Leibniz's "Possible Worlds"

Liu YueSheng
Department of Political Science and Law, Hechi Normal College, Guangxi Province, China

Abstract

The rigor and precision of Leibniz's "possible world" evolved into the concept of Turing machine, and with the birth of the first computer and the physical realization of Turing machine, human cognitive and intelligent activities were optimistically considered by cognitive scientists to be convertible into computational programs for simulation by machines. Cognitive science then formed the research agenda of "cognitive computationalism", and our Chinese scholars have responded to this general view that "the essence of cognition is computation" and that the human brain and computers are merely formal systems for manipulating and processing symbols in their respective fields. Professor Hong Dingguo used the concepts of "manifest order" and "hidden order", Professor Jin Gulun used the philosophical categories of "constitutive theory" and "generative theory", and Liu Yuesheng used the concept of "cognition". Professor Hong Dingguo reinterpreted the relationship between the "real world" and the "possible world" by using the concepts of "manifest sequence" and "hidden sequence", Professor Jin Wulun used the philosophical categories of "composition theory" and "generation theory", and Professor Liu Yuesheng used the generalized information paradigm of "structural information" and "exchange information". "This provides a profound elucidation of the nature of cognitive logic and the process of human cognitive activities becoming symbols through coding and puts forward theoretical limits. The current theoretical dilemma and practical

difficulty of cognitive science lies in the fact that it has developed algorithmic concepts in the Turing sense that can only model the explicitly sequential part of cognitive and intellectual activity, forming a constitutive atomic abstraction, or in our terms, classical "structural information", which cannot fully explain the inner mechanisms of human mental activity and its embodied flexibility, selectivity and self-emergence. Wu Xuemou's pan-system theory does not simply rely on logic and Turing machine algorithms, but models human intelligence by treating structural information as a complex large system composed of a collection of elements and a collection of relations (exchange information: five mutual eight chips), in order to break through the narrow path of seeking only the local consistency of the system as currently done; while Wang Dekui's exploration of the three-spin biological and physical path and Huang Zhanji's abandonment of the artificial means of logic to seek the large logical natural mechanisms and Mr. Zhou Liquan's proposal of a schema for successful communication using natural language on the basis of concepts such as context and implicit connotation ("Logic — A Theory of Correct Thinking and Successful Communication"), all reflect the milestones of Chinese scholars who seek to address the deeper issues of cognitive science. We believe that along this series of explorations, combined with new results in recent years in the fields of artificial life and evolutionary computation, a new research agenda in cognitive science will emerge.

Keywords

Cognitive science, possible worlds, information paradigm

DOI: 10.47297/wspctWSP2515-470204.2018XX01

I. Introduction: The Mystery of History

Based on Leibniz's notion of "possible worlds", 20th century logicians have further rigorously and precisely built up a complete semantic theory of modal logic - possible worlds semantics. This allows us to view and explore logical problems from multiple perspectives, including the cognitive perspective, and to build various cognitive logic systems.

In a process very similar to the one described above, the 17th century philosopher Leibniz, in the process of commenting on and elaborating the meaning of the ancient Chinese diagram of Fuxi 300 years ago using binary arithmetic with two notations 0 and 1, finally discovered that "the 64 hexagrams in the diagram of the sixty-four trigrams correspond exactly to the binary numbers from 0 to 63. This discovery excited him so much that he immediately revised and supplemented his 1679 manuscript in French and sent it to the French Academy of Sciences" (Zhu Pao Kun, ed., International Studies of Yi, 5th series, p. 201). In a sense, Leibniz rigorously and precisely defined the "possible worlds" of the Yi diagram. But how he transformed the trigram and line diagrams into binary arithmetic, and at the same time had to lose the living ease of the diagrams while moving toward symbolization, is rarely explored.

Mr. Dong Guangbi pointed out in "Yi Studies and Technology" in the "principle of classification of trigrams": "The two yi, four signs, eight trigrams in the Yi diagram, ... is the number of arrangements of the infinite re-set of the two elements of yin and yang lines. (p. 85) here on the trigram change theory contained in the diagram, early revealed by Leibniz: "The surprising thing is that this arithmetic with zeros and ones can contain the mystery of the lines made by an ancient king and philosopher called Fuxi ..... Chinese lost the trigram or Fuxi's linear for perhaps a thousand years; they made many commentaries on (the trigrams) but found a meaning that I do not know how far away. Finally, its true interpretation turned out to come from the Europeans. What happened was this: about two years ago, I wrote to the famous French Jesuit, the venerable Father Bai Jin, who was living in Beijing at the time, about my calculation with 0 and I. He immediately saw that this was the key to unlocking the Fuxi diagram. He then wrote to me on November 14, 1701, and sent me the great figures of this philosophical monarch, all the way to 64; which left no room for doubt as to the truth of our interpretation, so much so that one could say that this

priest solved the mystery of Fuxi with the help of what we told him. For these figures are perhaps the oldest scientific monuments in the world, and to recover their meaning again after so long a time is indeed a rarity." (Quoted in Zhu Pao Kun, ed., International Studies in Yi Studies, 5th series, p. 205)

