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Logical Structure School II (Nine Applied Theories)

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Abstract

Based on existing logic theories, this paper proposes nine classical application theories. These consist of Logical Spacetime (which includes Logical Spacetime and Logical Mathematics and Physics), Logical Fields, Logical Networks, Life Communications, Life Reasoning Activities, Life Cycle, Life Data, Life Programming and Life Learning Strategy. The application theories describe a panoramic view of the technological development of their three main subjects (artificial intelligence, robotics and intelligent society) with the strength of one school of thought.

Keywords

Purpose, Logical Subject, Life-Giving Logical Equation Structure Diagram, Bionic Logic

1. The Theory of Logical Space

Introducing the "School of Logic and Structure".

As an introduction, I will provide an overview of the Logical Structure School. It is becoming increasingly clear that intelligent technology will be the driving force behind all human endeavors in the future, and determine the development of any country. Intelligent technology will usher in a new revolution for humanity - the Intelligence Revolution - fundamentally transforming the entire foundation of human survival and development. Within this revolution, I have proposed the "Logical Structure School", a self-contained academic system of thought, featuring the following ideas:

① The invention of the "Life-giving Logical Equation Structural Diagram" and a complete theoretical framework.

This is the first revolutionary tool in the intelligent technology revolution, and

is of paramount importance. It can be said that the transformation of humanity by intelligent technology will begin with the life-giving logical equation diagram.

② Serving as the foundation for next-generation software operating platforms.

③ Serving as the foundation for next-generation network software operating platforms.

④ Serving as the organizational model for next-generation network structures.

⑤ Serving as the organizational model for next-generation integrated circuit chips.

For over half a century, humanity has relied on the John von Neumann architecture to design central processing units, but I now propose a new concept: While developing the software operating system using the life-giving logical equation diagram, we can simultaneously redesign the central processing units with the same structure; The software operating platform's logic equation structure diagram, including its equation unit generator, clock system, mailbox, address system, registers, and other essential components, would be integrated into the central processing unit. The equation unit generator, clock system, communication system, address manager, and registers would replace the traditional controllers and arithmetic logic units, with auxiliary facilities in diagram form, enabling a collaborative approach between hardware and software to realize the Life-giving Logical Equation Diagram; The equation generator would replace the arithmetic unit, redesigning computation methods. Instead of conventional arithmetic operations, the equation generator's ability to analyze, reason, and generate new equations would enable intelligent computation; The clock system would issue clock variables to control all equations and hardware devices, creating intelligent control in place of more traditional control mechanisms. The equation unit generator would manage the clock system, dynamically generating or eliminating clock equations as needed; The communication system would continue to utilize communication variables to manage the mailbox for all structure diagrams. However, the equation unit generator would control the communication system by generating or eliminating communication equations in a dynamic manner; The address manager would continue to issue address variables using address equations to allocate new equation units and variable sets. The equation unit generator would then control the address manager by generating or eliminating address equations. Additionally, the address manager would also oversee the management of the central processing unit's registers; Auxiliary facilities would exist in the form of logical equations, and be managed by the equation unit generator.

I will continue to refine this research! If feasible, this will mark the beginning of a revolution in software, hardware, and networks driven by the equation structure diagram, as well as the transformation of the Von Neumann architecture. This can be achieved by combining the equation diagram with quantum and biological computing.

⑥ Utilizing the equation structure diagram as the organizational framework for chips, forming the hardware infrastructure of intelligent machines and

intelligent networks.

⑦ Utilizing the equation structure diagram to implement intelligent analysis, intelligent information reasoning, and intelligent structural reasoning; utilizing the equation structure diagram-based reasoning to create artificial intelligence and robotics; and utilizing the equation structure diagram-based intelligent network analysis, intelligent network information reasoning, and intelligent network structure reasoning to build an intelligent society.

⑧ Transforming traditional mathematics by replacing its research tools with equation diagrams; traditional mathematical results will be used to construct the relationships between numbers in logical equations, while new mathematical research will adopt the equation diagram as both working and descriptive languages.

⑨ Transforming traditional physics by re-framing existing physical research results using the equation diagrams; new research in the world of physics will also use the equation diagram as both working and descriptive languages.

⑩ Revolutionizing all fields of human academic research.

