk on “smooth ice” and move forward, instead, we have to “go back to walk on rough ground”.

“The more narrowly we examine actual language, the sharper becomes the conflict between it and our requirement. (For the crystalline purity of logic was, of course, not a result of investigation: it was a requirement.) The conflict becomes intolerable; the requirement is now in danger of becoming empty.—We have got on to slippery ice

where there is no friction and so in a certain sense the conditions are ideal, but also, just because of that, we are unable to walk. We want to walk: so we need friction. “Back to the rough ground!”(Wittgenstein, PI.4f.e. 107).

That rough ground is our forms of life, the “language games” we played in various practical occasions, within where languages play their significant roles. Translation is one of the major fields that language shows its power for communication. As a translation practitioner, it is natural for me to connect translation practice with Wittgenstein’s philosophy of language, especially when human translators encounter artificial intelligence. To some extent, Wittgenstein’s philosophy of language has been directly relevant to my thinking about artificial intelligence and cognitive science on translation and interpreting.

When other scholars were thinking that the methods of handling language and thought could be reduced to a universal, logical language, Wittgenstein turned the matter to practical questions and raised incredibly inconvenient questions that gained traction in artificial intelligence in the 1970s, 40 years after he was working on them. The inconvenient questions, to be more explicit, are the divergences on thoughts of meanings in languages and their manifestation in translation process. However, modern technologies have brought translation activities into a new era, which makes it more difficult for non-professionals to discuss the issue. Therefore, in this chapter, I will give an introduction of contemporary translation technologies, focusing on their operating mechanism, the purpose of doing which is to clarify the complex technicality and make preparations for following arguments on translation.

In the first section, I reveal the clue of the relevancy between Wittgenstein’s thoughts and translation technicality. And then in the second and third section I will make

researches separately on the mainstream contemporary translation technologies, including NMT (Neural Machine Translation), NLP (Natural Language Processing) and their extensions. In the fourth section I try to discuss the distinction of human intelligence and machine intelligence, explaining the interrelations and mutual effects between them. At last, I give a summary of the whole chapter.

2.2 Sketch on contemporary translation technologies

Machine translation and later the NMT (Neural Machine Translation) are now greatly touted and it is considered a revolution for translation, completely changing our ways of communicating and even thinking in languages. Before we start the philosophical thinking and discussion of this issue, I think we would better to make a thorough survey and study on the history of translation technologies, the current technological trend and the fundamental rationales of artificial intelligence translation.

2.2.1 NLP-Natural Language Processing

When we talk about artificial intelligence translation, the main issues are still concentrated on the processing of natural language. Therefore, as a precondition, we must clarify the basic and fundamental concepts and rationales, as well as the developmental periods of Natural Language Processing. NLP is a sub-area under artificial intelligence, which is a main application scenario of artificial intelligence technologies in language systems. Natural languages are languages naturally evolved along with the development of human cultures, which are considered as major tools for thinking and communicating of mankind. The processing of natural languages is one of most difficult obstacles, which makes the studies of NLP challenging.

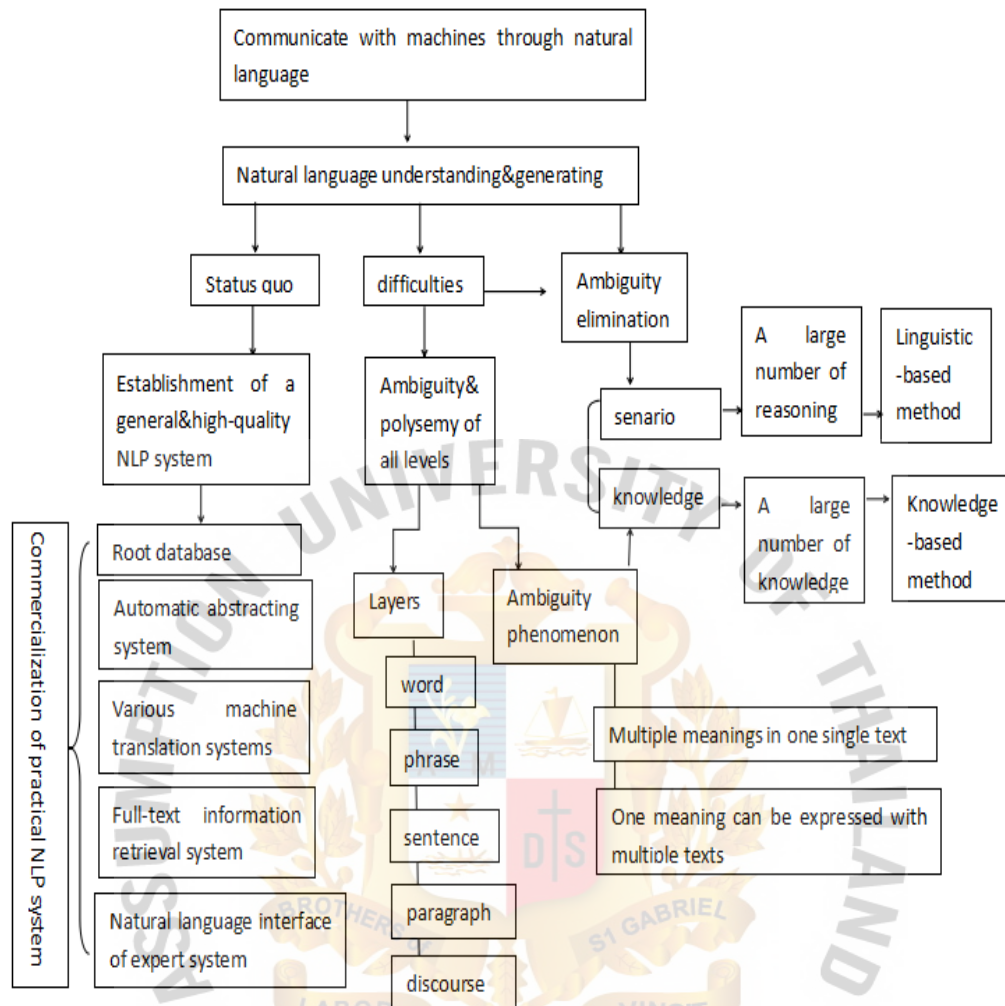


Figure 1. Illustration of NLP

Theoretically speaking, NLP is a very attractive man-machine interaction mode. Natural Language Processing refers to the theories and methods that can realize the effective communication and interaction with natural languages between man and computer system, which is a science integrating linguistics, computer science and mathematics. It involves natural languages, that is, ordinary language and as a result, gains a close connection with linguistic research. However, there are still significant distinctions. NLP does not focus on general research of natural language but develop computer system that can accomplish the effective communication through natural language. It is commonly believed that NLP is the field overlapping computer science, artificial

intelligence and linguistics concerning the interaction between machine and natural languages.

Take one of the earlier language processing systems *SHRDLU* as an example, they could work very well in a “block world”, by using limited vocabulary for conversations, which find a reason for researchers to be optimistic about it. The “block world” means the corpus with limited word numbers taken into the processing system. However, when they tried to extend the system into the realistic world with surroundings filled with vagueness and uncertainty, in a very short time they lose their confidence and optimism on it.

We cannot frame natural language and then adapt it to a certain system, or just distinguish it as separate meaning units¹⁰. That is decided by the historical development and intrinsic functions of natural languages. To understand natural languages, we need to know broad knowledge from the outside world and then also acquire the capability of handling the knowledge. “Understanding” here refers to cognize the content being expressed in the context of human civilization and social backgrounds. As a consequence, the cognition of natural language becomes also a highly contentious topic on AI-complete¹¹ process. Meanwhile, in the process of natural language, the definition of “understanding” also becomes a major problem. Research on the problem of understanding definitions has attracted wider attention.

The research of NLU (natural language understanding) started from 1960s, after the breakthrough of Chomsky on linguistic theories. The result of natural language

¹⁰“Frame natural language and then adapt it to a certain system” refers to the routine technological methods of processing languages, which is breaking languages into meaning blocks(units) and then applying it by encoding and decoding under a certain algorithm.

¹¹ AI-complete in IT is used to describe problems or outcomes that would rely on having a strong AI system in place. In other words, it is able to put together a computer system that functions at as high a level as a human being.

understanding is to acquire a semantic representation. There are three mainstream semantic representations: distributional semantics, frame semantics and model-theoretic semantics.

Distributional semantics takes semantic representation as a vector, based on the distribution hypothesis of Harris: Semantically similar words occur in similar contexts.

The interpretation is too condensed here. In order to help my reader to better understand it, it will be unpacked properly in Terms Used List.

Frame semantics refers to the method of representing semantic with a frame, which can deliver a more abundant structure comparing with the method of distributional semantics.

Model-theoretic semantics is the way of mapping natural language into logic form. As to algorithm, it usually constructs a semantic parser, which tries to present a more complete knowledge system of the world than the previous two methods. However, it is difficult to construct the semantic parser, which greatly limits the application of the method¹².

What is commonly adopted at present is the transformation form of frame semantics, which is combined with domain, intent and slots to express semantic consequences. Domain refers to data or resources of the same kind, as well as services relevant to these data or resources, such as “restaurant”, “plane ticket”. Intention means the operation of the domain data, usually named with verb-object phrases, like “purchase ticket”. Slots are the space for saving domain attributes, like “time”, “departure”, or “terminal” in the domain of plane ticket.

¹² Refer to the definition of “semantic parser” in the part of Terms used on page 23.

There are some typical practical cases that NLP confronted with. Now look at the following sentences. They may be ambiguous in many ways, but here I assume that their ambiguity is determined by the syntactic or semantical properties.

“We give these bananas to the monkeys because they are hungry.” and “we give these bananas to the monkeys because they are ripe.”

The pronoun “they” refers to monkeys in the first sentence while refers to bananas in the second sentence. To resolve the ambiguity properly you need to know something about the attributes of monkeys and bananas.

The main categories of NLP contain the following aspects: Text to speech, Speech synthesis, Speech recognition, word segmentation, Part-of-speech tagging, Parsing, Natural language generation, Text categorization, Information retrieval, Information extraction , Text-proofing, Question answering, Machine translation, Automatic summarization and Textual entailment.

2.2.2 Major obstacles in NLP

Currently there are several key difficulties in this field. **Firstly, it is hard to define the meaning scope of words, that is, the ambiguity issue of words.** We have to make decisions of selecting one given meaning of words out of two or more meanings attached to words. In our ordinary language, there is the characteristic of coherence among words, while the usual method of defining the boundaries of words is to select the best combination that makes the most fluent given context with no extra grammatical errors. In Chinese languages, it is also a headache to find boundaries for words. We need to figure it out how to diminish the meaning ambiguities of words. When words are adopted in our using of daily languages, usually more than one

meaning are attached to them, therefore it is our work to make decisions to choose the most suitable interpretation, so as to make the sentence most fluent.

Fuzzification, or vagueness, of syntactic is the second concern for us. Fuzzy expressions refer to the feature of vagueness in our language, which can only be clarified under certain circumstances. It is commonly believed that the grammar of natural languages is one major kind of ambiguity. I am not very sure about connections between vagueness and the discussion of ambiguity, which is a much bigger topic needed more thorough research. Here I would like to explain that vagueness is not the same as ambiguity and ambiguity need not imply any vagueness. One sentence can be parsed into several parse trees and we have to depend on the information of meanings and context to find out the most proper parse tree for the sentence. Here, in my opinion, is quite necessary to give the definition of parse tree for better understanding. Parse tree is picture of derivation in the phase of parsing, which focus on the actual implementation of grammar, including some details like keywords, parenthesis, white spaces, braces, etc. Parse tree is also called concrete syntax tree that represents the syntactic structure of a string according to some context-free grammar.

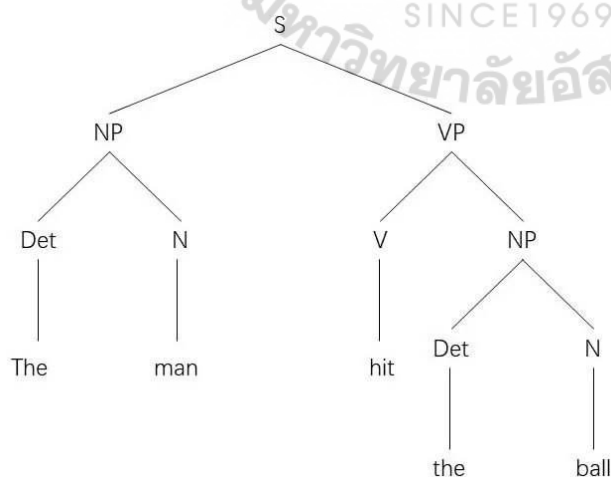


Figure 2. Sentence parse tree

Flawed or non-standard input is another problem that we face in ordinary language. Some examples I would like to list here, foreign accents or local dialects in voice processing, misspelling in text processing, mistakes in grammatical or optical character recognition, etc. When errors or mistakes cannot be recognized or, in some situations, corrected in other ways, they will cause even worse consequences.

The relationship of speech act and planning should also be put into consideration. We do not always express what we mean with the literal meaning of sentences. For instance, “Could you please pass me the sugar bowl?” A good response to this request is obviously just passing the sugar bowl. In most context (there may be some exceptions), “Yes, I can” is going to be a terrible answer, while answering “no” or “it is too far for me to reach it” is, to some extent, acceptable. For another example, if a course was not set up in the last semester, to the question “How many students failed the exam of the course?”, the answer “the course was not open last semester” is much better than “nobody failed the exam”. The example well illustrates the situation of pragmatic presupposition failure. The speech act is influenced by intentions of the speakers to serve specific purposes, which cannot be planned and then grasped by linguistic processing systems.

According to my study on recent literature in this field, the processing of natural languages takes stochastics, probability, statistic, etc., to solve these issues mentioned above, especially to the difficulty that thousands of possibilities will be created when highly vague long sentences are analyzed in the context of practical ordinary grammar. Some tools, like corpus and Markov models usually are adopted to diminish ambiguities.

The technologies of processing natural languages are evolved from sub-area of artificial intelligence related to learning acts, that is, machine learning and information collection.

2.3 Neural machine translation

2.3.1 What is neural machine translation?

Probably it is not a great idea to reveal problems with theoretical interpretations and illustrations. So I try to explore more in artificial intelligence field by analyzing the development of neural machine translation, which is symbol and milestone of translation technologies. At the very beginning when Google neural translation technologies are released, people are shocked. Even the translation professionals start to doubt their skill proficiency of language using. It seems like to prove that human beings are flawed in applying language and human translators are going to be replaced sooner or later. That is the purpose that I put this part here. In philosophy, when we want to see something deeper behind, we have to know the object thoroughly and comprehensively first, at least to locate the problems. So here raises the question, what is neural machine translation? How can it affect the translation field? What power is it and how powerful it gets to be in the future?

2.3.2 PBMT and neural translation

If you have been using machine translation, the chances are that you have been using a PBMT, that is, phrase-based machine translation. Different from the previous PBMT, the translation system released by Google is neural machine translation, which is based on the neural network. The neural network is adopted to make it a simple and easy program that is designed to work similarly as the brain does. The mode of neural translation is to use vectors to express words in field of real numbers. Each element of a

vector could be any arbitrary real number, while distance and directions among vectors show the relations among words, which will enrich the information of the whole texts. For example, in the model of neural network translation, a word is not merely a serial number but a vector containing more than five hundred dimensions, with its essence of five hundred groups of numbers, reflecting some certain aspects of the word.