But why are foreign scholars as a rare treasure of the trigram change, but for some of our ancient scholars regarded as speculation? Ming Dong Shouzhu said: "change the case of trigrams, mixed and not one, each holding the division also. Fool's word change must want to match the word of the trigrams, this is not a foolish guess." (Dong Shouxu, "trigram change examination" volume, page 660) Qing Hu Wei that "Li, Shao for the study of the first day", "not only lost the purpose of the "The Same", but also not the meaning of the "The Passage" (Hu Wei, "Yi Tu Ming Discern" Volume IX, page 778). In fact, Dong's and Hu's views reveal the signs of the inherent flaws of the modern cognitive-logical system established by following Leibniz's ideas.

1. Lai's calculation method using 0 and 1 whether to solve the Fuxi chart. Fuxi figure as the world's oldest scientific monument, if only the numerical structure of the 64 trigrams, or "binary arithmetic" (later called binary numbers) that the number is the combination of the two basic symbols 0 and 1 to represent any number of methods, more specifically, it is full of 2 into 1 number system. Then it will not become the first of all scriptures if it has been handed down in China for thousands of years.

2. 64 trigrams can be used to characterize the 64 possible events or things. Ancient China, people use it to predict their own production activities and life in the things that will happen. From the mathematical point of view of probability theory, if 64 trigrams represent the 64 possible answers to the predicted things, and each trigram and 6 lines, which has six different types of answers, according to the probability of independent events appearing in the probability formula know that the prediction of the probability of hit should be 1/64 or 1/64 x 6/384, which is the mathematical theory of modern probability theory。

3. Chinese Song Dynasty Shao Yong had quantified the order of the eight trigrams: "seven sons of Qian, six sons of Tui, five sons of Li, four sons of Zhen, three sons of Xun, two sons of Kan, one sons of Burgundy, Kun all Yin, so no sons." This quantization order of the eight trigrams, indicating that Shao has given the decimal and binary conversion methods, but did not reach the stage of manifestation of Lai's more cannot be applied to the design of computers, today's

high-speed electronic computers and a variety of automated control systems, robots, artificial intelligence theory, perhaps people only think of Lai's "possible world ", but forget that this is also indirectly applied and developed the "I Ching" in the eight trigrams into the principle.

4. Lai's key to unlocking the Fuxi diagram only opened a digital reality but left behind the historical confusion of the possible world. In fact, the essence of the I-Ching lies in the principle of "Tao" and "Yin and Yang" as opposites and changes. The I Ching should be seem as an ancient masterpiece of discovery and application of relative phenomena and principles of relativity, and the 64 hexagrams should be represented as relative. Western science and technology and spiritual civilization in the middle of the growing gap, cannot be commensurate, but is the lack of the principle of relativity, take the polarity of thinking caused. "According to the eight trigrams of yin and yang (hidden) rhythm, you can synchronize with the numerical value of the infinite extension, (where the numerical value refers to the number of bits arranged). However, the Yin (black) Yang (white) hidden and visible settings, which follows the heart of the image and the theory, any one of them for the show, then infinity is equal to infinitely small, and the Taiji Bagua is the corresponding zero one with the same position! Can be analyzed can be divided, can be back can be direction, can come can go, so a single logic, can get the highest rate of bypass! The universe of time, space - the number of nothing, because of the cut and both 'there, nothing', this one comes and goes freely the logical wall rate, called zero-one congruence. " This depolarized view of relativity makes the trigram change theory of the trigram change diagram a living source of combinatorial innovation, but history does not let humans experience the digital real world once, we are not going to make another difficult adventure to the possible world. (See Deng Qubai: line changes and trigram changes, combinatorial innovation, Philosophy Research, 2003, No. 2) Once the possible world appears in some form of the real world, it makes us re-enact the confusion of history.

