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Systematism—The Evolution from Holistic Cognition to Systematic Understanding †

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Abstract: Starting from the ancient philosophical proposition of "the whole is greater than the sum of its parts", this article attempts to answer the different responses of different holistic theories to "1 + 1 > 2" in different times. When trying to define systems or systematism, due to the introduction of the concept of exchange and traditional holism, one must ask the question of how to sublimate them into modern systems theory? How does systems philosophy counteract-eat the traditional holism step by step and reshape holism under the framework of systematism?

Keywords: whole; system; exchange; chain domain; envelope diagram

1. "1 + 1 > 2" under the Traditional Holistic Theory

The concept of the whole is a very ancient philosophical concept, and compared to the concept of the whole, the concept of a system is much newer. Nowadays, people enter the field of systems science or systems theory, often using the concept of the whole as an entry point, which is normal. However, what is not normal is that people often mistakenly believe that systems theory is the same as holistic theory, and that systems science is the science of holism [1] (p. 21).

"The whole is greater than the sum of its parts." This is a well-known and understood philosophical principle, and it is very common. In simple terms, it means "1 + 1 > 2". As for why the whole is greater than the sum of its parts, there have been different answers during different times.

We say that there is both a whole and a part, and a whole is always a part of the previous whole, which seems indisputable. However, if we continue to extrapolate infinitely upwards, we will inevitably come to the conclusion that the world we inhabit is actually a whole. Objectively speaking, in the axial age, both Eastern and Western philosophers viewed the world in this way. Eastern philosophers saw the world as "the unity of heaven and man," while Western sages saw the world as "atomism".

In the era of "reductionism" after Newton, people started to understand the world from a small reference point and expanded the territory as much as possible with the scientific knowledge that people had mastered (mainly Newtonian mechanics and mathematical calculus). A series of modern disciplines such as astronomy, geology and physics have been established one after another, which have greatly enriched people's understanding of nature. At the same time, as mechanical materialism began to become popular, people began to believe that everything in the world is interrelated, interacts and influences each other, and that our external world is a natural, unified and objective world that is not transferred by people's will.

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This is a great era that has abandoned "God" and "master", and established holistic theory through thinking about the internal connections of material movement, believing that "1 + 1 > 2".

2. "1 + 1 > 2" under the Holistic Theory of the New Era

The "reductionist" thinking method has created countless material and spiritual civilizations for humanity in the 19th and 20th centuries. With the increase of knowledge, the mechanistic materialism created on the basis of "reductionist" thinking has encountered strong challenges from system philosophy. Regarding the proposition of "1 + 1 > 2", system philosophy believes that emergence is necessary for the whole to be greater than the sum of its parts. Without emergence, the whole must be less than or at most, equal to the sum of its parts, and the key factor that determines whether it is greater or lesser is emergence. Conversely, the emergence of a system determines its status as a whole. It may form a system, remain a collection or a stack, or even disintegrate and disappear, returning to its parts. Therefore, Professor Wu Jie believes that "emergence is the most brilliant achievement of system self-organizing evolution. It is the fundamental cornerstone of system evolution and the brick of the universe." [2] (p. 202).

At the same time, system philosophy also holds that the actor is both practicing and understanding, so the actor is one with the world around them. We can acknowledge that there is an external world, but this world is the world of the actor's practice and understanding, not an abstract system [3] (p. 9). The emergence of a system is related to the observer, and different observers may have different answers to the same emergence; thus, the observer also determines the status of the whole. This is the holistic theory of the new era, wherein it is held that 1 + 1 > 2.

3. Systematism

Systematism is a systematic concept formed by in-depth discussion, with exchange–exchange chain as its core concept, and wherein most of its principles are materialistic. Unlike materialism, systematism insists that systems and matter are not the same, and cannot and will not be the same. It is considered that the concept of a system in matter is the relationship of attribute and inheritance. Systematism jumps out of the circle of materialism, takes the problem of exchange as the starting point to understand the world, regards the six elements of matter, energy, information, time, space, and spirit as the basic exchange elements of its equivalent view, and holds that the world is broken. If materialism takes the movement of matter as the research object, systematism focuses on the exchange relationship between the elements of the system.

Due to the bondage of the concept of great unity, materialism regards spirit as the other pole of the discussion of the problem, and artificially opposes the two concepts of matter and spirit, which limits people's field of vision in understanding the world. Materialists do not know that people's understanding of the world not only depends on practice, but also on the spiritual wealth of human beings. Systematism introduces spiritual elements, breaks through the barriers in the understanding of matter and consciousness, observes the world we live in with a broader vision and a more objective state of mind, and sums up some new cognitive laws, such as broken system view, chain domain thinking space, and so on.

4. "1 + 1 > 2" under the Understanding of Systematism

4.1. The Relationship between the Whole and the Emergence

For a long time, the description of the relationship between the two concepts of the whole and the system was vague, and most thought that the system and the whole were equivalent and identical. However, according to system exchange theory, the concept of the system and the whole is neither the same nor equivalent, and the relationship between them is the relationship of development and inheritance. The system is dynamic and developing, and the whole is relatively static and unchanged; the description of the system is relatively random, while the overall description is relatively rigorous; the spirit of the

system can be objective or subjective, and the whole may be an objective existence outside of consciousness.

Emergence has an overall attribute, but the overall attribute is not necessarily emergent. The judgment of "emergence" determines the status of a whole, and whether the whole is standing still or upgrading and becoming a system.