The equation structure diagram transforms mathematics into Logical Mathematics, and physics into Logical Physics. In turn, Logical Mathematics and Logical Physics create Logical Space-Time. The difference between Logical Space-Time and traditional space-time is that the former exists in the form of the equation structure diagram.

By revolutionizing all human academic research through equation diagrams, bionic logic, logical mathematics, logical physics, and logical space-time, six key points emerge: By re-framing existing research results using the equation structure diagram, the Logical Structure School will ensure the inheritance of established truths, guiding research towards a scientific path and avoiding pseudo-scientific approaches; New academic research will utilize the equation structure diagram as both working and descriptive languages; The life-giving logical equation diagram will be used to model all research objects; Extensive interdisciplinary collaboration and comprehensive research will be fostered across all fields; New research approaches will be created for collaboratively studying academic objects of intelligent society; Intelligent machines and intelligent networks can be extensively applied in the form of equation structure diagrams to conduct academic research.

Transforming all human industrial and agricultural practices.

There are five key points in this section: Utilizing intelligent societies in the form of equation structure diagrams to conduct industrial and agricultural production; Establishing widespread industrial and agricultural models built upon the equation structure diagram; Employing intelligent society control, intelligent society research, intelligent industrial and agricultural models, and intelligent network development to create distributed production units, with logistics organized in a logical network; Adopting a reformed academic approach based on the equation structure diagram for industrial and agricultural research; Extensive use of intelligent machines and intelligent networks, with both their logical structures based on the equation structure diagrams.

While proposing the equation structure diagram as a transformative tool, the Logical Structure School also advocates for an intelligent society order based on civil rights, human rights, and the rule of law, aiming to prevent potential disasters caused by intelligent warfare and intelligent authoritarianism.

The majority of these ideas have been addressed in the first and second papers, while the remaining parts will be developed and presented in the upcoming third paper.

The first paper introduced five foundational theories: The Purpose of the Logical Structure School, The Subjective Initiative Structure, Subjective Initiative Structure Engineering, The Life-Giving Logical Equation Structural Diagram, and Bionic Logic. These theories provide direction, methodology, and evaluation criteria for the foundational research of artificial intelligence, robotics, and intelligent societies.

The second paper introduced nine applied classical theories: Logical Spacetime and Logical Mathematics and Physics, Logical Fields, Logical Networks, Life Communication, Life Reasoning Activity, Life Cycles, Life Data, Life Programming and Life Learning Strategies. These theories, which are based upon the five foundational classical theories from the first paper, provide a comprehensive overview of the technological development of the three key subjects, namely artificial intelligence, robotics and intelligent societies, from the perspective of an entire academic school.

The third paper, The Logical Structure School III (Five Working Steps) will build upon the five foundational classical theories from the first paper and the nine applied classical theories from the second paper. It will introduce five working methods for the intelligent era, namely Hermeneutics, Development, Normativity, Intersectionality and Foundations, which are intended to serve as a starting point for further exploration. Hermeneutics will focus on the intelligent analysis of the Logical Equation Diagram; Development will explore the paths to realizing the ideals of the Logical Structure School; Normativity will examine how to establish an intelligent social order based on civil rights, human rights, and the rule of law; Intersectionality will investigate academic, industrial and agricultural intersections; and Foundations will study how to translate the theories of the Logical Structure School into practical applications.

Origin of this Research

Prior Research

Humans establish subjective order based on subjective laws; an example of this is using a government to regulate social order. Similarly, they also establish objective order based on objective rules; for instance, ancient agricultural practices scheduled farming based on the growth patterns of crops, while ancient animal herders regulated the order of their lives according to the availability of water and grass based on the growth patterns of their livestock. Early industrial civilization was governed by Newtonian mechanics, an objective set of rules that dictated the industrial order (including the order of machinery, the order of factory

production, the technological order of nations and humanity, and the order of agriculture and industry). Later, the order of energy automation and industry was regulated by the objective rule of relativity. With the invention of the computer, John von Neumann proposed the von Neumann architecture, which established the objective rules and order for the composition of computers. As humanity stands on the brink of the intelligent era, we find ourselves ignorant of the objective rules and order that will govern this new age. Current intelligent technologies merely scratch the surface, still using the outdated technology of the industrial era. Without understanding the objective rules of the intelligent era, we cannot explore its new order. We will also be unable to find the most suitable path for developing artificial intelligence, robotics and intelligent society, and will thus face a number of ethical risks. In light of this, the Logical Structure School has pioneered the exploration of the objective rules and order of the intelligent era.

