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System Management Theory Research from the Perspective of Lazlo's Grand Evolutionary Synthesis

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Abstract

In order to further promote and deepen the research of system management theory, we must have a more profound philosophical understanding of its ideological basis—general system theory and system evolution theory. Taking Ervin Laszlo's generalized comprehensive evolutionary system theory as the starting point, through reflection on Laszlo's phylogenetic theory paradigm and its application scope based on complexity science, combined with the historical evolution of systems management theory, the systematic The ideological basis of management theory is analyzed ontologically and methodologically, to find a new path for the transformation of system management theory from static mode to dynamic mode, which is of great reference significance for proving the advantages and characteristics of system management theory and its existing problems.

Keywords

General systems theory; Lazlo's Grand Evolutionary Synthesis; Systems management theory.

1. Introduction

During the development of philosophy of science, discussions about philosophical principles are often accompanied by empirical analysis of a specific theory or case. [1] In real life, many problems that cannot be solved by scientists or practitioners can often be explained by some classical philosophical principles. By using the methods and tools of the philosophy of science, the main task of the comprehensive evolution theory from the perspective of the philosophy of science is that integrated it into the actual history of science and philosophy for understanding and research. The whole process of researching it provides a good answer to the historical process of the emergence and development of this discipline. Similar to the development process of other knowledge theories, the comprehensive evolution theory is also developed on the basis of continuously absorbing the experience and wisdom of predecessors.

By searching the relevant literature, we can know that the historical conditions that led to the formation of the generalized integrative evolutionary theory were the continuous competition between the multiple evolutionary theory and the integrative evolutionary theory. In addition, the development of Darwinian evolutionary theory has contributed to the production of generalized integrative theories. The conflict and competition with Mendel's theory of genetics made it difficult for Darwinian evolution to develop much in the decades after its birth.In the following historical process,the five basic theories about Darwin's theory of evolution, namely natural selection, common ancestors, gradualism, evolution itself, and species multiplication,they each exhibited diametrically opposed fortunes that were not unified until the creation of a generalized integrative theory of evolution.Reviewing the entire history of philosophy,the initial stage of philosophy was metaphysics. Later, analytic philosophy suffered from the impact and competition of a series of different philosophical theories, and gradually

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began to decay.It was not until later that a brand-new systematic philosophy that embodied the whole thought was born, which was a brand-new change for the entire philosophical world.Among them, the typical representative of systemic philosophy theory, Irvin Lazlo, had a classical discussion in his book "Introduction to Systemic Philosophy", and he had a wonderful discussion on the whole process of the emergence and development of systemic philosophy.The background and reasons for the emergence of systemic philosophy are explained in detail.Laszlo explained and demonstrated the reasons for the emergence of systematic philosophy from the perspectives of the whole, dynamic and evolution.In addition, from the perspective of the generalized comprehensive philosophy, through the elaboration of both internal and external causes, Lazlo concluded that the generalized comprehensive philosophy is very important.From the perspective of Laszlo's theory of evolution,in this paper, we find a breakthrough for the transformation of system management theory from a static model to a dynamic model in the context of the whole evolutionary history of system management theory, which is undoubtedly of great significance for the development of system management theory.

2. The Ideological Perspective of Lazlo's Grand Evolutionary Synthesis

Irvin Lazlo is one of the most advanced scientists and management scientists of the 21st century.He is the founder of the Generalized Synthetic Evolution Research Society and serves as the President of its organization.Irvin Lazlo states that we need to think of an independent evolving system as a free entity. Isolated from its surroundings, any evolving system will rapidly decay and disappear. Irreversible processes within them push them toward a state of maximum entropy. As we know in thermodynamics, this is the state of maximum randomness and maximum inertia. All evolving entities in the world cannot have a pair of dialectical opposites. The reason for this is that evolution exists throughout nature and occurs in evolutionary systems.

Since the 19th century, many disciplines have used the old terms "systems," "evolution," and "processes" to express these laws. These expressions apply to the laws of matter, life and society, and they are laws of institutions, that is, they apply to material, living and social systems. Lazlo says: "The material, living and social systems are not separate from each other, but develop in relation to each other. We are committed to discovering the most common laws in these three areas, which are cyclical and recurring."In general, it is the general law of evolution and the fundamental law of systems philosophy. "[2] By synthesizing the study of these laws, a general theory of evolution is developed. Thus, Lazlo considers general evolutionary theory as the foundation of systems philosophy.