Comparing to the mode of statistical translation that generates clumsy and tortuous sentences, the neural translation can produce more fluent and human-like translation.

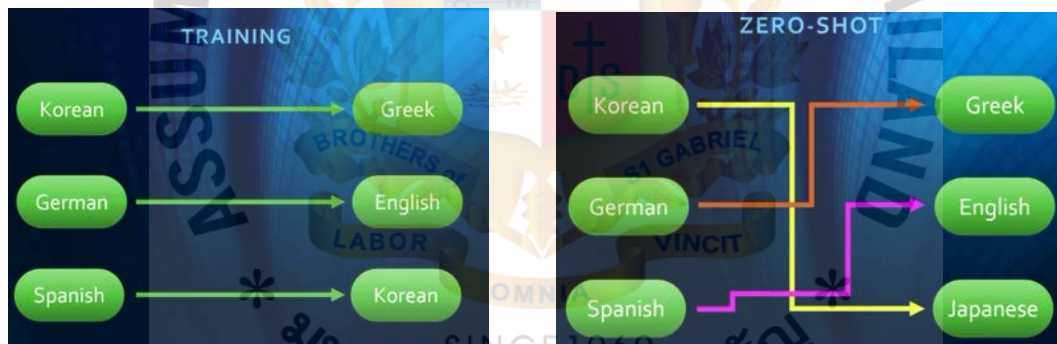
“NMT (Neural Machine Translation) imitates human brain in its structure, and its optimization process of parametric is similar to the learning process of human. It seems that neural network can capture images, words, recordings and medical data, etc., putting them into higher dimensional vector space, as mathematician said, to reflect some important characteristics of the real world by measuring the distance among them.”(Geoffrey Hinton, 1986) Hinton¹³ believed that that is the way brain works.

In other way, it is more like simulation of our way of thinking. And so the difference between the two tools is that, if you are using a PBMT, the system is going to blow through a lot of possibilities to come up with a solution to your translation problem. Whereas, when you are using a neural translation, actually, you will ask the computer to come up with an answer. So as you may understood, neural machine translation is a sought of so called artificial intelligence translation.

Neural networks are, as described, a very powerful tool that is used by various companies. It is also a really hot topic that is developed in recent years. For example,

¹³ Geoffrey Hinton is the “Father of Deep Learning”, the technology of which makes such a popularity of artificial intelligence. Among all the AI researchers of Vector Institute, the quoted rates of Hinton topped them all and he himself was the chief scientist of Google Brain AI team. In fact, in the past decade, almost every achievement in artificial intelligence, such as speech recognition, image recognition and gaming, to some extent, could be traced back to Hinton’s work.

Facebook is working on the system that, if you post a picture, it will actually be describing and recognizing what is on the picture. Then blind people can “see” what you are doing, where you were and who you are with, which is powerful. Microsoft also works on the system, such as picture recognition. Regarding the neural network translation that is released by Google, they have announced a sixty percent increase in the efficiency compare to the traditional PBMT system. Google also announced the capability of the system to do what they call zero shot translation. And it refers to that if you are training you neural network for neural-form translation, say, if you train it to translate from Korean into Greek, then train it to translate from German to English, and then from Spanish to Korean. When the training is completed, you can ask the system to translate in ways it has not been translating before. That is what they called zero shot.



So you could be able to ask the system to translate from Korean to Japanese and it will actually perform. And you can ask it to translate from German to Greek, it would also work it out. You can even ask it to translate from Spanish to English, in all scenarios as well. That is what they do with zero shot translation. Based on these functions, it is believed that neural translation is powerful and will get much more powerful in future. Nowadays we can easily find that so many people are looking into it and hardware is also progressing as well. Great improvement can be expected.

Therefore translators will have better access to better translation and we will also benefit from it soon. For example, now people try to plug the system into applications that we are using now, which would change things for us. Skype has been working on translation in conversation, which is inter-lingual chat. If it works well, actually it will be very effective, for you are possibly capable of having a chat with somebody who does not speak the same language as yours, which will help you interact with more people in a faster speed.

Another thing we need to pay attention to is that they work on training. The more time it gets for training, the better the neural network will get. As we say, the system depends on hardware and the programming quality. As time goes by, these things could get to be improved.

Another avenue is the context-relevant translation. That is also what researchers are looking into at the moment. If you have a document that you want to get it translated, you will work on several particular segments, then the system would be actually be able to take into consideration the subject in the whole text. And it will translate the segments accordingly by bearing the subject in mind. Thus, it will be forming a more natural and more accurate translation. Maybe it will get more powerful and affect things are done in translation.

2.4 Human intelligence and machine intelligence

Let us consider the issue of cognition, no matter it is human cognition or machine cognition. Strong artificial intelligence is an artificial intelligence that has mental capabilities. The very possibility of strong AI is highly contested. But in any case, a perfect piece of translation AI would not need to exhibit strong AI. It would only have

to be able to behave as though it can understand the linguistic performances. That means it would have to be able to respond to displays of emotion, creativity, humor, and intuition. Let us consider some of these features of human interaction.

First of all, we need to make clear the definitions of these words. Intuition is the ability to decide without knowing the reason. While the notion of consciousness is that we are always aware of our thoughts and the external world. The contradictory part is that we are not conscious of the source of our own intuitions and what processes are giving us intuition. We are not conscious of the source of our own intuitions.

When it come the machine intelligence, one might think that intelligent machines do not use anything like intuitive reasoning, since they always follow their own rules, that is, an explicit algorithm . But nowadays machines are astoundingly intuitive, because a lot of work now you see in the world is dealt with by, as we call it, Deep Learning¹⁴, which is about building up machine ‘intuition’. The system is given examples by examples all the time until it can figure out what is going on when it encounters a new situation, and then comes up with an answer. These machines make decisions via a process of data mapping.

Humboldt said that “Language, to its essence, is a continuous activity that is developing all the time.Language is never a product, but a kind of creative activity (Energeia)” (Humboldt, 1988: 49) . Because of the creativity, language can vary

¹⁴ Deep Learning (DL) is a new direction in the field of Machine Learning (ML) and it was introduced to make machine learning closer to its original goals, Artificial Intelligence (AI). DL learns inner rules and presentation layers from sample data, the process of which is very helpful to the explanation of data information such as words, graphic and voice. It is a complicated machine learning algorithm and its ultimate goal is to empower machine the ability of analyzing and studying, recognizing words, graphics or voices. Deep learning achieved greatly in fields of data digging, machine translation, NLP and relevant fields, making great contributions to the progress of AI technologies.

with changes of external conditions and can, at any time, make unlimited creation and use out of limited language materials.

In language, the distribution of words is a necessary condition for a deeper and highly significant property of natural languages: the ambiguity of meaning in utterances. Machine languages aim to remove this ambiguity by strict one-to-one assignments of 'words' to 'objects'. The result is a form of communication which is mechanical and unambiguous, but lacking in creativity. The creativity of natural languages resides in the multiple meanings that can be assigned to the same sentence because of ambiguities, arising from a non-mechanical or fluid relationship between words and objects in the world.

2.5 Conclusion

In this chapter, I mainly presented perspectives on modern translation technicalities and trends. Firstly I give a brief explanation of the connections between language translation and Wittgenstein's language thoughts. And then I specifically draw a sketch on contemporary translation technologies, embracing Natural Language Processing (NLP) and Neural Machine Translation (NMT). Introductions, concepts and main obstacles are separately discussed in part two and three. In part four, I distinguish the gap between Human intelligence and machine intelligence, highlighting cognition as the nature of intelligence and exploring the possibility of cognition realization in machine translation. The content of chapter two is going to be the foundation and premise of my following discussions, as well as the bridge between modern translation and Wittgenstein's thoughts in language and pragmatics. In my next chapter, I will have discussions on pragmatic concerns in translation from the perspectives of later Wittgenstein.

Chapter Three Language and Translation in Wittgenstein and His Counterparts

3.1 Introduction

Wittgenstein was one of the most influential philosophers of language in the twentieth century. Connecting Wittgenstein's thoughts about language with artificial intelligence translation is not an easy task because he did not explicitly discuss translation. In the *Philosophical Investigations*, the word "translation" is only used seven times. However, we can still find clues which are able to bring enlightenment for the development and research of artificial intelligence technologies in the field of language and translation, which is the focus of my dissertation.

In this chapter, I will introduce several important works of Wittgenstein from his different life stages, including *Tractatus*, *Philosophical Grammar*, *Philosophical Investigation*, and *the Blue Book*, from which I extract the content reflecting his ideas or interpretations on the relationships among human, language, and machines. Wittgenstein did not expect and experience the thriving and great popularity of artificial intelligence like we do nowadays, but he did realize the complexity of language and gave his unique explanation on "thinking" to human and machine separately.

3.2 Language in *Tractatus Logico Philosophicus*

3.2.1 General understanding of *Tractatus*

In this paper I try to concentrate on later Wittgenstein's philosophical thoughts on language. However, many propositions and discussions in his later work *Philosophical Investigation* can find origins from his earlier masterpiece *Tractatus*. There is a consistency between his earlier and later thoughts, not just a complete repudiation against his earlier thoughts from his later *Philosophical Investigation*, as we generally

believed. There are few aspects in common. Both concerned the issue of language expressions for thoughts, instead of thought itself that is focused in traditional philosophical discussions. Similar methodologies were adopted, considering the appearance of philosophical problems caused by thoughts confusions. Therefore, the solution of the problems is not to answer them as the questions required, but dissolve them by analyzing the questions themselves, manifesting that these problems are just consequences of irrational use of language. On the relationship of science and philosophy, he stuck to the same opinion about “what can be said and what cannot be said”. We always pursue essence, or intrinsic quality in science. Wittgenstein claimed that the thinking mode of Essentialism¹⁵ is not universal and there are some things that cannot be said, both in his earlier and later stages. Therefore, it is a necessary precondition to get a good glimpse of *Tractatus* so as to “understand his later thoughts better through the distinct comparison” (Chen Jiayin, 2005). The *Tractatus Logico Philosophicus* marks the achievement of Wittgenstein in philosophy from his early life.

The book deals with the problems of philosophy, and shows, I believe, that the reason why these problems are posed is that the logic of our language is misunderstood. The whole sense of the book might be summed up in the following words: what can be said at all can be said clearly, and what we cannot talk about, we must pass over in silence. (*Tractatus*, Vorwort (Preface) p9)

As to the set-up of artificial intelligence framework in in field of language, the last sentence of the above quote can be adopted to generalize the condition, that is , “what can be said at all can be said clearly”. Here what can be said refers that we can use systematic formal logic to explain propositions and facts clearly. At the premise of *Tractatus Logico Philosophicus* he claimed that a boundary exists for meaningful thought:

¹⁵ The Essentialism mentioned here should be limited within the scope of language studies. Further explanation can be found in Terms Used part.

Thus the aim of the book is to draw a limit to thought, or rather--not to thought, but to the expression of thoughts: for in order to be able to draw a limit to thought, we should have to find both sides of the limit thinkable. It will therefore only be in language that the limit can be drawn, and what lies on the other side of the limit will simply be nonsense. (*Tractatus*, preface, p2)

Wittgenstein divided the world into two parts in *Tractatus*, the sayable part and unsayable part, and set limits on our thinking. In chapter two I gave an analysis of the language mechanism of artificial intelligence which is considered to be built on logic and in accordance with Wittgenstein's Picture theory. Actually there are two issues involved in the *Tractatus*, that are the language representation of the metaphysical world and "silence" to the unrepresented aspects, which are basically in accordance with the two phases of language representation tasks in artificial intelligence, the selection of technological means of knowledge representation (especially logical means) and the delimitation of the possibility boundary of the scope of knowledge representation. The earlier Wittgenstein attempted to adopt a "once for all" method to achieve the goal of comprehensive representation of ordinary language by means of formal logic. The clarification of the mechanism discussed below will make a good foundation for the next chapter.

"What we cannot talk about, we must pass over in silence" (Wittgenstein, *Tractatus*, p10). The content that cannot be manifested in formal logical structure cannot be recognized and talked about. Non-atomic propositions are logical operations on the atomic propositions. So, meaningful sentences in English must eventually be reducible to logically complex sentences, built up from atomic propositions and the logical operators. Wittgenstein was following Russell's appeal to the mysterious concept of 'logical form'. Wittgenstein, in his earlier language philosophy, inherited concepts of

logical atomism and attempted to build the whole human philosophical knowledge based on logic, to get rid of philosophical ambiguity and chaos caused by the uncertainty and fuzziness of language. He thought that “The totality of propositions is language” (Wittgenstein, *Tractatus*, section 4.001). “It is not humanly possible to gather immediately from it what the logic of language is. So language disguises the thought” (Wittgenstein, *Tractatus*, section 4.002).

The differences in usage among words are not evident, and traditional philosophers have been confused by these apparent similarities and have conducted erroneous conceptual studies. Each functional structure corresponds to a different input-output relationship and a different set of steps for input, just as each tool in the toolbox corresponds to a different set of objects and instructions. For Wittgenstein, the real task of philosophy is to find the differences between these functions and uses marked by words, or to find the real programs that enable our natural language mechanisms. That is why his assumptions from *Tractatus* were, to some extent, rejected in his later works *Philosophical Investigations* and *Philosophische Grammatik*. After watching a soccer game, Wittgenstein got impressed and enlightened by the definitions of the word ‘game’, realizing the changing and baffling ordinary language deteriorated his faith and confidence to display the changing realistic world with a mechanical formal system. It is not possible to bind language games together and then build a set of logical system to utter accurate philosophical propositions. Later Wittgenstein once reflected on the issue and found out scientific methods may not work well on the tool of thinking, or we say language. “Man has to awaken to wonder - and so perhaps do peoples. Science is a way of sending him to sleep again” (Wittgenstein, *Culture and Value*, 1970).

Of course, before we attempt to demonstrate the failure of the establishment of ideal language structure, there is one thing we need to discuss first like Wittgenstein once did before, the idea that “philosophy aims at the logical clarification of thoughts” (Wittgenstein, *Tractatus*, section 4.112), the very first task of philosophy is to think and clarify concepts. This is to take place within a formal logical language.

Now we can proceed with a discussion why the formal logical language system does not function well. In his work *Philosophische Grammatik*, Wittgenstein mentioned if we observe the ordinary usage of a word, we will find something fluctuant. However, in our process of observation in words, we seek to get something fixed to fight against this fluctuation, just like “We draw a static picture for a constantly changing landscape” (Wittgenstein, *Philosophische Grammatik*, section 149).

With the constant change of the empirical world, the actual use of words also becomes variable, and their descriptions of the empirical world are characterized with simplicity, partiality and vagueness. Language is fuzzy and partial in meaning of words, sentences as well as various types of texts. The limitation of our epistemic cognition determines the fuzziness of language. The vagueness and simplicity of language originates from concepts that are created from the dynamic empirical world and the economical demands of the mass. Concepts are deprived from ordinary languages. With the guidance of meanings in natural semantics, there are different understandings of concepts and then differentiated thoughts emerge.