II. Main Discussion: The Road to Question and Breakthrough

Leibniz's vision of mathematical logic was to build an idealized "universal language" and "universal mathematics" that would turn all reasoning into compu-

tation and make all errors of reasoning into errors of computation, so that all kinds of arguments could be solved by computation. After the efforts of Frege, Russell, and other generations, the classical logic of "first-order logic" was finally established when Gödel proved the completeness of the first-order predicate algorithm, which partially realized Leibniz's ideal. This logic clearly assumes the two-valued principle (i.e., there is no proposition that does not have true and false values) and substantive implication, while multi-valued logic can take many other values besides true and false ones, thus quantum logic, fuzzy logic, etc. abandon the two-valued principle; modal logic replaces substantive implication with other implication by its intuition that defies common sense. These new branches of logic form a non-classical logic that is different from classical logic.

From a semantic point of view, the interpretation of axiomatic, formal systems has undergone an evolution from the real-world model to the possible-world model. The real-world model, also known as the one-world assumption, refers to the interpretation of all symbols and formulas within a formal system as objects in the real world and propositions about those objects, and the view that everything about which we can properly speak of its existence in a formal system must exist somewhere in the real world, except that the concern is with the more abstract and general aspects or properties of that world.

The possible worlds model, also known as the multiple worlds assumption, means that the explanatory framework of the formal system has multiple different possible worlds in addition to the real world; logical truth is not related to the real world only, but to all possible worlds; logical truth is true in all possible worlds

Along with the development of semantic thinking from real-world models to possible-world models, the focus of logical research has undergone a change from morphology (proof theory) to semantics (model theory)

This has a philosophical sublimation in Prof. Tingguo Hong's recent paper (see Ref. 6). He argues that:

Throughout history, fragmented human consciousness has produced a fragmented human reality, although this reality is objectified in psychological, physical, cultural, and material form in every human brain and in all non-living man-made objects.

From the point of view of modern physics, the real world is composed of

separate and independent particles. This idea is at best an abstraction that is only approximately valid in a certain limited field. The whole universe, generated by the various possible worlds, must be understood as a single indivisible whole, in which analysis (analysis as independently existing parts) does not have a fundamental status.

Therefore, Prof. Tingguo Hong sums up Bohm's view that: any explicitly analytic structure (we call it structural information) is always relative and temporary, and sooner or later it will dissolve in the context of the implicitly entangled sequence (we also call the context of its exchange of information the generalized information paradigm); at a deeper and broader level this infinite reality will expand into new explicitly analytic structures, and so on ad infinitum.

In this way, any solution to a holistic problem from a fragmented and explicit concept will always hit a wall.

If it is true that traditional thinkers and scientists always represent fragmented human consciousness (or polar thinking, which represents only the interests of some groups or is ignorant or insensitive to the deeper clues of wholeness) and always fail to learn the lesson of hitting a wall in the face of attempts to solve superficial conflicts (including the conflict between man and nature), then does the current state of cognitive science push Leibniz's rigorous, precise thought to its limits, re-enacting attempting to solve problems with wholeness by fragmentary ideas? This is something to ponder.

III. Conclusion: Philosophical Reflection

Leibniz had already established his own philosophical system: the doctrine of two kinds of entities before he published his Commentary on the Exposition of Binary Arithmetic with Only Two Symbols 0 and 1 - and on the Meaning of the Ancient Fuzzy Diagram (May 5, 1703).

This doctrine had been formalized since 1686, when he explicitly introduced the concept of "substance corporelle" in his Metaphysics and in his letter to Arnault.

In 1689, in his reading notes on Ralph Kouwers' System of Real Reason, he considered the materiality of the concept of "monads". At the latest, in 1695, Leys used the term "monad" in his own strict philosophical sense and explicitly

declared that "monad" is also a "unit of reality". We should not therefore oppose Leibniz, who was a prominent "object-philosopher," to Leibniz in his later years, who was supposedly committed to "monadism.

It was in the "marginal notes" of a letter to Arnault in September 1703, the year he published "The Meaning of the Ancient Fortuna", that he proposed two doctrines of matter. In this letter, Ley distinguished three senses of matter: (1) "matter as a tangible mass in itself"; (2) "secondary matter"; and (3) "original passive force", i. e., "primary matter". The first of these "substances" is Descartes's, while the last two are Ley's own.

In his letter to Wald of June 20, 1703, he proposed the famous explanatory framework of "entity structure" (five levels), the key is to propose the distinction and association between "singleton", i. e., simple entity (third level), and "tangible entity" (fifth level). The key is the distinction and association between the "singleton", i.e., the simple entity (the third level) and the "tangible entity" (the fifth level), which has since been maintained that there are two kinds of entities, the "simple entity" and the "composite entity" (tangible entity).