The published paper "The Fundamental Theory of Artificial Intelligence - Logical Structure and Logical Engineering" is the Logical Structure School's first phase of research, exploring the objective rules of the intelligent era. The second phase then shifted its focus from general study to the structure of subjective initiative, also exploring the order of the intelligent era. Due to its extensive scope, this research is presented in three separate papers. The first paper, "Logical Structure School I (Five Fundamental Theories)", explores the objective rules of the intelligent era, proposing five fundamental theories for research, and providing preliminary insights and examples of the basic theories. The five theories put forward are ① The Purpose of the Logical Structure School; ② Logical Structure; ③ Logical Engineering; ④ Logical Equation Structure Diagram Theory; and ⑤ Bionic Logic Theory. The second paper, "Logical Structure School II (Nine Applied Theories)", explores the objective order of the intelligent era, proposing the following concepts: ① Logical Space Theory; ② Logical Field Theory; ③ Logical Network Theory; ④ Life Communication Theory; ⑤ Life Reasoning Activity Theory; ⑥ Life Cycle Theory; ⑦ Life Data Theory; ⑧ Life Programming Theory; and ⑨ Life Learning Strategies. This paper engages in some applied research in the intelligent era, and preliminarily explores the main theories and example cases. The third paper, "Logical Structure School III (Five Working Steps and Several Issues to be Explained)", proposes five working methods, examines a basic exploration of certain theories and cases, and explains various issues. The five working methods are ① Hermeneutics; ② Development; ③ Normativity; ④ Intersectionality; and ⑤ Fundamentals. These three pioneering works all serve as a foundation for new research into the intelligent era.

This Paper

This paper aims to present a panoramic view of intelligent application research in the intelligent era, and is divided into nine parts: ① Logical Spacetime and Logical Mathematics and Physics, ② Logical Fields, ③ Logical Networks, ④ Life Communications, ⑤ Life Reasoning Activities, ⑥ Life Cycle, ⑦ Life Data, ⑧ Life Programming, and ⑨ Life Learning Strategy.

1.1. The Purpose of the Logical Structure School and the Theory of Logical Space

The Purpose of the Logical Structure School proposes a "new subjective logic". In short, this involves using objective logic to study issues and subjective logic to solve them, replacing the objective material world with a new objective, logical world, and replacing our traditional perspective on the universe, outlook on life, and general methodology with a new perspective based on objective logic. The subjective logic here refers neither to traditional faith or religion, nor to individualism. Instead, it is a form of subjective logic constructed from civil rights beliefs, human rights beliefs, and the rule of law, all of which are essential for an intelligent society. Its greatest function lies in rejecting the individualism that harms intelligent society, as well as the evils of intelligent warfare and intelligent rule brought about by individualism.

Both the objective logic for studying issues and the subjective logic for solving them mentioned here require the universe to be logical. By replacing the material universe with a logical universe, the Logical Structure School believes that the space-time of the intelligent era should be logical rather than material. Based on this, the Theory of Logical Space is established, designed to meet the development needs of the three main bodies of the intelligent era (artificial intelligence, robots, and intelligent society).

The theory of logical space requires humans to establish a new type of mathematical and physical theory for logical mathematics, establishing the following accepted principle: all material cognition must become logical cognition, that is, matter is actually a logical subject; all material phenomena become logical phenomena, that is, material phenomena are actually logical phenomena; the relationship between matter is actually a logical relationship, and logical phenomena and logical relationships are all logical subjects. Based on this, the concept of a logical subject representing matter is established, which is then further developed to represent time and space. After this, both space-time and matter can be represented by the single concept of a logical subject. The concepts of logical phenomena and logical relationships are also established. Logical space-time, logic, logical phenomena, logical relationships, and the logical universe are used to transform and develop existing mathematical and physical theories. Just as relativity needed to be developed where Newtonian mechanics was unable to explain the physical world, the theory of logical mathematics now needs to be developed where existing natural sciences are unable to explain the latest phenomena. The development of the three main bodies of the intelligent era, namely artificial intelligence, robots and intelligent society, requires the theory of logical mathematics and physics, as well as the logical space-time and logical universe they have created.