Under such a condition, the knowledge system of human beings is still built based on the dynamic semantics¹⁶, with meaning changing in contexts. Consequently, the logic

¹⁶ Dynamic semantics is a perspective on natural language semantics that emphasizes the growth of information in time. “It is an approach to meaning representation where pieces of text or discourse are viewed as instructions to update an existing context with new information, with an updated context as result. In a slogan: meaning is context change potential.” (Jan van Eijck and Albert

structure and rules in *Tractatus* from earlier Wittgenstein are extremely limited, because there is more meaningful language than fact-stating language.

3.2.2 Influence on Early Wittgenstein's thought from Frege and Russell

The philosophical thoughts of language from Wittgenstein come with a background. There is evidence that some of his main idea can be traced back to the knowledge and finding of Frege and Russell, who are both analytical philosophers as well as his fellow colleagues. Based on their contributions to analytic philosophy, be more specific, to mathematics and logic, Wittgenstein begins to develop his unique perspectives on language. So here I think it is necessary to give brief introduction of Frege and Russell, so as to understand Wittgenstein better.

In the preface part of *Tractatus*, Wittgenstein summarized the aim of the book is to show what is thinkable by showing what is expressible, then to mark the limits of thought by setting the limits of language. The root of the thought comes from logic, within which proposition plays a significant part. Traditionally speaking, propositions were taken to consist of a subject and predicate; proposition were taken to be truth bearers; and lastly they were taken to be related by the logical relation of entailment.

Frege's work in logic, developed in the *Begriffsschrift*, was revolutionary. Unlike traditional logic, his symbolic system did not take as fundamental the ordinary grammatical distinction between subject and predicate. Instead, the distinction between function and argument, which are mathematical terminologies, was central. The two breakthroughs of Frege are the extension of the notion of functions to equations as well

Visser,2010) The use of the word 'context' makes it clear that we are not interested in the total state of the receiver but only in aspects of it relevant to the kind of information we are focusing on. Thus, meanings are often called context change potential in the dynamic tradition.

as to expressions for numbers, and the extension of the above one to the expression in ordinary language.

Wittgenstein repudiates the designation as true or false, regarding sentences as names for objects in Frege's fruitful logic system. However, he accepted Frege's idea of replacing the traditional notion of subject and predicate with the concepts of function and argument (Wittgenstein, 1921, TLP 3.333), and in calling the truth or falsehood of each proposition its 'truth-value' (Wittgenstein, 1921, TLP 4.063, etc.). In his *Tractatus*, Wittgenstein claimed that what we need is a language that is unambiguous: a language whose grammar is governed by logic, a language with a logical syntax instead of the superficial syntax of ordinary language (Wittgenstein, 1921, TLP 3.325).

Russell tried to find the solution to the root error of treating classes as randomly classifiable objects. He claimed that both classes and individuals belong to different logical types, that is, what can be true or false of one is not likely asserted of the other. The solution developed is well-known as the theory of types. Wittgenstein barely accepts the type theory, thinking that it is a flawed one. He asserted that the major error of the theory is that it seeks to say something that is unsayable and certain types of symbols cannot sensibly be combined.

Following the same thought as Frege, Russell also devoted himself to building a kind of language which would be a more precise instrument than ordinary language for purposes of logic and mathematics. Instead of the natural use of our definite descriptions in ordinary language, Russell, as well as Frege, both regarded it as essential that the kind of language should contain only expressions which had a definite sense, by which they meant that all sentences in which the expressions could occur should have a truth value (Anthony Kenny, 1973). Here we should make clear that their intention of

designing a stricter and more rigorous language was not initially an interest in metaphysical issues but a wish to place mathematics on a solid logical foundation. Both Frege and Russell were dedicated to proving that mathematics, especially arithmetic, was in fact a branch or extension of logic involving no special subject matter of its own and was derivable from purely logical axioms.

What also worth mentioning are the rules of logic that must be entirely syntactical, such as the rules for manipulating symbols. It is not likely for us to formulate semantical rules, that is, rules about the meaning of symbols. Also the meaning of symbols cannot provide a justification of syntactical rules. It is not plausible to say that a symbol of any object must have a such and such rule. In order to say what the logical properties of language are, we should need a language with these properties, for otherwise we should be taking for granted what we are supposed to be explaining. But a language lacking these properties, “an illogical language, is impossible” (Wittgenstein, 1921, TLP 3.031). However, Wittgenstein rejected the probabilities of a philosophical research on logic as Frege and Russell had conceived what it is by giving that “logic must take care of itself” (Wittgenstein, 1921, TLP 5.473), in his writing of the *Tractatus* in 1921.

3.2.3 Picture theory--A theory of representation

The picture theory is widely acknowledged as the most significant thought in early Wittgenstein's philosophy. In the *Tractatus*, Wittgenstein mentioned that he was inspired by the reconstruction of car accidents with toys and dolls in a court of Paris. The positioning of a toy lorry and a toy pram exhibits the model or say, a three-dimensional picture of the collision. (Wittgenstein, 1922) How could the representation work in this way? We have to say both toy pram and lorry have to be proxy for the real

ones. So it could be summarized like this: the elements of the model take the place of the elements of the situation to be represented. This is the pictorial relationship which makes the picture a picture (Wittgenstein, 1921, TLP 2.14). The relationship between the elements of a picture, the fact that the elements are related in the way they are, is itself a fact, and this led Wittgenstein to say that a picture is a fact. He called the connection of the elements in a picture the structure of the picture (Wittgenstein, 1921, TLP 2.15). But the structure of a picture just not just lies in its structure, pictorial relationship within is also a necessity. The picture interpreted by Wittgenstein is the relation among elements having pictorial relationships to objects outside.

The picture theory of early Wittgenstein sought to illuminate the pictorial relations among thought, language and the world. On one hand, it tried to explain the relation between propositions and realistic facts, as well as the relation between language and world view. On the other hand, efforts also were made to explore the relation of proposition and language form. Whether it is virtual or real, picture itself is just a result of reflection from mind. Whenever thought exists, it will be reflected for sure regardless of truth or falseness. Usually, when we are using words, we get used to following the methods of transforming words into pictures, sometimes turned into other pictures, the key part of which is awakening of the pictures. When we see a word, the picture will come into our mind, which is aroused by philosophical nouns in our thought, believing that philosophical picture is the meaning of the object, or at least, some certain enlightenment on the object. If Wittgenstein gave a definition of the logical theory, it would be a violation of his own philosophical claim that philosophy is not to build new propositions but clarify them. Without doing that, he confined himself of explaining and clarifying propositions. Anyhow, in his view, most concepts and rules of words or

propositions generated from the experience and observation of context, therefore any attempt will cause a paradox, to which he claimed we shall keep silent. The logical picture itself is lifeless and can only be brought to life by use.

Anyone interested in Wittgenstein's philosophical thought must be known that the earlier logical picture was thoroughly abandoned by him in his later philosophy and afterwards he turned his research into language games. One of the main reasons causing the transformation is that Wittgenstein thought that "the logical picture had an intense hypnotic effect on philosophers, which makes their analysis objects obscure and be taken up mistakenly" (Wittgenstein, 1953). Logical picture seems to be everywhere; however, what can be presented is pretty limited. If things are only analyzed with grammatical logic, some false understandings of objects will be generated by the surface grammar. As to language game, its core concepts are language and act, thinking and world, which replace logicity with reflection. The distinction between the picture and "language correlation" lies in not only the transformation of philosophical thoughts from earlier Wittgenstein to later Wittgenstein, but also in whether mind gets itself trapped. The picture theory takes logic as priority, while language game takes action (use) as its priority.

When we finally get to know the reason that we have to keep silent, does it mean that we should stop thinking? I do not agree with the idea on this aspect. Grammatical expression and thinking in language are totally different things referring to the normalization of words. Now it is a quite common phenomenon that all grammatical rules are designed to convert the total process of thinking into expressible words combination. Language is not in accordance with objects ideally and for each individual,

words are attached to different meaning defined by themselves, based on which Wittgenstein initiated the concept of world picture.

“The gramophone record, the musical thought, the score, the waves of sound, all stand to one another in that pictorial internal relation which holds between language and the world. To all of them the logical structure is common.” (Wittgenstein, 1921,*Tractatus*,4.014) The pictorial world refers to that we cannot tell which one is better than others among various views of world and value. In a sense, only when two people are set in the same world map, then they can have a discussion on truth and falsehood. The way to pull someone else into our own world map is the adoption of words and language, both of which are certainly categorized into the scope of grammatical logic and the boundary has been drawn for them with certain rules. The Earlier Wittgenstein claimed that the task had been accomplished but decades later he himself gave up the limit that was drawn by himself. The limit of words seems to be the set of logical rules that has already been established, forming a circulation. How to break the limit of language? So far, the method from Wittgenstein is to desert the logic of language and keep silent about it.

A brief summary of early Wittgenstein’s thinking on philosophy of language has been made. In the next section we are going to focus on his other influential work, the *Philosophical Investigations*.

3.3 Return to the ‘rough ground’.

3.3.1 The transition from *Tractatus* to *Philosophical Investigation*

The first section of the chapter I have made a brief overview of the *Tractatus*. We will now turn to his work in the *Philosophical Investigations*.

Wittgenstein finished the *Philosophical Investigations* in his later life and it was published posthumously. The book actually is an integration of previous manuscripts and notes, including the *Blue Book* and the *Philosophische Grammatik*. Many of his concepts, such as that of a language game, family resemblance were initiated in these materials and later adopted and further interpreted in the *Philosophical Investigations*. The work mainly discussed the limitation and constraints of his earlier philosophical thoughts concerning language, mind and the physical world, and further and deeper understanding was raised, that is, the correlation among language, mind and the world existed within the structure of language instead of being out of it. Wittgenstein made another interpretation of the nature of philosophy, claiming that philosophy research is grammatical research.

I would like to give the example of poems. We all read poems, more or less, and a poem is not always attached with the literal meaning of the words, but also conveys meaning beyond, as we say. Why can the poet achieve it and we can sense it this way? The reason is that it is related with person, by whom the extra meaning is given. When we read the poem, what we get is not only the factual scene described by the poem, but also the sparkles and emotions generated from the background and life experience of the poet. So, as what Wittgenstein said, "Thinking of a language, is thinking of a form of life. (Wittgenstein, PI, 1953)", we can perceive the changes in his thoughts now and his previous ideas seem too narrow a path for us to move forward. The world map from early Wittgenstein consisted of the relations among language, logic and world, within which language is in accordance with the factual part of the world. Any propositions that combine facts with its logical form to construct a referential relation have meanings. However, the meaning here refers to the physical implication and meaning. Words we

are using, just like how we use them in the field of science, are only containers of implication and meaning, attached to which implication and meaning can be maintained and conveyed.

So, with logic, can language represent the world? Or in another way, the world described here is the actual whole world? Is it possible for us to narrate or even calculate the world through logic, like mathematical formulas? Walking back to natural language in ordinary life, Wittgenstein realized that it did not merely work in this way, instead, it encompassed much more complicated and affluent working mode and the life the human being is far more complex than codes in machine calculation. From there generated the philosophical discussions on language in later Wittgenstein, which sounded trivial and unorganized. In the following paragraphs, I am trying to just handle the profile of his language philosophy comprehensively because the content is so trivial and full of details that a thorough interpretation in my paper is not possible to be achieved.

3.3.2 Language as a therapy for philosophy

Wittgenstein considered language as the core therapy for “philosophy disease”, which are caused, in his opinion, by misunderstanding and misusing language. In the early period, he struggled to confine language in the scope of facts and logic, so as to exclude and dissolve all the illusions in metaphysics. There is nothing to say beyond facts and logic. Decades later with his gradually accumulating life experience and observation, he inspected what was finally left in ordinary language. After retrospect on the concepts like “form of life”, “family resemblance”, “language game” and his objection of “private language”, here leave us the question: what is left in language? With his

repeating and emphasizing of words such as rules or forms, we can get a glance that he still concentrated on the shared part, or we say, the grammar. And the grammatical rules are in the form of life shared by all of us, that is, the use of language. In the last section of the *Tractatus*, he gave the vivid metaphor of climbing a ladder. What is more important is what we see when we get to somewhere top of the ladder. Get rid of the ladder, and then we see what is left there.

Although *Philosophical Investigations* is still obscure and hard to understand, its writing style tends to be distinctively different from *Tractatus*, with very few assertions in it but a large number of instances and questions. Even we do read and understand the stories in it, it is not likely for us to figure out what he really meant. What is the reason that Wittgenstein takes so many examples to present his ideas? His thinking on concept may provide the answer. Concepts are expressed and manifested by their use, that is, if you know the concept, you know its use. Two methods can be adopted to handle a concept. One is to perceive what it is, for example, what beauty is, or what morality is. We give definitions by interpretation and explanation. Another way is to find out the conditions of knowing it, such as where beauty exists and when morality is used. We can gain the clues from the PI to show that Wittgenstein chose the second way to clarify the illusions in philosophy and get them cured.

To be more specific, if we assume that all propositions are explained through the first method, when we ask what object A is, we may get that the answer is f(B). What is B then? We will get the answer that B is g(C), so what is C? The consequence of following the method is that a dead end will finally be reached, which cannot be explained anymore by any other propositions and was called by Wittgenstein the atomic fact in his *Tractatus*. In *Philosophical Investigations*, Wittgenstein gave out the

refutation of the first method and asserted that the second method was what we need. It is not essential to know the essence of a conception, but we must be conscious of under what circumstances it does happen. If a machine is able to translate a language into another one automatically, we may say the machine do know how to translate and can provide a translated text. Actually the machine cannot explain what translation is, but its actions have already presented the meaning of translation. That is why Wittgenstein did not explicitly give definitions of his ideas, instead, he threw out a cluster of examples to get them shown up.

3.3.3 Language game, the variation of meaning

The language is itself the vehicle of thought (Wittgenstein, 1953, PI, p329). “I can see or understand a whole thought in a flash, Wittgenstein says, in exactly the sense in which I can make a note of it in a few words or a few penciled strokes.” (Wittgenstein, 1953,PI, p318 – 19). What gives the flash, or the notes, a content corresponding to a complicated thought is not anything that happens at the time, but all kinds of circumstances before and after, just as in the case of the man who suddenly sees how to complete an algebraic series (Wittgenstein, 1953, PI, p323). When Wittgenstein started to consider the relation between language and understanding, “all kinds of circumstances before and after” come into play, which set an embryonic background for his later thoughts. In the Blue and Brown Books, Wittgenstein uttered a statement on language game: “Language game is a way of applying signs, which is far simpler than that of the way we use daily language signs. It is the kind of language form, through which children began to learn how to use the language”(Wittgenstein,BB,1953).

Later in *Philosophical Investigation*, Wittgenstein gave further elaboration on the issue and summarized two types of simple primitive language forms, which was a reflection of his language view in earlier and later phases of his life. One is the language that is disconnected from the ordinary language, just as the picture of Augustine, which is a simple and primitive outlook of language that some philosophers like Frege, Russell and even early Wittgenstein also advocated with. “These words, it seems to me, give us a particular picture of the essence of human language. It is this: the individual words in language name objects—sentences are combinations of such names.—In this picture of language we find the roots of the following idea: Every word has a meaning. This meaning is correlated with the word. It is the object for which the word stands”. (Wittgenstein, 1953, PI, p2) It is in accordance with Augustine’s ostensive definitions. Another kind of language is ordinary language for certain purposes, such as the conversation between the architect and his worker described in Wittgenstein’s works. “The language is meant to serve for communication between a builder A and an assistant B. A is building with building stones: there are blocks, pillars, slabs and beams. B has to pass the stones, and that in the order in which A needs them. For this purpose they use a language consisting of the words "block", "pillar", "slab", "beam". A calls them out;—B brings the stone which he has learnt to bring at such-and-such a call”. (Wittgenstein, 1953, PI, p3) Both of the languages here can be contained into the language game coined by Wittgenstein.