2.1. Development of Lazlo's Grand Evolutionary Synthesis

2.1.1. The Basis for The Proposed Grand Evolutionary Synthesis of Lazlo - Complexity Science

First, complexity science."According to the traditional understanding, simplicity and complexity are relative." [3] Dr. Xinrong Huang of Tsinghua University states, "Before it is known, things are complex and difficult to understand. Once it is known, it becomes simple. This is common in the human understanding of things. However, modern scientific and technological developments have shown that complexity cannot be attributed to inadequate cognitive processes and that the existence of objective complexity must be recognized. True complexity should have its own norms, even if it is known and understood, and even if solutions are found, it is still complex. In other words, we should identify some fundamental differences between simplicity and complexity, so that complexity science has a relatively clear field of study. In recent years, there has been a growing interest in complexity science at home and abroad. The study of complexity started early, but it was not called 'complexity' at that time. "[4] The book Artificial Science was first published in 1997 by the Nobel Prize-winning economist

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and pioneer in the study of artificial intelligence and cognitive psychology, Sima He. The final chapter of the book is entitled "The Construction of Complexity". In the philosophy of science and technology and engineering, Szymárka argues that "systems research has been widely acclaimed for its ability to meet not only the need to address any major problem in the development of complex systems of knowledge and technology, but also the urgent need for complexity synthesis and analysis". From this, we can understand the author's close interest in complexity science. He began his early research after World War I. Simaga also provides a brief summary of what has been closely related to complexity in recent years from the perspective of scientific and technological developments. The topics that emerged after the Second World War were information theory, and cybernetics. The current hot topics in general systems theory are chaos and adaptive unification, genetic algorithms, etc. At the beginning of the 21st century, the originator of systems science, Bertalanffy, introduced concepts related to complexity.

Secondly, the theory of evolution was introduced. “evolution” originally means "to spread out, to unfold" and is of Latin origin, and was used in English until the 17th century. Before that, people mainly interpreted "evolution" as broad evolution, and "transformation" as biological evolution. But nowadays, the meaning of biological evolution has been assigned to "evolution". Before the birth of Darwin's theory of natural evolution, religious beliefs, represented by creationism, dominated. Later, with the development of the Renaissance movement in Europe, the religious power slowly diminished, and only then did some scientists and philosophers continue to propose theories with the idea of biological evolution.

Third, the Grand Evolutionary Synthesis in the perspective of complexity science. "The law of genetic variation and natural selection is the core of Darwin's theory of evolution, which is the law that people must master to understand the process of biological evolution. "As the most successful theory of evolution in human history, Darwin's theory of evolution has provided a rich source of ideas and knowledge about the diverse evolutionary processes in the world. In order to introduce the ideas of Darwinian evolution into other disciplines, many scientists and philosophers have gradually developed a broad system of evolutionary theory in the study of molecular, socio-economic, theoretical, material, and cultural systems, which is called generalized evolution or generalized Darwinism. This generalized theory of evolution has attracted the attention of many scholars, including physicists, philosophers, and psychologists, and many meaningful research works have been done for it "[5] For example, the famous molecular biologist Huxley introduced biological evolution to the field of molecular evolution, the philosopher James used evolution to explain the evolution of culture and thought, Darwin himself extended evolution to the evolution of language grammar and vocabulary, and so on. All of these show that Darwinian evolution has had a positive impact on the development of many disciplines. In addition, the idea of generalized evolution has also had a profound impact on the development of contemporary systems science. For example, the physicist Haken used Darwin's theory of biological evolution to explain the formation of the laser, and Simon's study of the evolution of computer systems shows that evolutionary theory can also explain this process.

2.1.2. The Formulation of Lazlo's Grand Evolutionary Synthesis View

Based on the achievements of systems science, Lazlo discussed the evolution of matter, life, society, and culture in a more comprehensive manner. Lazlo called this evolution a general evolutionary theory, and the significance of the general evolutionary theory is mainly reflected in the following aspects: First, historical materialism was established by unifying several evolutionary theories. According to historical materialism, they describe human society as a creation. Before Lazlo, there had been a number of scholars who discussed various areas of evolutionary theory. For example, Lamarck and Darwin, the founders of the theory of biological evolution, discussed biological evolution in a comprehensive manner. Marx and Engels described the evolutionary development of society and summarized it in five stages: "primitive

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society, slave society, feudal society, capitalist society, and communist society." [6] Unlike all other evolutionary theories, Lazlo's generalized integrated phylogeny is an unprecedentedly creative description of all evolutionary domains; second, Lazlo's description of all domains of evolution is not his own subjective hypothesis, but is based on the study of different sciences. These sciences include non-equilibrium thermodynamics, physical cosmology, evolutionary chemistry, macrobiology, and others. These sciences enabled Lazlo to unify all fields of evolution and allowed Lazlo to establish a generalized integrated theory of evolution.