1.2. Structure of Subjective Initiative and the Theory of Logical Space

The structure of subjective initiative is a logical structure, requiring existence in

both logical space-time and in the logical universe. The external communication of the structure of subjective initiative requires a logical network to transmit logic. This logical network needs to exist in a logical environment, that is, a logical field, while the existence of a logical field requires logical space-time and the logical universe to exist.

Therefore, the existence or production and use of the structure of subjective initiative requires logical space-time, while logical space-time needs to be based on the theory of logical mathematics and physics (*i.e.*, logical mathematics and logical physics). The theory of logical mathematics first requires the creation of a number of common sense concepts, including the following: time, space and matter are all logical subjects; the universe is a logical subject; matter phenomena are all logical phenomena; the relationships between forms of matter are all logical relations; universal connection is a universal logical relation; logical phenomena and logical relations are also logical subjects. It uses logical equation structure diagrams to describe everything in the universe and to study tantalizing questions such as "What is outside the universe?", "How did the universe come into being?" and "What existed before the universe came into being?" It uses bionic logic, as well as logical mathematics and physics, to construct the life-giving logical equation structure diagram of the logical universe. Moreover, where Newtonian mechanics is not enough, relativity is used. Where relativity is not enough is where the theory of logical mathematics and physics needs to be established. The tools for establishing the theory of logical mathematics and physics include the life-giving logical equation structure diagram and bionic logic. Mature logical mathematics and physics can then be used to construct the logical universe.

1.3. Subjective Initiative Structure Engineering and the Theory of Logical Space

Subjective initiative structure engineering is a form of logical engineering, and has two main requirements: ① The product of logical engineering is a logical structure which needs to exist in a logical environment, and the logical environment needs to exist in logical space-time; ② The process of logical engineering is the process of developing a logical structure, which also needs to exist in logical space-time. In this way, both the subjective initiative structure engineering and the subjective initiative structure require existence in logical space-time.

1.4. Bionic Logic and the Theory of Logical Space

The tool for constructing logical space-time is the life-giving logical equation structure diagram, while the tool for constructing the life-giving logical equation structure diagram is bionic logic. The word 'bionic' is used here as it not only simulates life but also refers to using logical equations to simulate all logical subjects, logical phenomena, and logical relations in the universe. Taking a star as a life with a clock cycle, and using a life-giving logical equation structure diagram to simulate the complete clock cycle of a star is also a form of bionic logic.

1.5. Case Study

There are several questions: "What is outside the universe?", "How did the universe come into being?" and "What existed before the universe came into being?" For these mysterious questions, modern humans often use conjectures as answers. However, these conjectures are no different from myths, meaning they have no practical significance. Modern humans also believe that the reason why these mysteries cannot be solved is that the existing technology and the way we observe phenomena is insufficient. However, as human cognition continues to advance, we may find that if we continue to advance along the existing path of technological development, humans will never obtain the technology needed to understand these questions, and may even be unable to further develop other technologies. What is the problem?

We need to be skeptical of the natural sciences that human industrial society regards as gods. There are problems with using natural sciences to understand the universe. Natural sciences are not enough to develop intelligent subjects! Moreover, as human technology advances into the intelligent era, humanity will find that seeking answers to the mysteries of the universe is closely related to its own destiny, while at the same time, new scientific theories must be invented to replace the existing natural sciences to develop intelligence. What should we do? The logical structure school has put forward its own point of view: "New Subjective Logic". In short, this suggests using objective logic to study problems and subjective logic to solve them, and advocates for replacing the objective material world with a new objective logical world. The universe is logical rather than material. Newtonian mechanics shall continue to be applied where it is still applicable, but where this becomes insufficient, relativity shall be used. When relativity also falls short, it will be necessary to invent a theory of logical space-time to continue the development of mankind. The theory that the universe is logical shall be used to transform and advance existing mathematical and physical theories, resulting in a new body of knowledge called the theory of logical mathematics and physics, which will help mankind progress in the intelligent era, and obtain the knowledge necessary to develop the main body of the intelligent era. The tool for exploring the profound mysteries of logical space-time is the life-giving logical equation structure diagram, while the current stagnation in natural science is merely the anticipation of the birth of logical mathematical and physical theory!

