Ancient Chinese Logic, Buddhism Influences with Western Rationalism and Mathematical Reasoning

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Abstract:

Logic, in the sense that it is understood in contemporary academic discourse, is frequently attributed to the ongoing progression of Western rationalism and mathematical reasoning within the field of idea history. This article compares and contrasts Western logic in the conventional sense of the term with those doctrines and concepts of logic that are equally representative of the development of Eastern intellectual history, as measured through a comparative lens of East and West. Specifically, it focuses on the similarities and differences between Eastern and Western logic. Ancient Chinese logic continued to exist in its own right. It developed byaccording to the traditional Chinese philosophical tradition, even though it diverged from the path formal logic took in the West during its development. The Mohists, the Ming School, and later Buddhist Logic were the primary places where it was first observed making its appearance. To varying degrees, these schools or schools of thought investigated dialectics, linguistic analysis, and logical reasoning; they were instrumental in laying the groundwork for developing ancient Chinese logic. The Named Schools, Mohist, and Buddhist logical systems are all forms of ancient Chinese logic that reflect the development of Chinese logic. These schools' investigations into argumentation techniques, linguistic analysis, and conceptual definition undeniably influenced subsequent generations of Chinese philosophy in their pursuit of philosophical and logical understanding. This is even thoughthese schools diverging significantly from conventional Western logic regarding methodology and application domains.

Keywords: Logic; Mohism; Chinese Philosophical Tradition.

1. Introduction

Logic provides the necessary tools for logical analysis, logical criticism, logical reasoning, and logical argumentation across all sciences, including the fundamental ones. It investigates the structure of thought, the principles that govern thought, and the logical approaches to thinking. It originates in three ancient ideas: the formal logic of ancient Greece, the masters of pre-Qin China, and the causal logic of ancient India. Famous writers and ancient Greek sophists were produced in different regions, countries, populations, languages, and cultural backgrounds, but they all have three major common points, namely, the use of strange expressions, double argumentation mode of thinking, and reductio ad absurdum refutation of the argumentation mode [1]. These three common points are the witty and wonderful use of rhetorical utility, comprehensiveness of thinking, and rigor of argumentation by famous writers and wise men.

The logic of ancient Chinese masters can be traced back to the pre-Qin period, and the most representative schools include the Masters, Legalists, Confucians, and Mohists [2]. The representative figures in these schools, such as Deng Qie, Confucius, Huishi, Gongsun Long, Mozi, and Xunzi and Han Fei in the later period, all made important contributions to the formation and development of logic in antiquity. Mozi, the founder of the Mohist school, proposed logical concepts such as „defense" and „reason," which laid the foundation for developing ancient logic. At a later stage, the Mozi School summarized the results of the thinking of its predecessors and wrote the first logical work with a certain system in Chinese history, the „Mozi Dialectics" (or the „Mozijing") [3]. The Mojing discusses „name" (equivalent to „concept" in modern logic) and focuses on „saying" and „arguing" (equivalent to „concept" in modern logic). (equivalent to „reasoning" and „argu-

1

mentation" in modern logic). He emphasized that concepts should be tested by practice and affirmed the first nature of objective reality and the second nature of concepts.

The three concepts of „reason, reasoning, and class" were proposed, similar to the dialectical logical relationship between argument, argumentation, and thesis. This logical system not only focuses on the form of reasoning but also the content and meaning of reasoning. Many specific logical principles, such as the Mohists, believe that judgment must be based on facts/reasoning, must follow certain rules, and cannot arbitrarily violate the laws of logic/the principle of equality must be adhered to in argumentation and cannot be imposed.

2. Famous Schools and Their Thoughts

2.1 The Chinese Tradition of Logic

The famous scholar is a school of thought that mainly studies „form and name" in the Hundred Schools of Thought during the Spring and Autumn Period and the Warring States Period [4]. In ancient times, „Xing" and „Form" were commonly used, and „Xing Ming" was „Form Ming". Since this school of thought centered on debating and examining the relationship between concepts and facts, it was later called the School of Names. According to Zhuangzi, Huishi had "five caravans of books." although some people believe that this refers to his collection of books, it is also possible that he had writings that have been handed down to the world. Gongsun Long also had „tens of thousands of weird speeches." Still, after the Qin and Han dynasties, the famous family gradually declined, and the literature about the famous family was also gradually lost. Fortunately, some of the only surviving materials can still provide us with some clues to study his ideas, such as in Zhuangzi - the world chapter recorded Huishi's In the book of Zhuangzi, it is recorded that Huishi's „Ten Things in the History of Things" and some of the entries in the „Twenty-one Things" of the defender are only the outlines or conclusive propositions of the famous scholars summarized by the later generations, and their specific contents and the process of argumentation have already been lost. The biggest difference between the pre-Qin masters and the current logic is that most of the masters' arguments served their interests and allegiances, not as a means of pursuing truth and science but as a means of making a profit. Typical examples are Deng Qie's „Two Arguments," Huishi's „Ten Things," Gongsun Long's „White Horse is not a Horse," and the apologist's „Twenty-One Things."