4.2. Discussion on the Definition of Bertalanfei System

As a result of emergence, the overall concept has transitioned to the concept of the system. Now, people generally accept the system's definition: the complex of interacting elements, which is called the Bertalanfei definition.

It should be noted that the Bertalanfi definition is very inclusive and is very good as the basic definition of the concept of the system. With the first, it is not easy to produce ambiguity; the second is concise and clear; the third package has a large capacity.

4.3. Replacement "Interaction"

As we all know, the traditional concept of "interaction" is basically a static concept and a simple description of the philosophy of that era, that is, it is neither discussed nor expanded. However, when we replace the words, "interaction" and "exchange", in Bertalanfei's definition, we are surprised to find that there is no loss in the connotation of Bertalanfi's definition, but its denotation is greatly expanded. Professor Wei Hongsen commented on this replacement: "introducing 'exchange' into the system definition enriches the connotation of the system and makes the system definition develop from static to dynamic, which is a major breakthrough in system definition" [4] (p. 1).

4.4. New Definition of System

Furthermore, we define the system in terms of the exchange chain:

The system generally has multiple exchange chains with the outside world, at least one of which is the main exchange chain of a certain time and space of the system. This main exchange chain restricts and affects other exchange chains. Without the exchange chain, or without the main exchange chain, the system will not become a system, or can not become an independent and stable system [4] (p. 6).

This definition can be the abstraction of the subjective and objective world that we already know, and it can also be extended to understand and discover the subjective and objective world that we do not know and do not understand.

4.5. The Whole of Domain Chain Thinking Space—Envelope Graph

Since the system is interchangeable, it is bound to form a switching chain, a switching domain, or a chain domain. The following picture is a schematic diagram of our imaginary chain domain thinking space, each point above is a small system, and elements are exchanged and emerge between points. This graph takes 1.6 directions as the base module to form the whole chain domain space. By borrowing this chain domain space, we can explain concretely how the system transforms from a relatively abstract concept to a relatively concrete system (whole) concept, and further clarify the integrity, arbitrariness, and uncertainty of the system. If several emerging points are connected to form an envelope graph. This envelope diagram is not only the boundary of the system, but also the whole of a system (Figure 1).

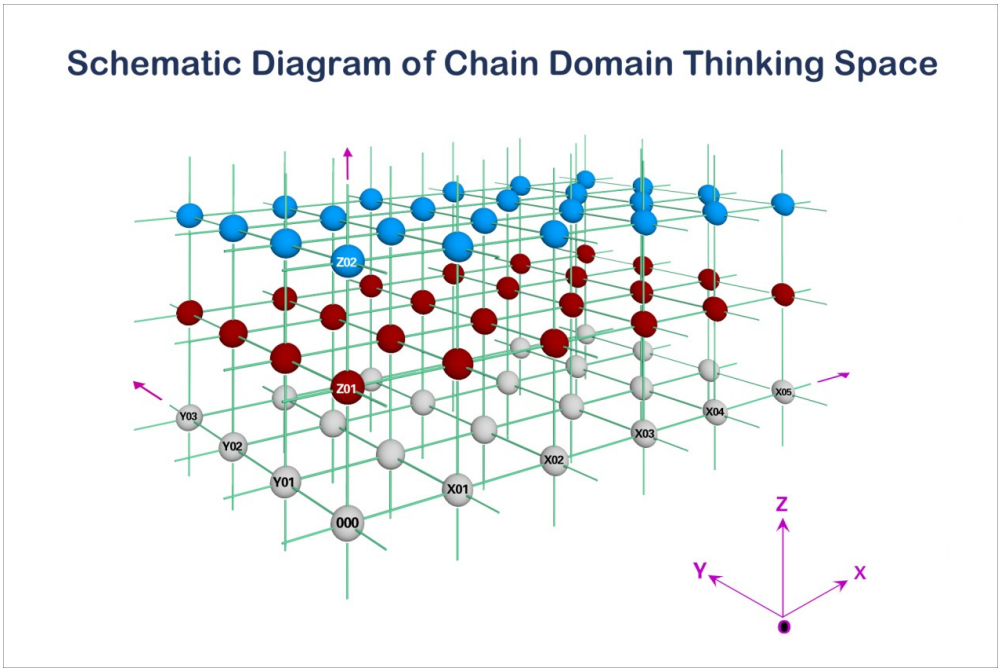

Figure 1. Schematic Diagram of Chain Domain Thinking Space.

As you can see, an envelope diagram, according to the issues of concern, is relatively isolated from the inextricably linked things, and in fact, forms a system. The formation of this system depends on our ability to discuss the problem, either take more or less than one emergence point, or take the near point or the distant emergence point, which is more subjective, but the existence of the emergence point is objective. In other words, the formation of the system is the subjective and objective unity of our cognition and consciousness. The unified process contains the integrity, uncertainty, and arbitrariness of the system, and the unified result shows a new holism under the framework of high-dimensional systematism.

5. Conclusions

To sum up, with the introduction of the concept of exchange, the traditional concept of the whole rises to the system concept's level; that is, systematism is thoroughly analyzed and, at this time, the whole contains not only material elements, but also energy, information, time, and space elements. It even contains spiritual elements, which is vividly demonstrated by the envelope diagram of the chain domain thinking space, and at this time, we say that the whole is identical and equivalent to the system. It is just that the whole at this time is the result of systematic thinking and the product of constructivism. It is no longer the same thing as the whole mentioned at the beginning of the article.

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