Therefore, Lazlo's Grand Evolutionary Synthesis is the crystallization and sublimation of science and the latest overview of scientific development; thirdly, in the generalized integrated evolutionary theory, Lazlo did not simply stitch together the evolution of different evolutionary fields, but combined them organically according to certain laws, thus making the evolution of each field into an organic whole. Fourth, the development of science and technology has played a very important role in the evolution of society, and Lazlo realized this and pointed out that evolutionary dynamics is an interaction. This interaction is based on the links between the components within society and between society and its environment. Among these complex interactions, science and technology play a very special role as the driving force for the continuous advancement and development of society; fifth, for the process of cultural evolution, Lazlo proposes a new concept, cognitive images, and describes the development of cognitive images in detail. It embodies an aspect of the cultural evolution process that can further deepen the knowledge and understanding of culture. This leads to a better description of cultural evolution in general, including not only a general description of cultural evolution, but also an understanding of past and existing cultures.

3. The Ideological Source and Philosophical Foundation of System Management Theory

3.1. Sources of Ideas of System Management Theory

3.1.1. Traceability of System Ideas

Systems thinking has a long history of development, and as human society has progressed, systems thinking has gradually developed and matured. In this rich history, Eastern and Western cultures have played different influences on its development, and there are many representative historical figures and cultural ideas. In the 5,000-year history of Chinese civilization, the light of wisdom and thought shines everywhere, and the formation of systematic thought has been fully developed. The ancient Chinese texts contain a wealth of philosophical ideas about systems, such as the Zhou Yi, the Five Elements, and the Eight Trigrams of Yin and Yang, which view the entire world as a dynamic and changing whole, reflecting the idea of systemic wholeness; and the Taoist school of thought, represented by Laozi, which embodies the idea of wholeness and systematicity, with the Tao as the highest level of its doctrine; and the military warfare concept of In military warfare, the idea of "planning a tent, deciding to win a thousand miles" and other ideas reflect the idea of system, of which Sun Tzu's "The Art of War" is a typical representative; the famous water irrigation project Dujiangyan also reflects the idea of system in the construction process. Systematic thinking has been applied to all walks of life, including modern business management, and has contributed to the development of management thinking in different fields. In the traditional culture of the West, system thinking also occupies a very important position. The Miletus school, represented by Thales, pioneered the theory of cosmic system and the proposition that "water is the origin of all things"; in 1543, Copernicus (1473-1543) published "The Theory of the Movement of the Heavenly Bodies" and put forward the heliocentric theory; in modern times, G. W. Leibniz (1646-1716)'s 1646--1716); Nichola of Cusa, the unity of opposites; "I. Kant's

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(1724--1804) cosmology, which can already be called a systematic self-organized evolutionary universe, which contains the starting point of all progress. "[7]

3.1.2. The Emergence and Main Ideas of General Systems Theory

The basis of general systems theory is systems thinking, which is developed on the basis of the fundamental understanding of the essential properties of systems. After understanding the essential properties of the system, the core and key problem to be solved is how to optimize the system as a whole on this basis. General systems theory has the following main ideas. First, the idea of the simple whole: "The idea of general systems theory is mixed with the idea of the simple whole, and on the basis of the empirical understanding of the system, a philosophical understanding of the system is gradually formed." [8] Ancient Eastern philosophical thought and ancient Greek philosophical thought both contain the idea of the simple whole, which is expressed in the form of a simple dialectic. Although the simple holistic idea is very simple and primitive, it contains the correct concept of the whole. Secondly, mechanical holistic thinking: its holistic view is the simple summation of parts to form a whole, which is in conflict with the dialectical thinking and is essentially different from the systematic holistic view. Third, the idea of dialectical system: Marx's idea of dialectical materialism sees the whole world as an organically connected whole, and he summarized the idea of dialectical system in a high degree from a philosophical point of view. Fourth, the scientific system idea of quantitative analysis: Since World War II, with the continuous development of computer technology, communication technology, operations research, cybernetics and other fields, many complex systems represented by system engineering have emerged. These system problems need to be solved by quantitative methods, and the trend of quantitative research has developed in different disciplines. "In particular, since the 1960s and 1970s, the emergence and development of theories such as dissipative structure and covariance have led to the gradual development and improvement of the quantitative study of systems and the gradual formation of a comprehensive system of research." [9]