Deng analyzed „two can say," „river in the river is very big, Zheng's rich people have drowned, people get his body, the rich people please ransom, the people ask for a lot of gold, to tell Deng to analyze. Deng analyzed it and said, ‚An, people will not sell it.' The body of the person suffering, to tell Deng to analyze. Deng analyzed and replied: ‚Anzhi, this will be no more buy.'" A rich man in Zheng drowned in the river Wei. The person who found the body demanded a very high price from the rich man, so the rich man delayed to ask for the body, and the person who got the body was not able to sell the body for a while, so both the person who got the body and the rich man were very anxious. In the face of the two lawsuits, Deng analyzes the contradiction and finds a way to study the problem: the corpse must sell the corpse to the rich, and the rich must be in the corpse to buy the corpse.

The so-called „the two can say" is the same fact to make two opposite assertions. It emphasizes the flexibility of concepts to make opposite judgments. Both „may" and „may not" can be true. The Confucian orthodoxy is considered as „not lawful to the former king, not etiquette, and good to rule the strange sayings, play qi words,...... can not be a program of discipline. (Not twelve sons - Deng analysis)" is not unreasonable.

In Gongsun Long's book White Horse Theory, he elaborated on the „white horse is not a horse" thesis. He discusses this issue from three aspects. First, the connotations of „horse," „white," and „white horse" are different. The connotation of „horse" refers to an animal, the connotation of „white" refers to a white color, and the connotation of „white horse" is an animal plus a color. Therefore, the white horse is not a horse; secondly, the extension of „horse" is different from that of „white horse," and secondly, the connotation of „horse" is different from that of „white horse." Secondly, the extension of „horse" is not the same as the extension of „white horse." Secondly, the extension of „horse" is not the same as that of „white horse." The extension of „horse" includes all horses, while the extension of „white horse" only refers to white horses. Therefore, the white horse is not a horse. Third, the concept of „horse" differs from „white horse." Thirdly, the idea of „horse" is different from that of „white horse". All horses have the idea of „horse" but do not include the color; the white horse only has the idea of „white horse," and the idea of a horse is different, so the white horse is not a horse. This may seem a pure explanation of the relationship between name and reality. Still, the fact is that during the Warring States period, horses in the area of the State of Zhao were affected by a virulent infectious disease, resulting in a large number of deaths of warhorses. To prevent the introduction of the plague, Qin posted a notice at the Hangu Pass: „No horse from Zhao can enter the pass! When Gong Sun Long rode a white horse to the Hangu Pass, he was stopped by the officials. He was stopped by the officials at the Hangu Pass, so Gong Sun

Long made this excuse to facilitate his entry into the pass on his horse.

Huishi's „Defense of Contract and Difference." The great homogeneity and the small homogeneity are called the small homogeneity; all things are the same and different, which is called the great homogeneity." People and rabbits are animals; this is the same; people are animals, but not all animals are people; people; people and people have similarities, and rabbits and rabbits have their similarities, but this is a small similarity. Each type of thing has common points, and things of different species have their common points, „small similarities and differences" refers to these similarities and differences. However, all things under the sun are similar, each for an objective existence; this is „the same." to see all things as their individual, they have their own characteristics so that they are different from others; this is „the same." It can be seen through the „great similarity" and „small similarity" that all things are similar and different from each other, and the similarities and differences between them are always relative.

2.2 The Influences of Buddhism

The specific features of Buddhist logic are manifested in the following aspects. It emphasizes the truth of the premises of argumentation/the theory of the „three phases of cause" on this basis. Among these, the thesis (pakṣa, zong) is expressed as a proposition in the form of a subject-predicate, which is the conclusion of the whole argument. The reason (hetu, cause) is also expressed as a subject-predicate proposition. It examines logical reasoning and delves into our perceptual and cognitive processes. It uses a variety of methods of argumentation, such as the logical theories found in Tantric classics, such as Catuskoti (Four Arguments Photography): The Four Arguments Photography is a central concept in Buddhist logic that refers to a fourfold distinction between anything or phenomenon: there is (existence), there is not (nonexistence), there is not (existence and nonexistence both have some justification), and there is not (neither existence nor nonexistence) [6].