Another issue is that the original mathematical and physical research has led to the invention of the theory of multidimensional space. However, how can humanity make use of this multidimensional space with just one origin and a cluster of coordinates? It is becoming increasingly clear that such multidimensional space can only allow gods to enter higher spaces. The ideal of humans using multidimensional space is an unachievable myth that will never be realized! What should we do? The logical structure school proposes that humanity should first create high-dimensional intelligence, and then apply the theory that correlates high-dimensional intelligence with high-dimensional space to enter, understand and

utilize high-dimensional space through high-dimensional intelligence. However, this path still has one important premise: the belief that the universe is logical.

1.6. Proposing the First Applied Classical Theory

The Logical Structure School proposes its first applied classical theory - *Logical Space-Time*; this encompasses two fundamental applied theories: Logical Space-time, and Logical Mathematics and Physics.

There are several key points to the theory of logical space-time:

① The common sense on which logical space-time is established maintains that time, space and matter are all logical subjects, material phenomena are logical phenomena, and the universal connection between matter is a logical relationship. Logical phenomena and logical relations are also logical subjects;

② Logical subjects are explained by three sets: the description set, the attribute set, and the function set. These three sets can be unified into a life-giving logical equation structure diagram. As long as the output variable set includes the union of the three sets, then the method for identifying the logical subject is to determine whether the subject can be represented as a life-giving logical equation structure diagram, and whether the output variable set of this life-giving logical equation structure diagram contains the union of the description set, the attribute set, and the function set;

③ When using a life-giving logical equation structure diagram to describe a logical subject, three tools need to work together, namely bionic logic, the life-giving logical equation structure diagram, and logical mathematics and physics.

Bionic logic constructs a life-giving logical equation structure diagram by means of bionic processes. The word bionic refers to identifying the structure, activity, and cycle of the logical subject. The life-giving logical equation structure diagram is then constructed based on the bionic results of the logical subject. Here, "life" refers to the activity cycle of the logical subject, including both the non-living logical subject and life itself. For subjects that cannot yet be modeled bionically, an artificial design is used. The most important work in this process is that the equation unit generator cooperates with the clock equation system to construct the activities and cycles of the logical subject.

Logical mathematics includes both logical mathematics and logical physics. Logical mathematics is a tool for establishing the equations of a life-giving logical equation structure diagram, while logical physics assists the bionic logic in identifying the structure of a life-giving logical equation structure diagram.

④ The following logical fields and logical networks are all described by life-giving logical equation structure diagrams. In this context, "life" refers to the clock cycle, while the birth and disappearance of logical units are described using the equation unit generator.

There are several key points to the theory of logical mathematics:

① The transformation of traditional mathematics to logical mathematics is reflected in two key aspects: One is to change the research of traditional

mathematics into numbers to the research of logical mathematics into logical equations, and the other is to classify the research results, research methods, and research directions of traditional mathematics into the field of creating the binary and multivariate relationships of logical equations;

② The first task of logical mathematics is to express the logical equations of everything in the universe derived from bionic logic. The second task is to study how to improve the ability of the equation unit generator in the life-giving logical equation structure diagram, how to generalize the known logical paths between inputs and outputs into logical equation units, and how to create logical equation units that establish the logical relationship from input to output once the input and output values are known. The third task is to classify traditional mathematics into the research field of logical relationships, and to apply this to the construction of binary and multivariate relationships within logical equation structure diagrams.

There are several key points to the theory of logical physics:

① The transformation of traditional physics into logical physics is reflected in: transforming physical definitions and theories into logical subjects, and constructing a life-giving logical equation structure diagram; in the future, all research results within logical physics will be expressed using logical subjects and their life-giving logical equation structure diagrams;

② Logical physics has three expression and research tools: bionic logic, the life-giving logical equation structure diagram, and logical mathematics. Bionic logic imitates the space-time of the universe and everything present within space-time. The life-giving logical equation structure diagram further expresses bionic logic as a structure diagram. The birth, activity, and demise of everything is realized by the equation unit generator. Life involves simulating the clock cycle of everything. Logical equations are specifically constructed using logical mathematics, while traditional mathematics is used to construct the binary and multivariate relationships of equations;