Wittgenstein probed into the meaning of language and found the concept of game as home for meaning to exist and manifest itself. “It is the realization of the variety among games which makes the concept of game a particularly useful one for Wittgenstein to express his new insights into the diversity of linguistic usages”. (Anthony Kenny, 1973)

From his perspective, the concept of meaning in philosophy was supposed to be the meaning concept of language. To make the point clear, it is worth illustrating the conversation between the architect and his worker we just mentioned in the above passage which is a typical example given by Wittgenstein to show us games in language. In the second section of *Philosophical Investigation*, Wittgenstein described a vivid scene of people using language. An architect was building a house together with his assistant, using materials like sand, rocks, pillars, etc. When the architect says: “rock”, then his assistant will pass him rocks based on their constant experiential communication, which is not just limited within the function of describing.

The comparison of language to a game by Wittgenstein was not meant to imply that language was something unimportant or just for entertainment. Conversely, it was expected to come out with the connection between the application of language and non-linguistic activities. The game here, as an analogous term, has been gotten rid of the characteristic when being used on common occasions. “We cannot say that the game has several independent meanings like ‘deposit’. It is a family-likeness term” (Wittgenstein, 1974, PG, p75, 118). This thought was developed in a famous passage of the *Philosophical Investigations* in which Wittgenstein denied that there was any feature, such as entertainment, competitiveness, rule-guidedness, skill, which formed a common essential element in all games; instead of that, “we find a complicated network of similarities and relationships overlapping and crisscrossing” (Anthony Kenny, 1973). The concept of ‘game’ is extended as in spinning a thread we twist fiber on fiber. ‘What ties the ship to the wharf is a rope, and the rope consists of fibers, but it does not get its strength from any fiber which runs through it from one end to the other, but from the fact that there is a vast number of fibers overlapping’ (Wittgenstein, 1953, PI, i, 65 – 7).

Then, ‘family resemblance’ one of the most well-known concepts from Wittgenstein, was developed from here.

Any scene that needs the application of language will be counted as a language game interconnected with other games through family likeness. Whenever a child fell and started to cry, his mother would teach him “It hurts”. Gradually the child would use the expression “It hurts” to take the place of the behavior of crying so as to get comfort from his mother. We are not sure the child understands the meaning of the word ‘hurt’, but to the child, every time his expressing of the word will bring him comfort. From the standpoint in *Philosophical Investigation*, the child has already learnt the meaning of ‘hurt’ in the game of falling because he knew how to use the word. Now let’s assume that the child grows up and goes see a doctor. The doctor knocks his knee asking: “Does it hurt?” and he responds “It hurts”, which is quite similar to the scene when he get comfort from his mother in his younger age. The “It hurts” here in the hospital may help the doctor to achieve a correct diagnosis for his disease and get him cured, and again, he understand the expression in this completely different scene with the likeness.

It is worth noticing that the meaning of words would be possibly different in various scenes with different usages. We can imagine in another remote city, the meaning of “it hurts” is feeling good, and then the child will be totally lost. Indeed the speaking of language is part of a communal activity, a way of living in society which Wittgenstein calls a ‘form of life’ (Wittgenstein, 1953, PI, I, 23). It is through sharing in the playing of language-games that language is connected with our life (Wittgenstein, 1974, PG 65). One word will function in diverse ways in different language games and a language means a form of life. However, “We remain unconscious of the prodigious diversity of

all the everyday language-games because the clothing of our language makes everything alike” (Wittgenstein, 1953,PI, II, 224).

3.4. Kripke’s Wittgenstein: A rule-following paradox.

Where there is a game, there is a rule. It sounds a common sense that rules are essential precondition when talking about games. When Wittgenstein brought the concept of language game to us, at the same time he put a consideration on the issue of rule following. In this section, I would like to, firstly, give an introduction of Wittgenstein’s argument on rule problem, and then have a discussion on the rule following paradox as interpreted by Saul Kripke.

3.4.1. Wittgenstein: rule paradox

In the section 201 of *Philosophical Investigation*, Wittgenstein described his rule-following problem.

This was our paradox: no course of action could be determined by a rule, because every course of action can be made out to accord with a rule. The answer was: if everything can be made out to accord with the rule, then it can also be made out to conflict with it. And so there would be neither accord nor conflict here. (Wittgenstein, 1953, PI, 201)

Obeying rules seems to be turned out to be a dilemma: actions are taken with the precondition of our not knowing the rules, but we just take actions by following rules.

Considering the structuring and compiling of the *Philosophical Investigation*, we can realize that Wittgenstein did not locate the rule following paradox at the outset of the book, but put it at the end of the book after he observed a large number of language games and conditions of obeying rules, which indicates that the appearance of the paradox is not an obstacle for language game and rule-following. Instead, it is the rational thinking that hits the wall in front of language games.

Wittgenstein's thinking pattern of the rule issue reflected that he had turned his philosophical vision to our social life and tried to depict the whole life with an unquestionable attitude, within where there is no rational thinking and logical inference, but life itself. Language game, or '*Sprachspiel*' in German, refers to "the integrity consisting of language and action (actions interwoven with language)" (Wittgenstein, 1953, PI, Item 7), that is, language activities and practice in ordinary life. Rule-following is the soul of language game and an indispensable condition for all human activities. Just like when we want to play a game, we have to know its rules first, which is logically reasonable. However, Wittgenstein mentioned that we took action before we knew rules and we learned rules in the process of taking actions. Therefore, we are obeying rules blindly and indiscriminately, which makes rule a result of action instead of a prerequisite. Rule is not a priori but among our actions. By throwing out the paradox, Wittgenstein attempted to reveal a simple thing: If we want to learn how to swim, we must get into water first. And if we want to know the rule, we must play the game first. As Wittgenstein wrote optimistically in *Philosophical Investigation* that "without knowing any explicit rules, we can learn how to swim by merely practicing.(Wittgenstein,1953)" But chicken and egg, which comes first? It is a good question that attracted attention from many philosophers, and also various interpretations and solutions were given, among which Kripke's argument on the paradox took a typical position.

3.4.2. "Kripkenstein", another form of skepticism on meaning

Kripke attempted to develop Wittgensteinian Paradox in question in his works *Wittgenstein on Rules and Private Language*. He thought that "the 'paradox' is perhaps

the central problem of *Philosophical Investigations*. Even someone who disputes the conclusions regarding ‘private language’ and the philosophies of mind, mathematics, and logic that Wittgenstein draws from his, might well regard the problem itself as an important contribution to philosophy. It may be regarded as a new form of philosophical skepticism” (Kripke, 1982, p7). Kripke coined the “rule paradox” out of the paradox from Wittgenstein and it is later commonly called “Kripkenstein”, which is effective to the analysis of rule paradox of Wittgenstein and his claim of language community offered us significant clues to better understand Wittgenstein’s thoughts.

The rule paradox was aimed to deny our current ability to infer present and future language usages from past usages, denying that our current usage conforms to past usage. Wittgenstein discussed the paradox from the aspects of both mathematics and mind. Kripke took the function of plus“+” as an example, attempting to prove that Wittgenstein had abandoned the Fregean mathematical concepts and adopted the standpoint that was similar to the thought of indeterminacy of translation from Quine. To make Kripke’s analysis of the paradox more clearly and straight, Let us go through the famous example first.

The paradox arises because, as the sceptic argues, nothing about me indicates that in using the symbol '+' I meant plus and not the following function called ‘quus’. When “plus” is used in the past:

I meant addition “plus+”.

I meant “quus”

$X \text{ quus } y = x + y \text{ if } x, y < 57$

$= 5 \text{ otherwise. (Kripke, 1982, p9)}$

So you assigned the meaning 'plus' to '+' and I assigned the meaning 'quus' to '+'. Then what difference is there between us? "Although I myself have computed only finitely many sums in the past, the rule for addition determines my answer for indefinitely many new sums that I have never previously considered. This is the whole point of the notion that in learning to add I grasp a rule: my past intentions regarding addition determine a unique answer for indefinitely many cases in the future. (Kripke, 1982, p7)". In this way, rule-following becomes sceptical and indeterminate. As we commonly grasp the rule of plus that $68+57$ leads to the result of 125 in the case that we never make 68 plus 57, then what the rule do we follow? There is no rule determined by previous cases and there are always infinite many usages that are in accordance with a limited finite scope of cases.

On the other hand, if we suppose that our meaning addition with '+' is based on the given general directions when using '+', then we make a rule of procedure for ourselves. The question is what constitutes the meaning by following the instructions? From Kripke's example we can see that the thought of infinite sums are not included within here. Our past performances and experiences of implementing the rules do not introduce a unique but many such-and-such possible procedures. "Supplementing the instructions with another set of instructions explaining how to follow the first set leads only to a regress. (Milikan, 2011, p325)".

The solutions to the sceptical problems from Kripke were recognized as the straight solution and the sceptical solution. A straight solution "shows that on closer examination the scepticism proves to be unwarranted" (Kripke, 1982 p.66). A sceptical solution concedes that "the sceptical hypothesis cannot be refuted and argues instead that our ordinary belief or practice can be justified without refuting the sceptical

Hypothesis”(Paul Hoffman, 1984, p24). Kripke, in his understanding of Wittgenstein, proposed a foundation for language, which is an agreement in responses. In his conclusion, there is no fact of the matter that justifies one response over another, and our agreement upon our responses in a community of speakers is sufficient to make language possible. Kripke considered ‘language community’ (Kripke, 1982) as the core of solving Wittgenstein’s paradox, acknowledging that language practice and social agreement are the only criterion of obeying rules or not. “The foundation for language proposed by Kripke's Wittgenstein is, in a nutshell, agreement in responses. Even though there is no fact of the matter which justifies one response over another, the mere fact that we agree in our responses is sufficient to make language possible. A wrong response is one that does not agree with those of the community, a correct response is one that does agree. If there were no common consensus, there could be no language” (Paul Hoffman, 1984, p25). Although agreement of responses is possible in a community of speakers, according to Kripke's Wittgenstein, “there can be no such agreement in responses of an individual considered in isolation (Paul Hoffman, 1984, p.89).

The rule-following paradox is not merely a Humean skepticism¹⁷, instead, through the paradox, Wittgenstein emphasized the features of mobility and inference in following rules. He is not intended to establish certain kind of rules or inquire what rule is, but focus on how to follow rules in language games. “What Wittgenstein is doing is describing the utility in our lives of a certain practice; necessarily he must give this

¹⁷ It is worth mentioning that, Ken Winkler has pointed out that Kripke's claim to use the notion of a sceptical solution in Hume's sense (p.4) is misleading. According to Winkler, Hume's sceptical solution "is what we would call a psychological explanation, part of an empirical theory of human nature with (for Hume) a philosophical point. It is not a solution to a 'sceptical philosophical problem' in Kripke's sense, because it does not show that 'ordinary practice or belief is justified' - at least not in any sense of 'justified' that has anything to do with reason or argument.

description in our own language. As in the case of any such use of our language, a participant in another form of life might apply various terms in the description (such as "agreement") in a non-standard 'quus-like' way. Indeed, we may judge that those in a given community 'agree', while someone in another form of life would judge that they do not" (Kripke, 1982, p. 146). Kripke's consideration on Wittgenstein as a logician is a misinterpretation of Wittgenstein's original intentions.

In the book *Wittgenstein on meaning*, McGinn claimed that Kripke completely misunderstood the purpose from Wittgenstein and argued that Wittgenstein abandoned some concepts that are familiar to us. McGinn thought that following rules did not require language community to attain same assertability conditions, but ensure that our speech act look same as following rules. Furthermore, even if we master the rules, we may not obey them. It indicated that it is not important to ascertain the criteria of rules, instead, what is more important is that we shall not consider in isolation whether one follow rules or not.

Kripke laid his attention completely on Wittgenstein's way of argumentation and analysis of his concepts, causing the obstacle of failing to get rid of Wittgenstein's original intention. Wittgenstein came up with the rule-following paradox after inspecting a large number of practical cases of applying languages. He aimed to clarify that once we talked about rule issues mechanically out of the context of specific language games, we would encounter the unsolvable paradox. The problem of Kripke is that he adopted the method which is totally opposed by Wittgenstein, to resolve the paradox caused by the method. Wittgenstein described a large sum of language-game examples and then summarized the paradox as rational thinking being rebuffed when encountering language games. The meaning of languages lies in activities of applying

languages and only within language games can we truly understand the meaning of language and experience the value of life, because language game itself is a form of life. Wittgenstein looked into the paradox with a dynamic perspective and attempted to settle the issue in actions or activities, as he said “philosophy is not propositions but activities”.

3.5 Conclusion

In this chapter, I mainly introduced Wittgenstein’s thoughts on language and also arguments and extensions from his counterparts. In the next chapter, I will discuss pragmatics in translation from the perspectives of Later Wittgenstein.



Chapter Four Critical Discussions and Pragmatical Contributions on Meaning and Rules in Translation from the Perspective of Later Wittgenstein

4.1. Introduction

“Success in creating AI would be the biggest event in human history. Unfortunately, it might also be the last, unless we learn how to avoid the risks. The progress in AI research and development is swift. And perhaps we should all stop for a moment, and focus our research, not only on making AI more capable, but on maximizing its societal benefit” (Stephen Hawking, 2017, GMIC lecture) . Stephen Hawking, the well-known physicist, warned us the risks of artificial intelligence. Hawking claimed that in the future AI robots might have self-consciousness and emotions, being able to control or even fight against human beings. The scenario seems to be quite far and fictional. What interests me is the involvement of artificial intelligence technology into the territory of language and its sub-discipline, translation. The revolution is taking place and all the giant companies rushed into the industry and nourished the big bubble with capital. Very few philosophical reflections and examinations were exerted on artificial intelligence translation. If any, they are usually more positive than negative, defending the mode and strategies of AI translation.

Based on philosophy of language from the later Wittgenstein, I make the interdisciplinary research among philosophy and pragmatics (translation is an important branch of pragmatics), exploring the philosophical connotation behind the issue of AI translation development. A functional and useful philosophy of translation would embrace the epistemological task of thinking about the relationships, communication, and integration processes of academic disciplines among themselves. It would consider

how this task could lead to a greater ability to address real-world problems. This is the reason that I give elaborate explanations and discussions in the previous two chapters, separately on technicalities of AI translation and on philosophy of language of later Wittgenstein, which make a foundation for me to extend my argument further into real-life translation issues.