This fourfold differentiation helps to avoid falling into absolute affirmations or negations but rather to understand and analyze things from multiple perspectives and levels. Karmic emptiness (Pratītyasamutpāda-śūnyatā): Karmic emptiness is a central principle of Buddhist philosophy, referring to the fact that all phenomena arise from the interdependence of numerous causal conditions and have no fixed and unchanging essence. In logical argumentation, the principle of karmic emptiness explains the complex relationships between things and how the truth behind these relationships can be revealed through logical reasoning.

Middle Way Theory (Mādhyamika): The Middle Way Theory is an important theory in Buddhist philosophy that advocates avoiding extremes and instead seeking a middle path. In logical argumentation, Mādhyamika emphasizes that one should not overly affirm or negate a particular point of view but rather hold a balanced, neutral attitude and discover the truth through in-depth analysis and reasoning [6].

All these methods of argumentation are important tools employed by Buddhist logic in exploring knowledge, truth, and the nature of things. Through these methods, Buddhist logic not only focuses on the form of logical reasoning but also explores the content and meaning of logical reasoning in depth, providing us with a comprehensive and in-depth way of knowing and understanding the world.

2.3 The Ancient Greek

Greek philosophy is an essential part of European intellectual life, the development of which cannot be understood without it, but from this purely historical point of view, the history of philosophy seems to be only a part of the history of civilization, and above all a part of the history of the civilization of the Greek nation. With the formation and perfection of democracy in ancient Greece, the participation of citizens was greatly stimulated. All citizens could participate in the management of the state through assemblies, citizens' assemblies, court debates, etc., which directly led to the prevalence of oratory, and the increasing importance of oratory led to the gradual improvement of rhetoric, philology, and the art of polemics, and the rise of sophistry based on it. By using the characteristics of language, sophistry guides people to think according to the thinking of the sophists and get the conclusion in their favor to maximize their interests. Representatives of ancient Greek sophistry include Zeno's theorist, the „half-fee lawsuit" of the School of the Wise, and the paradoxes of the School of Megara [5].

The „half-fee lawsuit" is about an ancient Greek philosopher, Protagoras, and his student Euthyphrox, who left the world a „case without end": Protagoras had trained students to help others fight lawsuits, and his contract with the students stipulated that students only pay half of the tuition fee, the other half of the tuition fee to be paid when they finished their studies in the first court to win the lawsuit: Euthyphrox didn't help others to fight the lawsuits after finishing their studies, and Protagoras could not collect the other half of the tuition fee for a long time. Protagoras did not receive the other half of the tuition for long. When he got tired of waiting, Protagoras filed a lawsuit in court to collect the other half of the tuition. Pu thought:

According to the judgment, Ortilus should pay me half of

the tuition if the court rules in my favor. If the court rules against me, according to the contract, Euthyllus should also pay me half the tuition fee. Or if the court rules in my favor, or if the court rules against me, then Ottilus should pay my half of the tuition. Ottilus then proposes a dilemma with the opposite conclusion. If the court rules in my favor, I should not have to pay that half of the tuition according to the ruling; If the court rules against me, I should not have to pay that half of the tuition, according to the contract. Or if the court rules in my favor, or if the court rules against me, I shouldn't have to pay that half of the tuition: This argument is even more obvious, as the two men are presenting a very typical dilemma reasoning, and this classic argument between the two men is also originated from „paying tuition fees" only [5].

In the „grain pile paradox," the Magarists asked, „How many grains can be added to the grain pile?" and „Where is the boundary between the grain and the grain pile?" Such questions are, in fact, a kind of sophistry, which modern dialectics refutes by saying that „quantitative change causes qualitative change." But does „quantitative change" really cause „qualitative change"? The debate of „quantitative change causes qualitative change" to refute this kind of sophistry is wrong; a grain and a pile of grain is only a quantitative change, not a qualitative change. The sophist of „the paradox of the heap of grain" uses the difference in the capacity of quantifiers, „the grain is not equal to the heap," to make sophistry. At the same time, the philosophy defines the relationship between quantifiers, such as „the heap is greater than the grain", as the following The philosophical definition of the relationship between quantitative units, such as „heap is greater than grain", is the result of qualitative change, which results in both sides being caught in sophistry by attacking one error with another error.