③ The traditional physics that has now become the logical subject of the newly created logical physics discipline is used to help bionic logic identify the structure of the life-giving logical equation structure diagram;

④ The creation of logical physics is based on several fundamental concepts: Time, space, and matter are all logical subjects; material phenomena are logical phenomena; extensive connection is a logical relationship; logical phenomena and logical relations are all logical subjects; and logical physics is used to establish a logical space-time;

⑤ The study of logical space-time and the laws governing the logical subjects, logical phenomenon subjects and logical relationship subjects is conducted using the life-giving logical equation structure diagram of the logical subject theory to help bionics, while the description set, attribute set and function set of the logical subject can all be described using a life-giving logical equation structure diagram.

In this way, the logical structure school uses the life-giving logical equation

structure diagram to inherit the activities of traditional mathematical, physical, and logical research. The logical structure school, in its creation and development of logical space-time and logical mathematics and physics, firmly rejects the development path of pseudoscience. However, both logical space-time and logical mathematics and physics are nascent fields that need to be further enriched and developed, and neither shall be arbitrarily denied. The development of the intelligent era will undoubtedly rely on the two fundamental applied theories of logical space-time and logical mathematics and physics. (Citing references [1]-[6])

2. Theory of Logical Fields

2.1. The Purpose of the Logical Structure School and the Theory of the Logical Field

The Purpose of the Logic Structure School proposes a "new subjective logic". In a nutshell, this new subjective logic uses objective logic to research issues and subjective logic to solve them. To fulfill this purpose, the Logical Structure School puts forth two foundational applied theories: 1. Logical Space-Time, and 2. Logical Mathematics and physics. The concept of logical mathematics and physics serves as the foundation for logical space-time and encompasses both logical mathematics and logical physics.

Following the establishment of these two fundamental applied theories, the Logical structure school introduces another novel applied theory: the logical environment, which they termed the logical field.

2.2. Case Study

Why use "logical field" instead of "scenario"? The concept of a "logical field" encompasses a broader range than a simple "scenario". It includes all physical fields and social fields (such as markets), as well as all natural and social environments. The reason for using the term "logical field" is that the effects produced within this field are logical effects, and the combined force of various influencing factors is a "logical force". The notion of a "scenario" obviously lacks the conceptual capacity to address the demands, control, and environmental influences associated with logical significance.

2.3. Proposing the Second Applied Classical Theory

This section introduces the second applied classical theory proposed by the Logical Structure School: *The Logical Field*. A logical field refers to a logical environment. The structure of a subjective initiative, as the most crucial logical subject in intelligence research, necessitates existence within a logical environment, engaging in a form of interaction that will mutually shape both entities. The logical environment, in turn, must exist within logical space-time, with both entities mutually shaping the other. Logical space-time serves as the environment for the logical environment, and both exist within the same space-time. Therefore, the Logical Structure School first established the theory of logical space-time, designed to

encompass both logical space-time and logical mathematics, and subsequently developed the theory of the logical environment, which they termed the "logical field".

2.3.1. What is a Logical Field?

A logical field is an environment composed of logical structures, with logical structures being equivalent to logical subjects. Interactions occur between these logical structures, and the interplay of these interactions forms the field. Logical fields can be categorized as natural fields, social fields, or integrated fields encompassing both natural and social elements. A logical field exerts a logical environmental influence on logical structures, resulting in a phenomenon of mutual shaping between the logical structure and the logical field. Logical structures engage in mutual shaping with the logical field through the perception and transmission of logic. Logic transmission occurs externally through logical networks, and internally through logical buses within the logical structure. The logic perceived by the logical structure is a form of data logic. A logical field can be represented as a life-giving logical equation structure diagram. Constructing such a diagram for a logical field involves the following key points: ① The required construction tools include bionic logic, life-giving logical equation structure diagrams, and logical mathematics and physics. These tools function similarly to their counterparts in general structure diagrams; ② Begin by creating a life-giving logical equation structure diagram for the logical subject within the logical field. The selection of the logical subject is determined based on the requirements of the research object; ③ Represent the transmission paths of equation units within the logical subjects of the logical field. Once marked, the structure diagrams of various logical subjects within the logical field form a complete diagram, representing the structure of the logical field; ④ The clock equation system and the equation unit generator of the life-giving logical equation structure diagram are distributed within the structure diagrams of their respective logical subjects. These components are distributed within the structure diagram of the logical field; ⑤ If the research object is one or several logical subjects within the logical field, then the mutual shaping between the research object and the logical field is represented by the directed paths of equation units exchanged between the research object and other logical subjects. In other words, the research object and the logical field share a single structure diagram; ⑥ Here, "equation units" refer to constants, variables, equations, systems of equations, or structure diagrams of varying scales. Different logical subjects can transmit various equation units to each other, and the directed transmission paths can be labeled with weights to indicate their order.