In this chapter, I try to defend my point that artificial intelligence translation will deteriorate our capability of using language in human society and the meaning conveyance in translation will shrink in the process of AI translation. All the discussions will be made within the following structure. Firstly, thoughts on translation and anti-essentialism in later Wittgenstein. In this part, I will first discuss the translational perspectives of Wittgenstein, to prove the connections between Wittgensteinian thoughts and translation studies. And then argue against the universality in machine translation technologies by interpreting the Anti-essentialism in later Wittgenstein. Secondly, translatability and intranslatability: “Qualia ineffability” issue in MT. This section will be divided into three parts: The boundary of languages. In this part, I will first explain “Whereof we cannot speak, we must remain silent” (Wittgenstein, 1922, §7), to argue about the untranslatable part of language excluded by machine translation. And then I interpret the Qualia ineffability in translation, which can only be controlled by human translator, instead of MT. For rules in machine translation games, I will discuss that machine translation is also one of language games. And then argue that the rules it follows in the game are mechanical and cannot play the language game to the most. Then, translation validity and meaning losses: reflection on AI translation. In this part, I will argue that communication validity and meaning transmission in AI

translation cannot be guaranteed. It may shrink our language and we have to admit the coexistence of precision and ambiguity.

Finally, the task of translation: What can be done with AI translation? There are three parts in this section. Translation: Reverberation of the work in alien languages. Here I will clarify that the original functions and purposes of translation, to prove that machine translation cannot meet the purposes, or at least prove that it can merely realize part of them. Fidelity and freedom in translation. In this part, I will argue that to which extent machine translation can ensure fidelity and freedom in translating process. And then try to prove that machine translation put limitations on meaning expansion in translation process and epistemological dislodging in AI translation. How to proceed the unsayable part in machine translation? At last, I will come to the conclusion of this chapter.

4.2. Thoughts on Translation and Anti-essentialism in Later Wittgenstein

4.2.1 The translational perspectives of Wittgenstein.

The perspectives on translation from later Wittgenstein highlighted functions and flexibility of language, which gave great enlightenment to translation studies. Wittgenstein did not specialize in translation research through his life and translation is just one of his tools for his philosophical investigations. However, his views about language and translation are in line with translation studies in linguistics, both developed from form to function, inferring to the transfer from Mechanism to Humanism. The transfer from Mechanism to Humanism refers to Wittgenstein's criticism on the limitation of the concrete form of the logical system of language philosophy and pointing out that there are many experiences beyond the boundary of philosophy and the limitation of reason in language, which can only be shown in

realistic life. It also came the emergence of anti-technolatry, which is also part of my concern in discussion of artificial intelligence translation. In this section, I try to seek the origins of Wittgenstein's perspectives on translation from his early and later philosophical thoughts, for further inspirations to translation research. On the other hand, by doing so, philosophical thinking can be provided for translation studies and then elevated to the height of philosophy of translation.

Wittgenstein is assertedly the first person to think systematically about the world in terms of language. In this sense, "he is one of the earlier pioneers of philosophy of language" (Chen Jiayin, 2003, p140). There was a significant transformation between his early and later thoughts on philosophy of language: in his early *Tractatus Logico Philosophicus*, he took formal language as basic, attempting to construct and clarify the essence of language in logical forms. While in his later *Philosophical Investigation*, he abandoned his thought of adopting logic principles as rules of meaning and instead turned to rules of ordinary language as standard of meaning. Wittgenstein tried to start from functions and pragmatical use of language to eliminate misunderstandings of language in traditional philosophy, so as to solve philosophical disputes and clarify philosophical propositions.

It is interesting that clues on translation studies were also contained in Wittgenstein's thoughts. The reason is that the 'linguistic turn' (Bergman, 1946) in philosophy through the twentieth century eminently showed its significance and influence in analytic philosophy or philosophy of language with logical analysis as its characteristics. While translation is exactly a "cross-lingual" activity (Liu Zhenxian, 2012, p3). In the first part of *Philosophical Investigation*, Wittgenstein explicitly categorized translation as a language game:

...Imagine a picture representing a boxer in a particular stance. Now, this picture can be used to tell someone how he should stand, should hold himself; or how he should not hold himself; or how a particular man did stand in such-and-such a place; and so on. One might (using the language of chemistry) call this picture a proposition-radical. This will be how Frege thought of the "assumption".

Forming and testing a hypothesis—

Presenting the results of an experiment in tables and diagrams—

Making up a story; and reading it—

Play-acting—

Singing catches—

Guessing riddles—

Making a joke; telling it—

Solving a problem in practical arithmetic—

Translating from one language into another—

Asking, thanking, cursing, greeting, praying.

—It is interesting to compare the multiplicity of the tools in language and of the ways they are used, the multiplicity of kinds of word and sentence, with what logicians have said about the structure of language. (Including the author of the *Tractatus Logico-Philosophicus*.) (Wittgenstein, 1953: section 23) .

The translation perspectives from Wittgenstein's philosophy of language aims to reveal rules of meaning concerned in the transformation process of language meaning, discussing the translatability and untranslatability of language symbols between objects and non-objects in language. According to Augustine's language view

(Wittgenstein, 1999: 1e, § 1) quoted by Wittgenstein in his earlier *Tractatus*, the basic units of language are signs or words, while signs and objects (here refers to physical objects as well as mental and psychological objects) are connected with rules, that is, the meaning of a word is the object it signifies. For any kind of language, we can ascertain the relation between its signs and objects. Or we can also say that, according to language rules, signs can be exactly defined. The language rules that can be universally applied are called "definition" by Wittgenstein.

Definitions are rules for translating from one language into another. Any correct sign-language must be translatable into any other in accordance with such rules: it is this that they all have in common. (Wittgenstein, 2002: 21, § 3. 343)

Due to the sameness of “definitions”, words from different languages for the description of the same object must be translatable, with equivalent meanings. Language rules that we are following so far are rules generated from logical reasoning, which form a unitary and rigorous application system, predetermining the generation of meaning. They have nothing to do with realistic practice and also sometimes cannot be changed by practice in our life. Furthermore, as to the objects beyond the scope of experience, or we call them ‘non-object’, can we get them translated? The answer is negative here. “It is not possible to establish a rule-governed connections between signs and non-objects because non-object signs cannot be precisely defined”(Liu Zhenxian,2012, p4), which means that signs of non-objects are untranslatable onto each other and their meanings are not equivalent.

Based on the previous referential theory, Wittgenstein came up with his Picture Theory. The form of a proposition might be changed when it is translated, or maybe even not be manifested as a proposition. Based on the context in Wittgenstein’s later philosophical assertions, the word ‘proposition’ here refers to sentence or expression in language, which is totally different from the definition of ‘proposition’ from Frege or Russell. “The translation of one language into another is not a process of translating each proposition of the one into a proposition of the other, but only the constituent parts of propositions are translated. (And the dictionary does not only translate substantives but also adverbs and conjunctions, etc., and it treats them all alike.)” (Wittgenstein 2002: 25, §4.025) . As long as the meaning of the constituents in a proposition is the same, then the meaning of the new expression must be equivalent to the meaning of the proposition before it being translated. So we can reach the conclusion that the meaning equivalence of translation among propositions is not decided by the forms of source

language and target language, instead, by their content. For non-object propositions, meaning equivalence in translation is not possible to be achieved due to the untranslatability of non-object propositions. Therefore, as Wittgenstein claimed, “what can be said” is translatable, while “what cannot be said” is untranslatable.

Later Wittgenstein explored the rules of meaning generation of ordinary language. Here ordinary language refers to the daily language system “Here 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” (Wittgenstein, 1999:11e–12e, §23). The form of life is the fundamental common sense that is formed based on the totality of human verbal or non-verbal behavior, as well as assumption, practice, tradition and social habits. “It is a presupposed norm in language culture and also the external environment for the use of language” (Grayling, 2001, p93, 97).

We can see that the emphasis of language game is on the interaction between language and ordinary life and the diversity of language use in daily life. Language dwells in social life, which is a purpose-oriented social activity. It should not be applied mechanically by following rigid logic doctrines. In this way Wittgenstein refuted his previous singular all-embracing meaning conception that is constructed on mathematical logical calculus: denying the diversity and complexity of word meaning. In short, use of language in later Wittgenstein is a conventional social norm and a philosophical grammar on the understanding of language rules. He actually considered meaning as the rules that restrict the use of language. As a result, “abiding by language rules is generating meaning, and learning rules is learning meaning” (Ahmed, 2010, p75).

Translation is a game from one language to another. The commensurable norms of human language can easily guarantee the intelligibility and translatability of the two languages. Translation, as an interlingual and cross-cultural activity, there must be a collision of forms of life concerning the two languages with their separate rules application. So how to transform them into each other? Wittgenstein claimed that “Whence comes the idea that the beginning of a series is a visible section of rails invisibly laid to infinity? Well, we might imagine rails instead of a rule. And infinitely long rails correspond to the unlimited application of a rule” (Wittgenstein, 1999, 85e, § 218). So it is not dogmatic and rigid to obey rules, instead, the use of rules is infinite and we can understand and apply rules creatively. The creative ability upon language application will not be deteriorated merely because of obeying rules. What is more, we obey rules in various contexts, therefore the rules will be endowed with different interpretations, and then different meaning is produced. “For a large class of cases—though not for all—in which we employ the word “meaning” it can be defined thus: “the meaning of a word is its use in the language”(Wittgenstein 1999, § 43). That is, “meaning in use” or “meaning as use”.

There may be some arguments against the above translation perspectives that is determined by context and said these translations are far from precision. Here Wittgenstein came out of another idea: “I can think of no better expression to characterize these similarities than “family resemblances”; for the various resemblances between members of a family: build, features, colour of eyes, gait, temperament, etc. etc. overlap and criss-cross in the same way. — And I shall say: ‘games’ form a family”(Wittgenstein, 1999: § 67). The concept of family resemblances allows the ambiguity of definitions, which emphasizes on individuality and diversity of concept

denotation. In our ordinary language, there is a clear fact that the use of definitions is not strictly stipulated by rules and sometimes, in certain surrounding, ambiguous definitions or ambiguous use of definition is what we need. For later Wittgenstein, translation is translating meaning, while meaning is generated by using rules under different contexts. The ground of translatability is not the sameness of symbolic definitions but the similarity of words or sentence functions. In other words, the standard of translation, according to later Wittgenstein, is the purpose or function of translation. Although there is no perfect equivalence between two languages, but the concept of family resemblances supports the idea that a translation that functions well in context is a successful one.

“Meaning is use” of later Wittgenstein is of great significance and influence and it is recognized as the origin of modern Pragmatics in the field of Linguistics. Translation studies, which are deeply influenced by linguistics, also undoubtedly benefited from the thoughts of later Wittgenstein. Eugene A. Nida advocated that “Translation means translating meaning” and “dynamic equivalence”, which is in line with the translation perspectives of later Wittgenstein. Koller, a German linguistic scholar, also gave another similar concept of “pragmatic equivalence”, within which we can see the inspiration from later Wittgenstein.

4.2.2 Refutation of Universality in machine translation technologies with the Anti-essentialism in Later Wittgenstein.

Wittgenstein presented the argument on the essence of language in Section 65 of *Philosophical Investigations*. Within the quote we can clearly get his negative attitude towards the essence of language, and it is later called Anti-essentialism. Before we start

the discussion, we have to get through the concepts of essentialism and then what Wittgenstein fought against.

Essentialism suggests that “A word is a sign for a meaning which correlates to an object. The way words connect with the world is by picturing a state of affairs by the use of names/signs which have determinative meanings. The object in the world has a sign. The meaning is the object in the world. The essence of the word is the meaning, the object”(Mendel F. Cohen,2006). So in this way the essence of language becomes ostensive. When we define something, we point at the object and directly say its name. Therefore, language is shrunk into the naming of objects. Sentences are combined with names to construct the picture of the realistic world.

Anti-essentialism, as advocated by Ludwig Wittgenstein, is the refutation of Essentialism by asserting that there is not one thing that a word can mean. Rather, a word can mean innumerable things depending on its use, or purposes. It is a ‘form of conceptual relativism¹⁸’ advocated by Later Wittgenstein” (Hans-Johann Glock,2008). According to Wittgenstein’s thesis of the “Arbitrariness of Grammar.”, there is no such thing as a “correct system of concepts” or a “fit” between a conceptual scheme and reality. Contrary to the claims of essentialist philosophers, there are no such things as concepts that “carve reality at its joints” (Phedrus, 265e). And in the well-known paper “On the Very Idea of a Conceptual Scheme,(Davidson,1974)”, Donald Davidson categorized Wittgenstein into a “ Scheme-content dualist”, and he made a summary on Wittgenstein’s point on essence, “he holds that there are radically different conceptual

18 Conceptual relativism is the thesis that there can be incommensurable conceptual schemes. Typically, this thesis is understood to entail one or both of the following claims: There can be multiple conceptual schemes that cover roughly the same area of discourse but are not intertranslatable.

schemes; and he maintains that at least some of the languages expressing different conceptual schemes are incommensurable. (Davidson, 1984)”

We take a look at the objections against his considerations and then his response to the issue in section 65 of *Philosophical Investigation*, which is a direct evidence for his Anti-essentialism standing.

65. Here we come up against the great question that lies behind all these considerations.—for someone might object to me: "You take the easy way out! You talk about all sorts of language games, but have nowhere said what the essence of a language-game, and hence of language, is: what is common to all these activities, and what makes them into language or parts of language. So you let yourself off the very part of the investigation that once gave you yourself most headaches, the part about the general form of propositions and of language." And this is true.—Instead of producing something common to all that we call language, I am saying that these phenomena have no one thing in common which makes us use the same word for all,—but that they are related to one another in many different ways. And it is because of this relationship, or these relationships, that we call them all "language". (Wittgenstein, *PI*, 1953, section 65)

The argument delivered in the above section is *de facto* the denial of a very common view, an attack on Platonism. It is commonly known that Plato's forms are universalized particulars, such as chairs being derived from chairness. While Wittgenstein claimed “that these phenomena have no one thing in common which makes us use the same word for all,—but that they are related to one another in many different ways.” The invariability in language game is rejected by Wittgenstein. Take the “chair” example here, he indicated that we should not attach the word “chair” to a chair as there is no essence to the object and no essence to the name. Despite the conventions dictate that we may use that name to indicate that object, people are free to use it in a number of other ways as well. “It is as you please to use words for its best purpose. (Wittgenstein, 1953, p180)”

What Wittgenstein made effort to in his later works was to wipe off the boundary of language. He overturned his earlier perspectives that language can solely indicate

external objects and then formed his later idea that meaning of language lies in purposes being realized in human's lives. Earlier Wittgenstein believed that it is the essence of language that decides the line between 'sayable' and 'unsayable' and traditional philosophical disputes are generated from saying the unsayable part with language, therefore the finding of essence of language will offer solutions to all the traditional philosophical confusions. In his later period, he began to realize the multiplicity of language functions and abandoned the methodology of giving a systematic description of language; instead, he started to truthfully describe various 'language game'. From the perspective of his later considerations, philosophical issues grow out of not distinguishing different types of language games or, more simply speaking, comprehending statements metaphysically without contexts.