3.2. Philosophical Foundations and Issues of the Systems Management School

3.2.1. The Main Elements and Philosophical Foundations of The Systems Management School

The evolution of systems management theory is fundamentally inseparable from general systems theory. "Since its introduction by Henderson, the concept of "systems" has evolved into LV Bertalanffy's General Systems Theory, and later into Cybernetics, a theory developed by Norbert Wiener. The clever combination of cybernetics and information theory by Kenneth Boulding was a theoretical innovation that led to a new face of General Systems Theory: A Scientific Framework. The concept of "holism" was first introduced in the book Foundations, Development, and Applications of General Systems Theory. These scholars, as described above, have integrated the principles and methods of general systems theory with the practice of business management, and this initiative has laid a solid foundation for the emergence of the systems management school. "James E. Rosenzweig, one of the great management scholars of all time and one of the outstanding representatives of the systems management school, co-authored, with Johnson and Fremont Custer, the 1963 book Systems Theory and Management and, with Fremont Custer, the 1970 book Organization and Management: A Systems Approach and a Variational Approach. This book provides a more comprehensive discussion of systems management theory. [10] The systems management school, represented by Custer, recommends the use of the categories and principles of systems theory to analyze and study management problems in an integrated manner and to improve management efficiency through the application of systems management theory. Systems management theory is a theory that considers the business organization as an organic whole and the management

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operations as interconnected sub-businesses. A business organization is a dynamic artificial system that interacts with its surroundings.

The emergence of various management ideas has its philosophical basis. The systems management school of thought has its roots in an "all-encompassing" philosophy of systems. The philosophy of the 20th century has been called analytical philosophy. However, with the rapid development of contemporary science and technology, especially the emergence of many new disciplines and the development of new philosophies, the status of analytical philosophy has been declining since the 1950s. "The contemporary American philosopher Irving Lazlo argues that the enthusiasm of analytic philosophy to isolate the problems between concepts, semantics and logic is not conducive to scientific and technological progress, nor does it solve the crisis facing humanity. Therefore, in Lazlo's view, one should abandon the analytical philosophical system and return to an integrated philosophical system that analyzes and solves practical problems from a phylogenetic perspective, while applying a connectional perspective." [11] The problem of human cognition is probably one of the most controversial topics in the history of philosophy. Almost all philosophers have elaborated on it. Lazlo is no exception. He argues that human cognitive abilities have developed and evolved through the process of adaptation to the environment. However, once human understanding evolves, it acquires a conscious autonomous evolution, which is no longer necessary to ensure its survival.

3.2.2. Problems Existing in System Management Theory

In general, there are three main reasons why systems management theory has not received much attention. First, according to systems theory, each particular organization in an economic society is a suborganization of a complex social giant system. In order to study its organizational nature and behavior and to carry out effective management practices, we must always pay attention to the evolutionary patterns of society as a whole and consider it as a complete system. However, bourgeois researchers usually have difficulty in correctly revealing the laws of production and economy in capitalist society; secondly, systems theory researchers, led by Bertalanffy, try to build a universal system model based on the scope and foundation of general systems, in order to respond to changing management practices; finally, since general systems theory originally originated from biological research, it believes that, like the environment in which natural organisms live, human technological and social systems have a yet-to-be-developed nature. Finally, because general systems theory originated in biological research, it assumes that, like the environment in which natural organisms live, human technological and social systems have some common laws, structures, and properties that have not yet been discovered. As a result, some systems management scholars have often mistakenly applied the laws of biological systems to technical, social, and economic organizational systems and made unwarranted analogies.