3. A Mozi-Focused Discussion

Mozi's dialectic of name and reality is an important concept in his philosophical thought, focusing on the relationship between words and reality. This dialectical idea played a key role in both Mozi's pragmatism and his view of logic. Here are some key points about Mozi's dialectic of name and reality: The basic idea of the dialectic of name and reality: Mozi believed there was a difference between words and actuality and that people were prone to misunderstand words because of their superficial meanings. He advocated going deeper into reality and understanding the actual situation represented by words through dialectical thinking, i.e., the name and reality match each other. Limitations of language: Mozi clearly understood the limitations of language, pointing out that language is

only a symbol and is easily influenced by subjective and cultural factors. He emphasized the complexity of the actual context behind words and concepts and reminded people to use language carefully in thinking and communication. The Importance of Practical Action: Mozi emphasized the importance of practical action behind the debate of name and reality. He argued that to realize the matching of name and reality, people need to verify the accuracy of words through actual efforts and practices. This fits in with his pragmatic viewpoint, which emphasizes practical problem-solving. The Defense of Name and Reality in Logical Reasoning: Mozi uses the defense of name and reality in logical reasoning, emphasizing the need to focus on the consistency between concepts and reality in the reasoning process. He may emphasize clear and precise arguments to ensure no misunderstanding due to vague language in the logical reasoning process. The Defense of Name and Reality in Social Ethics: The defense of name and reality also plays a key role in Mozi's view of social ethics. He may advocate that social, ethical behaviors should align with the actual human situation rather than remaining only in words and forms. This reflects his concern for practical issues. Through Mozi's name and reality debate, he attempts to dispel any misunderstanding between language and practicality by emphasizing the importance of practical action and logical thinking in solving problems and achieving socio-ethical goals. This concept is intertwined with Mozi's views on pragmatism and logic, and together, they build his unique and powerful philosophical system.

Mozi's pragmatism is associated with logic in his views on reasoning, argumentation, and dialectics, and he uses logical thinking to solve practical problems. The following are some aspects of Mozi's pragmatism associated with logic: Practical Application of Argumentation: Mozi focused on the practical effects of argumentation and his tendency toward pragmatism led him to focus on the application of argumentation in solving practical problems. He emphasized that argumentation is not just for the sake of the argument itself but also to solve social, ethical, and political problems. In logic, this is reflected in his concern for the purpose and effect of argumentation. The Discriminatory View of Names and Logical Thinking: Mozi's view of the discriminatory view of names and realities emphasizes the relationship between language and reality, which has important implications in logic. Logic is concerned with clear and precise ways of thinking. Mozi's concern with the distinction between name and reality led him to focus on accurately understanding the relationship between concepts and reality in his logical thinking. The use of debate: Mozi's dialectic is reflected in his comprehensive understanding of how he approaches things.

In logic, dialectics emphasizes the treatment of contradictions and complexity and the integration of different points of view. The debate in Mozi's logic can be regarded as a pragmatic way of thinking about logic. Pragmatism's flexible application of logical rules: Mozi's pragmatism is characterized by his flexible application. He is concerned with the practical results of problem-solving, not just formal logical correctness. In practice, he may adopt flexible logical means to maximize social benefits. Integration of social ethics and logical thinking: Mozi's pragmatism emphasizes solving social and ethical problems, and logical thinking plays an important role in this process. He might support his socio-ethical views through logical arguments, emphasizing the achievement of social harmony and improvement through sound arguments and reasoning. Thus, the connection between Mozi's pragmatism and logic is mainly reflected in how he used logical thinking to solve practical problems and his practical application of argumentation and reasoning in practice. This connection makes Mozi's view of logic practical and social.

4. Conclusion

In this article, Western logic in the traditional sense of the term is compared and contrasted with those doctrines and concepts of logic that are equally representative of the development of Eastern intellectual history. This comparison and contrast is done through a comparative analysis of East and West. It focuses specifically on comparing and contrasting Eastern and Western logic's similarities and differences. Although it diverged from the path formal logic in the West took during its development, ancient Chinese logic continued to exist in its own right. It developed by the traditional Chinese philosophical tradition. This was the case despite the fact that it diverged from the path that formal logic took in the West. The primary places where it was first observed and appeared were the mohists, the famous schools, and later, the Buddhist logic. These were the primary places where it was observed. The investigation of dialectics, linguistic analysis, and logical reasoning was carried out by these schools or schools of thought to varying degrees; they played a significant role in laying the groundwork for developing ancient Chinese logic. The Named Schools, Mohist, and Buddhist logical systems are all examples of ancient Chinese logic that reflect the development of Chinese logic. These logical systems are different from one another. The investigations that these schools carried out into various methods of argumentation, linguistic analysis, and conceptual definition unquestionably had an impact on subsequent generations of Chinese philosophers as they endeavored to achieve philosophical and logical comprehension. Even though these schools diverged significantly from the conventional Western logic regarding methodology and application domains, this is the result.

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