"...Instead of producing something common to all that we call language, I am saying that these phenomena have no one thing in common which makes us use the same word for all..."(PI, 1953, section 65). From here we can learn that later Wittgenstein considers that languages are heterogeneous and there is no commonality among languages. Language itself exists with no certain essence but displayed as games, among which uses (or we can say purposes) are orientations for language expressions. Language is a complicated social activity following certain public rules. In translation, it is manifested that translators have to do the translating work based on objectivity and, meanwhile, language activities are constructed in the process of implementing language games. Wittgenstein's 'meaning is use' can be well fit in the theoretical and pragmatical research of translation. Translation is an activity of language and multi-culture, which

always follows a research trend of structuralism¹⁹. “In language and linguistic studies, structuralism includes collecting a corpus of utterances and then attempting to classify all of the elements of the corpus at their different linguistic levels. It also tries to explain broad subjects by surveying their individual components and the way they interact to each other. (Bahram Moghaddas, 2015)”. “Saussure, Jakobson and Chomsky are the main structuralist theorists” (Pettit, 1975, p1), who redefined the paradigm of language usages in recent decades. We find the close connection here between the development of translation theories and study of language philosophy. Meaning, as the core concept of language philosophy, also is of great significance to the construction of translation theories. Translation is the process of meaning exchange of different language codes and units, dominated by translators. “Translation is the dialogue between the translator and the author of the original text. It is the act of presentation and interpretation with text as its media” (Chen Jiaying, 2001). The original translation studies only pursued the acquisition of meaning, but later translation gradually shifted to the study of language autonomy. In accordance with Wittgenstein’s thoughts, translation is also a realistic activity, which can only have life in use. Translation process is regarded as the dynamic transfer of meaning. Therefore, it is the indeterminacy and dynamic nature of meaning that should be highlighted in translation process.

The dynamic nature presents the aspect of flexibility and mutuality in language games, as well as the close bonds between language game and ‘form of life’. “Language is not a single structure composed of propositions that simply depict or describe facts, but a heterogeneous cluster composed of colorful and functional linguistic games. In the same

¹⁹ “Structuralism believes that all human activity and its products are constructed and not natural. It also holds that everything has meaning. Structuralism underlies on the concepts that every system possesses a structure, that structure determines the position of every element of a whole, that

way, the world is not a single structure composed of simple facts, but a heterogeneous conglomeration of rich and varied forms of life "(Han Linghe 1996: 107) The form of life from Wittgenstein, to some extent, resembles the 'life world' of Heidegger, aiming to emphasizing on the importance of contextual uses onto the selection of languages.

As to translation activities, the surroundings is in constant changes and it is the embodiment of a translator's capability to handle the changing situations, which cannot be fulfilled by machine translation. It is a higher level of translation ability to flexibly maintain the balance between the rules and the purposes, according to different circumstances. Therefore, absolute and universal standards should not be pursued blindly in translation researches, such as the Alienization and Domestication strategies that were popular in last few decades, or the artificial intelligence translation framework in recent years.

Danica Seleskovitch, one of the founders and advocates of Interpretive Theory (*le theorie de l' interpretation*) in translation studies, also gave the similar thoughts, believing that translation should not be confined within grammatical rules and the equivalence of words or texts. He claimed that translation is the interpretation of meaning, an explanation of the original texts by translators with lingual signs and their own cognition as supplements. It is not the equivalence of language unites but the original connotation of the text that should be pursued by translators. The main contribution of Interpretive Theory (*le theorie de l' interpretation*)²⁰ is to distinguish linguistic meaning and non-verbal sense. "The object of translation is not language itself,

structural rules deal with coexistence than changes, and that structures are the "real things" underlying the surface of meaning"(Bahram Moghaddas,2015).

²⁰ School of the interpretive theory (*le theorie de l' interpretation*, also called (*le theorie de sens / the theory of sense*), was an academic school studying translation theories and teaching, which appeared in ESIT in 1960s, with two interpretation scholars, Seleskovitch and Lederer, as its founders.

but the meaning that is expressed by means of language. Because people from different language communities have common needs and they aim to achieve mutual understanding and exchange of ideas, or engage in possible cooperation in various fields. Therefore, the task of translation is to convey communicative meaning, with language merely as one of the essential conditions to understand meaning”(Seleskovitch, 2009). The meaning delivered by communicators is not what lies in language signs but the non-verbal ones.

In summary, translation is the conversion of two languages games under certain rules, the process of which involves two distinctive types of life forms. The differentiated historical period and backgrounds in language-using endowed original texts and their translations with different contexts. Different forms of life reveal that translation activities must be dynamic and translators has to adjust translation strategies to adapt to the dynamic changes of the context. Therefore, a fixed and limited translation system might not really work. In the latest translation systems, the translating process mainly relies on text corpus and big data (mainly probability calculation and mathematical statistics), and translated works are obtained through logical comparison, within which context and the dynamic feature are excluded. In the process, the presentation and transmission of meaning is static and restrained, due to which translation accuracy and validity should be highly doubted.

4.3. Translatability and Untranslatability: “Qualia ineffability” issue in MT.

4.3.1 The boundary of translation

When we come to the boundary issue in language, the famous saying from Wittgenstein "Whereof we cannot speak, we must remain silent." (Wittgenstein, 1922, §7) will pop out, to argue about the untranslatability part of language excluded by machine translation. What cannot be said must consequently not be translated. According to Wittgenstein's comments in *Tractatus*, fields including religion, ethics and aesthetics are classified into the unsayable part, or we say, the untranslatable part in language. Wittgenstein tried to interpret the ineffability of Qualia in language, which can only be felt and expressed by human translator, instead of Machine Translation. Qualia refer to "the conscious language experience that involves non-physical properties. It rests on the idea that someone who has complete physical knowledge about another conscious being might yet lack knowledge about how it feels to have the experiences of that being." (Nida-Rümelin, 2002). The discussion on ineffability of Qualia is going on among linguists, and there are two crucial components of a translation should be considered, a purpose and an audience, which involves intentions, emotions, imaginations and curiosities, etc. Machine translation cannot find its place among them because of its incapability of capturing these qualia with rigid algorithm.

Jakab once gave his own assumption of the ineffability of qualia that "there is no linguistic description of a given experience such that understanding the description would result in someone who has never had the experience being described undergoing an experience of that type" (Jakab, 2000, p329). Here in translation activities, the ineffability of qualia refers to the unique feature of language understanding and meaning transforming, which is a kind of complex and sensory-mind-context interwoven process. That means our use of language cannot be completely illuminated, part of which is veiled under the combined effect of sense, mind and contexts, varying

among individuals and specific communities or occasions. The qualia in various languages differ while easier to be understood by people of the same community when applying to the same context. “Understanding in the standard sense involves our linguistic conceptual abilities; but our linguistic-conceptual abilities are not involved in undergoing simple sensory experiences; so they cannot deliver knowledge by acquaintance, which means linguistic descriptions of sensory experiences cannot result in someone who understands the description undergoing the experience being described.” (Thomas Metzinger & Bettina Walde, 2000). The relation between our linguistic-conceptual abilities and sensory experiences is still not easy to be reconciled. The “qualia” in language is hard to be defined, the existence of which is denied by Wittgenstein, thinking it is, at most, a meaningless proposition. “If someone were to draw a sharp boundary I could not acknowledge it as the one that I too always wanted to draw, or had drawn in my mind, for I did not want to draw one at all. His concept can then be said to be not the same as mine, but akin to it. The kinship is that of two pictures, one of which consists of colour patches with vague contours, and the other of patches similarly shaped and distributed, but with clear contours. “The kinship is just as undeniable as the difference” (Wittgenstein, PI, section 76). The ‘vague contours’ in language, according to Wittgenstein, is the unsayable part that is closely related to the other part, the ‘shaped and distributed’ one. However, it can only show itself in context instead of being described. Modern translation technologies face the issue, too. Almost every translation system operates on shaped and well-distributed usages of language, while the other part is, most of the time, ignored or abandoned for it is too difficult to handle, which has no logical rules to follow and is too mysterious to be understood by artificial intelligence devices. Consequently, the single-sided translation is crippled in

meaning and less valid and effective. The feature of dynamic in context is supposed to be the irrevocable part in changing languages, which takes context to the core to the solution of the issue.

Later Wittgenstein turned to ordinary language and his 'meaning is use' locates the exploration of meaning in context. When, where and how language games are played, context has a say. There is no ontological status for context and its property of ontology can only be showed as the binding of meaning in the process of language change and understanding. Context is the set of subjective and objective elements that is indispensable in process of meaning generating and understanding. The analysis of context is aiming to eliminate traditional ontological questions and logical language forms, as well as the limitation from rational thinking. Overall, context highlights humanity, that is, there is no certain, sole and ultimate meaning or concept as the noumenon of language. If there is one, it must be the dynamic language practice process itself for meaning generating and understanding.

4.3.2 From Wittgenstein to Quine: Indeterminacy of translation.

The research on translation should not always be suspended on discussions of technological level. The distinction between phenomenal translation and realistic translation is essential to the development of meaning theories. "Phenomenology is the study of our experience, that is, how we experience" (David Woodruff, 2018). Phenomenal translation refers to the way we experience the process of language transformation in translation, while realistic translation is language conversion in actual and objective conditions. So the distinction between phenomenal translation and realistic translation is the distinction between *how we think translation works* and *how*

translation actually works. It is commonly known that Wittgenstein did not make any specific studies on translation, but his later philosophical thoughts and opinions on language reached the maze of translation and directed to the core issue of translation. Quine shared a quite similar view with Wittgenstein on the indeterminacy of translation in his *Word and Object* (Quine, 1960). In this part, I would like to analyze the views on translatability and untranslatability from the two philosophers, revealing the extent of untranslatability, so as to prove the limitation of contemporary artificial intelligence translation.

A proposition must communicate a new sense with old words. The proposition communicates to us a state of affairs, therefore it must be essentially connected with the state of affairs. And the connexion is, in fact, that it is its logical picture. The proposition only asserts something, in so far as it is a picture. (Wittgenstein, *Tractatus*, 4.03)

The early Wittgenstein claimed that the essence of language is in accordance with the intrinsic structure of the world. “The totality of propositions is language, while the totality of facts is the world.” “To all of them the logical structure is common” (Wittgenstein, *Tractatus*, 4.014). That is the reason that the world can be depicted by language. The picture theory is actually the referential theory under a new name, which matched up to the mainstream concepts of modern machine translation technologies. The translatability of language is now concentrated on parallelism problem of language symbols and signs. Translation is being processed and completed with the clustering of big data, following logical rules as its basis. However, the later Wittgenstein examined the deficiency of the picture theory, and finally went to the “meaning is use”.

The description of Use theory is presented by the analogy between language and game. The use of language is determined by forms of life: different uses of language for

different forms of life. For example, a community using monotonous color must live a different form of life from us, and the translation of the color words will become a difficult task, or may even not be translated. Since the meaning of language lies in use, then the rule or standard of translation should be the equivalence of uses, instead of the equivalence of symbols or syntactical structure. In the research and development of artificial intelligence translation technologies, technical engineers have realized the problem and already started their exploration, putting factors like context and relativity into consideration. The “family resemblance” from Wittgenstein’s later language thoughts also offer enlightenment to the neural translation technologies, which is now mainly dominated by the giant LSPs (Language Service Provider), such as Google, Facebook, Tencent, etc. It is extremely difficult to achieve the goal, because what we are facing is a framing barrier. Basically all of the current machine translation technologies are restricted within the scope of mathematics and logic, including probability, statistics and big data, etc., operating on the foundation of symbolic logic. To improve translatability of language, we have to break through the obstacle and admit that the meaning transfer through artificial intelligence translation is not that acceptable and improving as we commonly think today. It is not absolutely true to say the development of translation technologies will constantly increase the translatability of language. For later Wittgenstein, the ground of translatability is not the homogeny of symbolic definitions, but the sameness of statement functions. Under some translation circumstances, we can surely know the function of sentences but we cannot make the replacement because there are no substitutions that exist. Under some other circumstances, we do not make sure the function of a sentence but we still attempt to substitute it. There is no final judgment whether it is true or false. Consequently, it leads

us to the conclusion that the “meaning is use” from Wittgenstein showed translation a way towards indeterminacy.

Quine’s behaviorist view of meaning also denied the certainty of meaning. Although we cannot find clues whether Quine got inspiration from Wittgenstein, but they did have something in common. Quine explicitly put forward his view on the indeterminacy of translation with his description of “radical translation” ²¹(Willard Quine, 2008). The running rabbit called “gavagai” by the tribeman well revealed that the indeterminacy of translation not only contain the indeterminacy of meaning, but also the indeterminacy of reference. Because when pointing the rabbit and shouted “gavagai”, we still cannot make sure it means certain part of the rabbit, certain type of rabbit or just barely rabbitness. “Manuals for translating one language into another can be set up in divergent ways, all compatible with the totality of speech dispositions, yet incompatible with one another. In countless places they will diverge in giving, as their respective translations of a sentence of the one language, sentence of the other language which stands to each other in no plausible sort of equivalence however loose.”(Quine,1960 ,p27) There are so few proper sentences that can be translated without any situational or cultural connotation that they cannot form a fixed and reliable basis for the establishment of a complete and undisputed translation correspondence system for the whole language system. Quine also advocates the holistic view of meaning. “The unit of empirical significance is the whole of science. It is misleading to speak of the empirical content of an individual statement.” (Quine,1951,p43) The basic unit of meaning is not isolated words, nor individual sentences, but an overall statement consisting of a large sum of

²¹ Radical translation is a thought experiment in *Word and Object*, a major philosophical work from American philosopher Willard Van Orman Quine, which is used as an introduction to his theory of the indeterminacy of translation.

sentences. In Wittgenstein's concept of language game, specific language games are individually adopted to assure the application of meaning and rules of language. The holistic view of meaning allows meaning reallocation of words under the comprehensive speech act tendency. As a result, connotative meaning that is closely bound together with words becomes very dubious. The refutation of determinacy of meaning from Quine keeps "definitive translation" far beyond reach, which is a fundamental denial to the foundation of artificial intelligence translation technologies.

4.4. Task of Translation: What can be done with AI translation?

4.4.1 Translation: Reverberation of the work in alien languages

"Say what you choose, so long as it does not prevent you from seeing the facts. (And when you see them, there is a good deal that you will not say.)"(Wittgenstein, 1932, p79). In fact, Wittgenstein thought that use is a better perspective. Use language as you intend to achieve your purpose. It is still acceptable to talk about meaning, but it may cause various misunderstandings. In the *Philosophical Investigations*, Wittgenstein writes, "the work of the philosopher consists in assembling reminders for a particular purpose"(Wittgenstein, 1953). That is, his ideal philosopher works to remind those confused by abstract theorizing of the ordinary uses of words and to set their thinking in order. The clarity achieved through this kind of activity is not the clarity of a coherent, all-encompassing system of thought but rather the clarity of being free from being too influenced by any systems. As long as the goal can be achieved, what is expressed in surface language will not matter anymore. The translation activities are goal-oriented and translators have to reach an alien language to find the spot for the specific goal and intention. Therefore, fidelity in translation is not necessarily a priority anymore.

However, in artificial intelligence translating networks, fidelity is considered as one of the most important aspects to evaluate the quality of a translation, which is evidently shown on a syntactical level. It is decided by the working mechanism of artificial intelligence translation, from which translated sentences are generated by means of parsing, comparing and allocating in corpus and database. It can produce an illusion for an ordinary reader that fidelity is achieved in the process and the meaning from the original text is therefore guaranteed. Right to the opposite, “Fidelity in the translation of individual words can almost never fully reproduce the meaning they have in the original. For sense in its poetic significance is not limited meaning, but derives from the connotations conveyed by the word chosen to express it. We say of words that they have the emotional connotations. “A literal rendering of the syntax completely demolishes the theory of reproduction of meaning and is a direct threat to comprehensibility” (Benjamin, 1923, P10). Therefore, it is not the best way to praise a translation that it is just the same as the original text and it should also not be the goals set in the process of translation.