The cooling of the systems management boom is due to the fact that it does not satisfy everyone, that it is very abstract and somewhat rudimentary, that it cannot be implemented, and that it is not easy to implement for managers who expect concrete practical guidelines, and that it is too variable, too complex, and too unpredictable for management scholars who are eager to conduct research and analysis. From this perspective, general systems theory, the ideological basis of systems management theory, has become the culprit of the obsolescence of the systems management school. Since its introduction, the general systems theory has been almost stagnant.

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4. Rethinking the System Management Theory in The Context of Lazlo's Generalized Integrated Evolutionary System Theory and Its Implications for Management Organizations

4.1. The Necessity and Possibility of Reflection on System Management Theory

4.1.1. Necessity of Reflecting on System Management Theory

All spheres of the empirical world are constantly in the process of evolution: in the universe above the head, and in the living world under the feet. The origin of these evolutionary processes belongs to the third state system, a dynamic matter-energy system with equilibrium. This system forms a unified continuum that connects the boundaries of classical disciplinary traditions, as is evident if we compare the universe with the systems that have always existed on Earth using some basic parameters. The relevant parameters include complexity, volume, combinatorial capacity, and level of organization. We have observed that as the binding capacity decreases, the level of organization increases accordingly. Thus, Lazlo suggests that "higher levels of organization offer new possibilities for the development of more complex organizations; the greater the variety of building blocks used to form the upper system, the more exotic the structure and function will become, and the new connections will be established between the associated lower subsystems. Thus, once a completely new organizational level is reached, evolution will create more advanced and diverse structures and functions". One of the major advances in the development of management theory undoubtedly lies in the use of general systems theory in an attempt to build a systems management theory. Systems management theory provides management leaders, especially top managers, with a basic concept and a general approach to considering management problems, but one cannot rely on these ideas and methods alone to cope with the ever-changing nature of practical management problems. Both the theory and practice of business management require a systematic approach. There is hardly anyone who does not support the use of systems analysis and systems thinking methodology in management. In fact, experienced professional managers have long been accustomed to viewing the complex situations they encounter as a network of many interrelated factors. Managers are often surprised when they find that some management scholars see systems analysis as a novelty, says Koontz. Thus, it has been suggested that, like the power theory, the systems management approach is, in a sense, an unfulfilled promise. With all of these arguments, a reworking of systems management theory is imperative.

4.1.2. Possibilities for Upgrading Systems Management Theory

However, as the development of systems science entered the 1980s, a new integrated approach to systems research emerged. This grand, new convergence of the mainstream emerged in China. Qian Xuesen, one of the outstanding representatives of the Chinese school of systems science, established the disciplinary position of systems science in the modern science, technology, and economic system and clarified the system structure of systems science based on the summary of the whole process of systems research in the past half century. The integrated approach is a milestone for the development of systems science. This is because the mature theories in systems science are based on simple systems or simple large systems. Some systems with many different situations (e.g., economic management systems) are essentially complex giant systems. The integrated approach, as a scientific approach to the study of complex giant systems, has the important characteristic of being scientifically tractable. This is what scholars and managers who want to apply systems theory to the field of management are looking for.

According to Lazlo, the levels created by the evolution of systems are not only structural, but also control levels. At the control level, higher-level systems can control certain aspects of the behavior of lower-level systems. Regardless of the details of the lower-level units, at the level

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of control over the higher levels, relatively complex systems at the lower levels can be purposefully selected to organize the systems at the higher levels so as to obtain correspondingly effective control, but not too complex. He also quotes biophysicist H. Patti, who says that selective neglect of irrelevant systems can be used to control the system. Patti says that selective ignoring of irrelevant details is a universal property of hierarchical control systems. Hierarchical control always results from internal organizational constraints that force lower-level units to merge into a collective pattern of behavior that is independent and distinct from these units and that produces dynamic behavior. Advanced systems are not produced with complex system functions; they can also be produced with simplified system functions. However, once a new level emerges, the system at that new level will evolve incrementally, becoming progressively more complex as it evolves. In summary, systems management theory and practice have evolved over more than half a century. Although it has brought tremendous changes to our society, it has not yet reached its full effectiveness and potential, and it still does not meet the needs of people to advance human progress and transform the objective world. Where is systems management theory headed? Clearly, its future is intertwined with the future of management science and systems science. For example, today's management is clearly immature in its analysis and interpretation of economic phenomena. Although economics has evolved over the past 200 years since Smit, at least in terms of its practical approach, it is still far from meeting the standards set by the natural sciences for a mature discipline, and the current state of management is very different from the theory.

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