Here Leh's doctrine of "secondary matter" naturally serves as an "intermediary" between his "philosophy of objects" or "phenomenalism" and his "philosophy of entities the "intermediary" function of his "philosophy of objects" or "phenomenalism" and his "philosophy of solids" or "monism" are interrelated. The "intermediary" function is manifested in the fact that "tangible entities" are both "tangible" entities and tangible "entities". The "tangible entity" is both a "tangible" entity and a tangible "entity": because it is a "tangible" entity, it is intrinsically related to the "object" that exists as a "phenomenon" with a partially divisible extension; because it is a tangible entity", it is inevitably related to the "unit" that "constitutes the absolute original essence of things", which "has absolutely no parts" and exists as "essence" without extension. The "unit", i.e., the "singleton" or "simple entity", which has "absolutely no parts" and does not have an extended existence as an "essence", is intrinsically related to.

It seems that Leh's two doctrines of entities are essentially two levels of the five-level structure of entities, and we cannot put the different levels of "phenomenalism" (philosophy of objects) and monism (philosophy of entities) into one level. We cannot put the different levels of "phenomenalism" (philosophy of objects) and monism (philosophy of entities) into one level, and as long as we do not look at Lehigh's two doctrines of entities from a flat

perspective, we are bound to conclude that his simple entities or monads concern the logical and essential level of his doctrine of entities, while his tangible entities concern the real and phenomenal level of his doctrine of entities. (See: Duan, Dezhi, and Li, Wenchao: "i-style on the inner connection between Leibniz's phenomenalism and monism", Philosophical Studies, 2002.9)

Looking at the history of Western philosophy, although there are a series of transitions to get rid of the cognitive dilemma, such as: Western positivism, analytical philosophy through Wittgenstein, Gödel made the transition from logic to philosophy, Western continental phenomenology, existentialism through Heidegger began the transition from the phenomenological "epistemology" to the broad sense of existence "No matter how complex the hierarchy of Western philosophy as a whole is, the source is Leibniz's doctrine of two entities. It is difficult to complete the great transformation from entities to relations. This philosophy that has not completed the conversion process has hindered the development of cognitive science, and therefore a breakthrough in cognitive science will undoubtedly require a major revolution in philosophy!

References

[1] Hong Dingguo. Physical Positivism [M]. The Commercial Press 2001.

[2] Jin Gulun. Philosophy of Generation [M]. Hebei University Press 2000.

[3] Hong Dingguo. A preliminary investigation of the nature of consciousness [J]. Natural Dialectics Research 1995 (4).

[4] Hong Dingguo. Exploring the nature of consciousness [J]. Studies in Natural Dialectics 2001 (7).

[5] Hong Dingguo. The Nature of Consciousness [J]. Studies in Natural Dialectics 2002 (9).

[6] Hong Dingguo, Rong Qingyan. David Bohm's view of dialogue as a transcendence of traditional human thought and culture [J]. Nature Dialectics Research 2003 (2).

[7] Wu Xuemou. Pan system, Wan paradoxical demented dream [M]. Hubei Education Press 1998.

[8] Huang Zhanjiet al. Thinking and Wisdom - Popular Logic [M]. Huhehaote,

Yuanfang Publishing House 1999.
[9] Wang Dekui, A Preliminary Exploration of the Theory of Three Spins [M]. Chengdu: Sichuan Science and Technology Publishing Du 2002.
[10] [German] Stegemüller: The Mainstream of Contemporary Philosophy [M]. The Commercial Press 1992.
[11] Chuan Chen Bo. Introduction to the Philosophy of Logic [M]. People's University of China Press 2000.
[12] Zhou Changle. Introduction to cognitive logic sta [M]. Guangxi Science and Technology Publishing House, Tsinghua University Press 2001.
[13] Zhang Jianjun. The problem of logical omnipotence and dynamic cognitive logic [J]. Natural Dialectics Research 2000 Supplement.
[14] Li Xiaowu. Several misunderstandings in the current research of logic in China [J]. Natural Dialectics Research 2000 Supplement.
[15] Liu Xiaoli. The Dilemma and Direction of the Research Program of Cognitive Science [J] China Social Science 2003 (1).
[16] Zhou Yan. A Computational Model for the Evaluation of Scientific Theories [J]. Philosophy Research 2002 (9).
[17] Zou Son-li. Information flow logic [J] Philosophical Studies 2002 (9).
[18] Liu Yuesheng. The Evolution of Information Value-added. Information Revolution in China [M]. People's University of China Press 1998.
[19] J.C. Lo. From material entity to relational reality [M]. China Social Science Press 1996.
[20] Zhou Li-Quan. Logic-Theories of correct thinking and effective communication [M]. People's Publishing House 1994.