“The language of a translation can---in fact, must---let itself go, so that it gives voice to the intention of the original not as reproduction but as harmony, as a supplement to the language in which it expresses itself, as its own kind of intention.” (Benjamin, 1923, P21)

The other language into which we translate the text shall not become a cover to dark the light of the original language but more space should be created for its more full shining, which is the responsibility of the translator, and it cannot be replaced by machine translation due to its meaning generating mechanism. Translation is not merely a process of reproducing meaning of the original language. It calls for more intention interpretation with an alien language as the linguistic complementation. As the

metaphor says in *the Task of the Translator* from Benjamin that translation just reach the outskirts of the language forest, not the center. It is just the reverberation of the work in alien languages. The translator actually does not bring a text into another language world fully but shout at the “forest” and then get an echo back. The translation of the original language reached one spot of the other language with the subjective intention and goals attached by translators. Learning from the well-known saying of Shakespeare, here are also one thousand different “Hamlet” from one thousand different translators, which highlights the significance of subjectivity in translation. In this sense, translation is not a reproduction of meaning anymore, instead, it is a revival and an extension of life of the original works in an alien language. In machine translation, the possibility of growing and extending the original is almost demolished. The equivalent repetition of syntactical structure running in language corpus or big data can only offer translation version that has already been set or collected, within which the functions of translation cannot make its full play. And it is one of the problems that I aim to clarify in my thesis.

4.4.2 Translation Validity and Meaning Losses: Reflection on AI translation

The validity in translation is more a pragmatic issue, which is a criterion of effectiveness and efficiency in translation and it is also a concern for translated texts from artificial intelligence translation technologies. In the following paragraphs, I would like to argue that communication validity and meaning transmission in AI translation cannot be guaranteed. It may shrink meaning generation and conveyance in language. We have to admit that validity of translation should be considered as a priority when there is an inharmonic situation between validity and fidelity.

Fidelity is a factor evaluating the consistency, stability and reliability of a translation generated in a translating process, referring to the extent of the final translation consistency when adopting similar translation system to translate a text repeatedly. In another way, fidelity is the degree of reliability to the evaluated translation, which is mainly determined by lexical and syntactic equivalence achieved in most of the machine translation systems. We may use a formula for the calculation of the degree of fidelity: $X=T+B+E$, with T as the truth value, B as systematic errors, E as random errors and X as the final translation gained. In translation industry, actually there is an indicator that is solely designed for the evaluation of translation quality in artificial intelligence translation, which is called BLEU, the 'Bilingual Evaluation Understudy'. Here 'understudy' means artificial intelligence translation systems take the place of human translators. The indicator is adopted as the main evidence to evaluate series of texts processed by NLP. BLEU is a tool for the measuring of fidelity in translation process. It takes the role of validity and now is considered as the priority in developing translation technologies. For example, it is commonly seen that some commercials boast that the AI-based translation system is able to translate ten thousand words within ten seconds; the accuracy of Japanese-Chinese translation reaches up to 98%, etc. The research results and evaluation are established with their observations on fidelity, instead of validity, which, as I say, is a wrong direction.

The validity of translation in machine translation refers to the degree of presenting the expected results or intention in translation through the system. A greater consistence between the translation and the original text on the designated purpose indicates a higher validity in translation. Or else, the validity of translation system is lower. The validity of translated texts in a machine translation mechanism is an essential and most

important condition for a translation with good quality. However, it is greatly underestimated and there is an imbalance between the weight of fidelity and validity in machine translation. The trend is that fidelity is much more weighed because of the shallow understanding of translation from the mass. Now it is easier to convince people to accept a machine translation application or platform with a comparatively higher BLEU value, which is an indicator merely for fidelity of translation. While, the Use theory from Wittgenstein, the linguistic functionalism from Christiane Nord, and the Dynamic Functional Equivalence from Eugene Nida are all advocating the prior role of validity, which is contradictory to the current trend in machine translation. The topic is worth discussing for most current LSP (language service providers) set their goals to make machine translation infinitely close to human translation without thinking the feasibility of solving the problems on validity concerns. Some of the companies like Microsoft do realize the bottleneck and struggle to jump over the barrier to improve the quality of translation to a higher level. The research and development department of Microsoft is exploring on Dual Learning, Deliberation Networks, Joint Training and Agreement Regularization, etc. They are seeking for a breakthrough but since now all the above technologies are still in pilot phase and have not been put into practical use. Whether they are of positive significance to the development of machine translation, or whether they can be put into use to serve various purposes in language, are still on pending.

The deviation in machine translation causes another concern of meaning losses. Wittgenstein considered meaning as the kind of social expression of human behaviors, knowing the meaning of a word is knowing how to configure it in the conversation. Language is not an abstract entity with no vitality but the social practical form of human

behaviors and activities. The sentences that we write on blackboards, or propositions we created in philosophy, are all generated under the background of the realistic world. However, algorithm-based language translation mechanism is limited in their response to the real world. The limitation mentioned above frames and narrows the communicative competence of language due to the lack of existence of implicative rules that endorse our communication. Therefore, the problem may cause the meaning losses in the process of translation.

One clear sense in which a social practice qualifies as an actual language is that, according to it, one can make noises or inscribe marks and thereby say that P for some suitable sentence replacing P. And one of the things that is surely essential to language is that we can say things in it. But no such indirect discourse is licensed just in virtue of some people's playing chess or the parlor game; none of the players has said or asked or requested or suggested . . . that anything at all. There is something missing. We are playing a game, and using tokens according to a set of conventional rules, and engaging in a social practice that may not only be fun but have some larger point; it might even be in some way vital to our way of life. The things the players in these various games have done may have significance in some sense, but nobody has made any assertions or asked anything or advised anyone to do anything (Wittgenstein, 1953).

“There is something missing.”... “The things the players in these various games have done may have significance in some sense, but nobody has made any assertions or asked anything or advised anyone to do anything” (Wittgenstein, 1953). The missing part is the implicit part hidden in our language system, the conventional rules from social norms and cultural connotations. The sense is the concentration of social conventions beyond linguistic forms. Most human translators rely on the unique ‘sense’ to give different versions of translation for one text, to satisfy various purposes and occasions, with their translation better being called ‘translation variation’ by means of “adding, subtracting, compiling, narrating, shrinking, merging and altering. (Huang Zhonglian, 2000,p5)”. Machine translation processes corpus without the ‘sense’ and consequently the part of meaning carried by the sense is neglected. The neglect of the

meaning (lost part) surely affects the final translated results to serve the purpose expected.

4.5 Conclusion

In this chapter, I mainly discussed the extension and enlightenment of Wittgenstein's later language philosophy to pragmatics, especially in translation. His meaning theories and rules in language games promoted turns in linguistics, following which the later researchers change their perspective of language research from ideal language to daily language. Many contemporary linguistic schools or fields can be traced back to the pragmatic thoughts from later Wittgenstein. His pragmatic thoughts can be summarized as below: there must be participants for applying of language, two or more parties; utterance is a kind of speech act and can only acquire its meaning in certain context, with intentions; meanwhile pragmatic principles and rules must be followed so the parties involved can understand each other and get the intentions expressed within the discourse, finally achieving a successful communication.

Translation studies, as one of the important branches in Pragmatics, can also be inspired and guided by the pragmatical thoughts of Later Wittgenstein, especially his Use theory, which is closely related to meaning generation and transmission. The emerging new translation technologies bring challenges to translation studies. How to evaluate them and clarify the current situation are becoming urgent tasks for language philosophers due to the great influence of artificial intelligence in language world. Considering the issue here, I start with the interpretation of the thoughts on translation and Anti-essentialism perspectives in Later Wittgenstein, then repudiating the universalities of artificial intelligence translation that is built on algorithms. At the second step, I

discussed the translatability and untranslatability, as well as the indeterminacy of translation to reveal the feature of translation, with Wittgenstein's meaning theories as important supporting evidence. Finally, I talked about the fidelity and validity in machine translation to evaluate its functions and negative consequences it may cause. The final conclusion of the chapter reveals the potential contradictions and conflicts on ways that human and AI-base translation systems proceed translation.



Chapter Five Conclusion

5.1 Summaries

Think back to the earlier period when I was planning the framework of my paper, I always tried to explore an innovative proposition and proceeded into an unexplored ground. However, in the process of making preparations for the writing, I got inspired from Wittgenstein's ideas on philosophical studies. "A philosophical work consists essentially of elucidations. The result of philosophy is not a number of "philosophical propositions", but to make propositions clear. Philosophy should make clear and delimit sharply the thoughts which otherwise are, as it were, opaque and blurred (Wittgenstein, 1922, p4.112)". Therefore, 'Clarification' turns to be the key word, as well as the guidance, in my paper. In the previous four chapters, I tried to clarify separately the thesis statement and framework, the technicalities of machine translation, the Wittgensteinian views on language and their interaction with translation and finally the discussions on pragmatic contributions and inspiration from Later Wittgenstein to Machine translation mechanism.

In chapter one, I start with the background and significance of the research. Languages are not static and they are always growing and expanding in the process of being used, which makes translation an even more difficult task. Facing a world with information explosion, the connotation and denotation of languages are greatly enriched and expanded. Therefore, the conveyance and transmission of the latest language ingredients also needs to be dealt with updated principles and guidelines.

Meanwhile, we benefit so much from science and technologies. It seems that we are quite addicted to scientific solutions and sometimes believe in them in a superstitious way, heavily depending on them. With the development and new progress of new

neuro-cognitive technologies, people seem to prefer to adopting technical methods to deal with languages obstacles, such as AI translation. Then I turned to my thesis statement that meanings transformed and conveyed in AI translation cannot be justified by the technical mechanism based on which it is functioning. It is a regress of meaning theories and may potentially cause language deficiency. In order to support the statement, I will probe into machine translation technicalities as well as Wittgensteinian views on language and meaning, aiming to dig the pragmatic value out of *Philosophical Investigation* and offer further guidance or even solutions to language use in machine translation field. Preceding relevant researches, definitions of the terms used and research methodology for the research are also specifically presented in the chapter.

In chapter two, I focus on translation technicalities. I accepted the suggestion from Professor John Giordano, who has a good insight and knowledge in information industries. He gave me the guidance that I shall have a profound knowledge about my research object before I start my discussions or arguments, or else it may get me trapped into subjective illusion. Therefore, I firstly reveal the clues of the relevancy between Wittgenstein's thoughts and translation technicality. And then I make researches separately on the mainstream contemporary translation technologies, including NMT (Neural Machine Translation), NLP (Natural Language Processing) and their extensions. Finally, I discuss the distinction of human intelligence and machine intelligence, explaining the interrelations and mutual effects between them.

In chapter three, I give an elaborate interpretation of language thoughts from both earlier and later Wittgenstein, as well as his counterparts, which is another essential part of my "elucidation" task. I firstly compare Wittgenstein's works from his different life stages, including *Tractatus*, *Philosophical Grammar*, *Philosophical Investigation*, and

the Blue Book, etc, to present his main philosophical concepts and claims in language, as well as the conversion in his thoughts which had a great influence in philosophy of language. Then I have a discussion on his rule-following paradox and Kripke's further extension on rules. Chapter three is functioning as the preparatory work for the further discussions in the following chapter.

Chapter four is the main part for achieving my research objectives. I mainly focus on critical discussions and pragmatical contributions on meaning and rules in translation from the perspective of later Wittgenstein. Firstly, I give an elaboration on his translational views based on anti-essentialism, repudiating to exploring individuality from generality in the way of induction. Then, translatability and untranslatability is discussed, as well as the indeterminacy of translation, denying the universality features in machine translation, within which Quine's thoughts are involved to further clarify my ideas. Finally, I consider artificial intelligence translation in application scenarios and further discuss the task of translation. Then I raise my concerns to machine translation, which may, although it is still not very convincing, cause translation validity deficiencies and meaning losses.

5.2 Limitations and expectations

The misleading characteristics of ordinary language, in Wittgenstein's opinion, are the causes of definition confusions. Since scientism is taking its lead in modern society, we are easily bewildered by science, or we say, scientific methodologies, seeking to mimic scientific research procedures in philosophical studies. We are always trying to cover various phenomena with one rule or an explanatory theory. Induction is the most important character of reasoning in science and we are driven to make inductions by the

strong scientific beliefs. In the field of philosophy, induction might be the source that causes a large number of chaos. As Wittgenstein said, “an ostensive definition can be variously interpreted in every case (Wittgenstein, PI, sec 28, 14)”, which overthrows our understanding of concepts on different facts and phenomena. We are now seeking universality where it suits particularity only and narrowing our ways of using languages and their meaning. Based merely on my shallow understanding of Wittgenstein’s thoughts on language and meaning, all my discussions are not strong and convincing enough to disclose or solve the conflict between humanities and scientism, but I do believe that it is a good start to introduce pragmatism, with the advocacy from Wittgenstein, into the field of translation, to explore and expand space for more potentials of language use and meaning development.

“Although it is conceivable that the study of brain activity might turn out to be a more reliable predictor of human behavior, the sort of understanding of human action it gave would not be the same as that involved in the language game on intentions. Whatever the value of the scientists’ discoveries, it could not be said to have revealed what intentions really are” (Wittgenstein, 1953, p213). Artificial intelligence translation technologies, as the major typical technology for simulating human brain to process human natural language, it creates a reliable impression to the public. However, it cannot find a solid philosophical ground for its rationality and reliability. Creativity and intentionality are still mysterious space to be further explored in the future. Due to my limited knowledge and understanding in scientific technologies, the analysis on modern machine translation or some other updated systems might be partially subjective, without giving a thorough interpretation. More efforts need to be made to further reveal the internal mechanism and fundamental schemes in language processing technologies.

After twenty years' development of semantics, philosophers gradually move their eyes to the field of the study on the philosophy of pragmatics, paying more attention to intention which plays an important part in language expression, so as to promote the study of contemporary philosophy of language into the track of "pragmatic turn", making context as the foundation of meaning exploration. The study of translation is also inseparable from philosophy of language. With meaning issues as the ultimate pursuit of language philosophy, there will be no final answer for translation if meaning problems cannot be solved. Only through the continuous efforts of language philosophers to approach the origin of meaning as close as possible, can scholars on translation studies have rules to follow. Philosophy of language advocates the 'linguistic turn', which exactly originates from the scientific perspective of modern logic. One of the most important characteristics of modern logic is its highlight of logical syntax. In other words, language is analyzed through a series of scientific and systematic methods provided by modern logic. The logical analysis of language structure is adopted as an effective way to the study of language meaning, depending on which we attempt to improve the accuracy and theoretical level of language philosophy.

However, as one of the typical representatives of modern meaning views, Wittgenstein uses his language game to repudiate the previous essentialism in meaning and considers meaning as activities. He claimed that meaning exists in use and there is no meaning without use. His pioneering view brings enlightenment and inspiration for the research and development of modern translation technologies. Selecting any sections from the later works of Wittgenstein, we may find some clues to demonstrate that language translation cannot be achieved by merely building a formally logistic system. In my future work, I will make efforts to further clarify why background knowledge of our

activities cannot be presented comprehensively by a formal logistic system. By exploring the potential solutions of the issue, I wish to acquire more ideas about future artificial intelligence translation framework.



References

- Alexander Miller. (2007). *Philosophy of Language, Second Edition*. Oxfordshire: Routledge&Talor Francis Group.
- Allen, James. (1987). *Natural Language Understanding*. Boston: Addison-Wesley Publishing Company.
- Arnold, D. (1994). *Machine translation: an introductory guide*. Manchester, Oxford:NCC/Blackwell.
- Baker, Mona. (1998). *Routledge Encyclopedia of Translation Studies*. London & New York: Routledge.
- Baker, Mona. (2006). *Translation and Conflict: A Narrative Account*. New York :Roudedge.
- Bassnett, Susan and Andre Lefevere. (2001). *Constructing Cultures: Essays on Literary Translation*. Shanghai: Shanghai Foreign Language Education Press.
- Bassnett, Susan and Harish Trivedi. (1999). (Eds.). *Post-colonial Translation Theory and Practice*. London and New York: Routledge.
- Bassnett, Susan. (1993). *Comparative Literature: A Critical Introduction*. New Jersey: Wiley-Blackwell.
- Bassnett, Susan.(2004). *Translation Studies (3rd Edition)*. Shanghai: Shanghai Foreign Language Education Press.
- Bastin, Georges and Bandia, Paul. (2006). *Charting the Future of Translation History*. Ottawa: Ottawa UP.
- Benjamin,Walter.(2000). *The Task of the Translator*. The Translation Studies Reader. Lawrence Venuti (Ed.). London: Routledge: pp15-24.

- Berman, Sandra & Porter Catherine. (2014). *A Companion to Translation Studies*. New Jersey: Wiley Blackwell.
- Boghossian, P. (1989). *The Rule-Following Considerations*, Oxford: Mind 98: 507-49.
- Brachman, Ronald J. (1979). *On the Epistemological Status of Semantic Networks*. In *Associative Networks Representation and Use of Knowledge, by Computers*, (ed) N V Findler. New York : Academic Press.
- Budd, M. (1984). *Wittgenstein's Philosophy of Psychology*. London: Routledge.
- Chen Jiaying.(2003). *Philosophy of Language*. Beijing: Peking University Press.
- Cheung, Martha. (2006). *An Anthology of Chinese Discourse on Translation: From Earliest Times to the Buddhist Project (Volume One)*. Manchester: St. Jerome Publishing.
- Cronin, Michael. (2013). *Translation in the Digital Age*. London and New York: Routledge.
- Dinda L. Gorlée. (2012). *Wittgenstein in Translation: Exploring Semiotic Signatures*. Berlin/Boston: De Gruyter Mouton.
- Dinda L. Gorlée.(1989).Target. *International Journal of Translation Studies*. Volume 1, Issue 1, January, pp. 69 - 94
- Dukate, Alga. (2009). *Translation, Manipulation and Interpreting*. Bern: Peter Lang.
- Ervas, Francesca. (2008). Davidson's Notions of Translation Equivalence, *Journal of Language & Translation*, September, pp 7-29.
- Flotow, Luise Von. (2004). *Translation and Gender: Translating in the Era of Feminism*. Shanghai: Shanghai Foreign Language Education Press.
- Frascolla, Pasquale. (1994). *Wittgenstein's Philosophy of Mathematics*. Oxfordshire : Routledge.

- Gentzler, Edwin. (2001). *Contemporary Translation Theories*. (Second Revised Edition). Bristol: Multilingual Matters.
- Gile, Daniel. (1995). *Basic Concepts and Models for Interpreter and Translator Training*. Amsterdam & Philadelphia: John Benjamins.
- Glock, Hans-Johann. (2007). *Relativism, Commensurability and Translatability*. Blackwell Publishing Ltd, December, 06–34.
- Greenberg, Mark and Harman, Gilbert. (2005). *Conceptual Role Semantics*. Oxford: Oxford University Press
- Hale, Bob and Wright, Crispin. (1998). *A Companion to the Philosophy of Language*. Oxford :Blackwell.
- Hatim, Basil. (2005). *Teaching and Researching Translation*. Beijing: Foreign Language Teaching and Research Press.
- Hauben, R. Heinz von Foerster, Margaret Mead and JCR Licklider.(2003). *The conceptual foundations for the internet: The early concerns of cybernetics of cybernetics*.
Retrieved from: <http://www.columbia.edu/~rh120/other/misc/talknov2003.txt>
- Helme, K. M. (1978). *Strands in the Theory of Meaning from Frege to Wittgenstein* Doctoral dissertation, University of Oxford.
- Hermans, Theo. (1999). *Translation in Systems: Descriptive and Systemic Approach Explained*. Manchester: St. Jerome Publishing.
- Hermans, Theo. (2005). *Crosscultural Transgressions: Research Models in Translation Studies*. Foreign Language Teaching and Researching Press.
- Huang, Eva and Judy Wakabayashi. (2005). *Asian Translation Tradition*. Manchester: St. Jerome Publishing.

- Hung, Eva. (2005). *Translation and Cultural Change*. Amsterdam/Philadelphia: John Benjamins Publishing Company.
- Jakab, Zoltán. (2000). *Ineffability of Qualia: A Straightforward Naturalistic Explanation, Consciousness and Cognition*. Volume 9, Issue 3, pp 329-351.
- John Hutchins. (1997). *Evaluation of Machine Translation and Translation Tools*. Chapter 13.3 in *Survey of the state of the art in human language technology*, (Eds.) G.B.Varile and A.Zampolli. Pisa: Giardini, pp. 418-419.
- Kashope, Handel et al.(2012). *Cultural Studies of Transnationalism*. London and New York: Routledge.
- Katan, David. (2004). *Translating Cultures: An Introduction for Translators, Interpreters and Mediators*. Shanghai: Shanghai Foreign Language Education Press.
- Kay, M. (1998). The Proper Place of Men and Machines in Language Translation. *Machine Translation*. 12 (1/2): pp3–23.
- Kong Huiyi. (2005). *Rewriting History of Translation*. Hong Kong: Centre for Translation studies of Chinese University of Hong Kong.
- KOOIJ J G. (1974). *Ambiguity in Natural Language*. Holland:Borth-Holland Publishing company. p269-271.
- Kripke, Saul. (1982). *Wittgenstein on Rules and Private Language*. Harvard University Press.
- Kuhiwczak, (2007). Piotr and Karin Littau.(Ed.). *A Companion to Translation Studies*. Multilingual Matters Ltd.
- Larkosh,Christopher.(2011). *Re-Engendering Translation: Transcultural Practice, Gender/sexuality and the Politics of Alterity*. Manchester: St. Jerome Publishing.

Lefevere, André. (1992). *Translation/History/Culture: A Sourcebook*. London and New York: Routledge.

Lefevere, Andre. (2004). *Translation, Rewriting and Manipulation of Literary Fame*. Shanghai: Shanghai Foreign Language Education Press.

Lepore, Ernie and Smith, Barry. (1987) (Eds.). *Handbook of Philosophy of Language*. Oxford University Press.

Levin, Janet. (2018). *Functionalism*.

Retrieved from: <https://plato.stanford.edu/archives/fall2018/entries/functionalism/>

Liao Qiyi.(2014). *Translation studies: Text, Context and Cultural Construction*. Shanghai: Fudan University Press.

Liu Miqing,(2005). *A Comparative Study of Chinese and Western Translation Thoughts*. Beijing: China Translation and Publishing Corporation.

Liu, Lydia. (1995). *Translingual Practice: Literature, National Culture, and Translated Modernity-China 1900-1937. (Chinese edition)*. Stanford: Stanford University Press.

Loffiredo, Eugenia & Manuela Perteghella. (2006). *Translation and Creativity*. London & New York: Continuum.

Ma Zuyi,(1998). *A Brief History of Chinese Translation*. Beijing: China Translation and Publishing Corporation.

Martin, Kusch. (2006). *Wittgenstein on Translation*. Berlin: Parerga.

McDowell, J. (1984). *Wittgenstein on Following a Rule*, *Synthese* 58: 325-63.

McGinn, C. (1984). *Wittgenstein on Meaning*. Oxford: Oxford University Press.

Moore, A,W. *Conceptual Relativism*, Oxford: Zurich Doctoral Workshops in Philosophy.

Retrieved from: <http://www.philosophie.uzh.ch/de/doktorat/zdw/concrel.html>.

- Munday, Jeremy. (2009). *The Routledge Companion to Translation Studies*. London & New York, Routledge.
- Munday, Jeremy. (2016). *Introducing Translation Studies: Theories and Application (4th edition)*. London and New York: Routledge.
- Nida, Eugene A. (1964). *Toward a Science of Translating*. Leiden: E.J. Brill.
- Nida-Rümelin, Martine and Donnchadh O Conaill. (2002). *Qualia: The Knowledge Argument*. Stanford University: Metaphysics Research Lab.
- Nord, Christiane. (2001). *Translation as a Purposeful Activity: Functional Approach Explained*. Shanghai: Shanghai Foreign Language Education Press.
- Olohan, Maeve. (2000). *Intercultural Faultlines: Research Models in Translation Studies: Textual and Cognitive Aspects*. Manchester: St. Jerome Publishing.
- Parr-Membrives, Eva et al. (2013). *Cultural Aspects of Translation*. Tübingen: Narr Verlag.
- Paula G. Rubel and Abraham Rosman. (2003). *Translating Cultures: Perspectives on Translation and Anthropology*. (Edited). Providence: Berg Press.
- Perez, Maria Calzada. (2003). *Apropos of Ideology: Translation Studies on Ideology, Ideologies in Translation Studies*. Manchester: St. Jerome.
- Petrilli, Susan. (1992), *Translation, Semiotics and Ideology*. Traduction, Terminologie, Rédaction, vol. 5.
- Pettit, Philip. (1975). *The Concept of Structuralism*. Los Angeles: University of California Press.
- Poehhacker, Franz. (2004). *Introducing Interpreting Studies*. Routledge.
- Proceedings IEEE International Symposium on Requirements Engineering. (1992). *Specifications into Formal Specifications Using Contextual Dependencies*, pp.232-239.

- Pym, Anthony.(1998). *Method in Translation History*. Manchester: St. Jerome Publishing.
- Quine, Willard. (2008). *Chapter 31: Three indeterminacies. Confessions of a Confirmed Extensionalist: And Other Essays*. Harvard University Press: pp. 368–386.
- Reiss, Katharina. (2004). *Translation Criticism: The Potentials & Limitations*. Shanghai: Shanghai Foreign Language Education Press.
- Robinson, D. (2005). *Translation and Empire: Postcolonial Theories Explained*. Foreign Language Teaching and Researching Press.
- Robinson, D. (2005). *Western Translation Theory: from Herodotus to Nietzsche*. Foreign Language Teaching and Researching Press.
- Roman, Alvarez & Vidal, M. Carmen-Africa. (1996). *Translation, Power, Subversion*. Multilingual Matters Ltd.
- Rose, Marilyn. (1997). *Translation and Literary Criticism*. Manchester: St. Jerome Publishing.
- Seki, Y. Ishihara, H. and Kasami, T. (1993). *A Translation Method from Natural Language Specifications into Formal Specifications Using Contextual Dependencies*. Proceedings of the IEEE International Symposium on Requirements Engineering, pp. 232-239.
- Shuttleworth, M. & M. Cowie (1997). (eds). *The Dictionary of Translation Studies*. Manchester: St Jerome.
- Sidiropoulou, Maria. (2005). *Identity and Difference: Translation Shaping Culture*. Bern: Peter Lang.
- Sinaiko, H.W. & Klare, G.R. (1973). *Further Experiments in Language Translation: A Second Evaluation of the Readability of Computer Translations*. ITL, 19: 29-52.

- Sluga, Hans and Stern, David G. (1996). (Eds) *The Cambridge Companion to Wittgenstein*. Cambridge University Press.
- Steiner, George. (1975). *After Babel: Aspects of Language and Translation*. London: Oxford U.P.
- Sun Li. (2011) . *On the Influence of Wittgenstein on Liu Miqing's Translation Theory*, Journal of Northeast Agricultural University.
- Tonkin, Humphrey and Maria Frank. (2010). *The Translator as Mediator of Cultures*. Amsterdam/Philadelphia: John Benjamin's Publishing Company.
- Toury, Gideon. (1995) *Descriptive Translation Studies and Beyond*. Amsterdam/Philadelphia: John Benjamins Publishing.
- Tymoczko, Maria. & E. Gentzler. (2005). *Translation and Power*. Beijing: Foreign Language Teaching and Researching Press.
- Tymoczko, Maria. (2010). *Translation, Resistance, Activism*. Amherst and Boston: Massachusetts UP.
- Tyulenev, Sergey. (2014). *Translation and Society: An Introduction*. New York: Routledge.
- Venuti, Lawrence.(2004). *The Translation Studies Reader (2nd Edition)*. New York: Routledge.
- Wang Hongzhi. (2014). *Translation and Modern China*. Shanghai: Fudan University Press.
- Wang Ning. (2009). *Cultural Shift in Translation Studies*. Beijing: Tsinghua University Press, 2009.
- Wilks Yorick. (1979). *Machine Translation and Artificial Intelligence*. Translating and the Computer, B.M. Snell (Ed.). North-Holland Publishing Company.

Wilks, Y. (1973). *An Artificial Intelligence Approach to Machine Translation*. In Schank and Colby (eds). *Computer Models of Thought and Language*. Freeman. San Francisco: 101-129.

Wilks, Y. A. (1975). *Preferential, Pattern-matching, Semantics for Natural Language Understanding*. *Artificial Intelligence*. 6, 55-76.

Williams, Jenny & Andrew Chesterman. (2002). *The Map: A Beginner's Guide to Doing Research in Translation Studies*. Manchester: St. Jerome Publishing.

Wittgenstein, L (1921). *Tractatus Logico-philosophicus*. New York: Harcourt, Brace & Company, Inc.

Wittgenstein, L. (1933). *The Blue and Brown Books*, Basil: Blackwell.

Wittgenstein, L. (1953). *Philosophical Investigations, First Edition*. Macmillan Publishing Company.

Wittgenstein, L. (1956). *Remarks on the Foundations of Mathematics*. Oxford: Blackwell.

Wittgenstein, L. (1969). *On Certainty*. New York: Harper and Row.

Wittgenstein, L. (2007). *Lectures and Conversations on Aesthetics, Psychology and Religious Belief*. University of California Press.

Wright, C. (1989). *Critical Notice of Wittgenstein on Meaning by Colin McGinn*, *Mind* 98: 289-305, b.

Wright, C. (1989). *Wittgenstein's Rule-following Considerations and the Central Project of Theoretical Linguistics*, in A. George (ed.) *Reflections on Chomsky*, Oxford: Blackwell.

Xie Tianzhen. (2004). *History of Modern Chinese Translation (1898-1949)*. Shanghai: Shanghai Foreign Language Education Press.

Xu Jun. (2012). *Research on Literary Translation Criticism* (Ed.). Nanjing: Yilin Press.

Yuan Naiqing. (2012). *The Theoretical Guiding Value of Later Wittgenstein's Linguistic Philosophy to Translation*, Beijing: College English Journal.



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Fayang Huang is a 34-year-old lecturer from Wuchang University of Technology in Wuhan city of central China, teaching Translation Course and International Trade Practice. He got the BA in Business English from Fuzhou University in 2008 and the MA in translation and interpreting from Wuhan University of Technology in 2016. Since 2018, he has been studying on the Philosophy of Language, as a PhD candidate in Assumption University. He once published five papers on translation education and language research, and a textbook titled *Oral English Practice*.