2.3.2. Modified Transmission

After an equation unit is transmitted from one logical subject to another, the logical subject receiving the equation unit will modify the equation unit received from the previous logical subject before transmitting its own equation unit. For instance, the Sun exerts a gravitational pull on the Earth, and the Earth, in turn,

exerts a gravitational pull on the Moon. When the Sun's gravitational pull on the Earth changes, the Earth modifies its gravitational influence on the Moon due to changes in its orbit or other factors. In this case, gravity represents a logical equation structure diagram of the carrying capacity of the gravitational field. The Earth performs a form of modified transmission by modifying the equation unit transmitted to it by the Sun before transmitting it in turn to the Moon. This phenomenon of logical networks and modified transmission is ubiquitous in all interactions within physical fields and applies to social fields as well. For instance, assume that the influence of Chinese law on country A is a legal logical structure diagram carried by legal data logic. Country A's legal influence on Country B, in terms of transmitting legal logic equation units, is affected by the changes in the legal logic equation units transmitted by China to country A. Country A then performs modified transmission on the legal logic equation units received from China. Integrated fields can be studied in a similar manner. The process of modified transmission can be described as follows: One logical subject transmits an equation unit to a second logical subject, thus altering the second subject's structure diagram. As a result of this alteration, the second logical subject modifies the equation unit and transmits it to a third logical subject. The change from the second to the third subject is a result of the change from the first to the second subject; hence, the transmission from the second to the third is a modified transmission of the information received from the first.

2.3.3. Natural Logical Fields

Natural logical fields correspond to what is referred to as Field Theory in traditional physics. Ultimately, natural logical fields are composed of matter, and the interactions within these fields are the interactions between different forms of matter. However, in this context, matter is treated as a logical subject, and the research tools shift from physics to logical physics.

2.3.4. Social Logical Fields

Social logical fields represent another dimension of study within human society. In essence, social logical fields are composed of people, and the function within these fields lies in the interaction between people. In this context, "people" are considered logical subjects or structures of subjective initiative.

2.3.5. Perceiving Logical Fields

For a logical subject to engage in mutual shaping with a logical field, it must first perceive the logical field. This perception encompasses the perception of logical subjects within natural logical fields, the perception of human logical subjects within social logical fields, and the combined perception of both natural and social logical fields by a logical subject. For instance, a person feeling cold is perceiving the natural logical field, while a person feeling mistreated by their superior is perceiving the social logical field. If a person feels both cold and mistreated, leading to a feeling of dejection, this represents a combined perception of both natural

and social logical fields.

The perception of a logical field by a logical subject is achieved through the directed transmission of equation units.

2.3.6. Environmental Influences of Logical Fields

Mutual shaping exists between logical subjects and logical fields. The logical field influences logical subjects by either supporting or opposing their life activities or life cycles. For instance, a logical field can provide the necessary resources for a logical subject while also removing any waste produced, thereby exerting an environmental influence. Conversely, a logical subject can influence the logical field through its life activities or life cycle, resulting in the shaping of the environment. Examples include deforestation by humans for survival, and the current efforts to reduce greenhouse gas emissions.

2.3.7. Demands and Control within Logical Fields

① Demands within Logical Fields

Logical subjects and logical fields mutually shape each other, and this mutual shaping is realized through the exchange of equation units. The shaping of a logical subject by a logical field encompasses demands, which are expressed through equation units. For example, cold weather creates a demand for warmer clothes, and the desire to be accepted at a university creates a demand for studying harder.

② How to Obtain Demands within Logical Fields

Obtaining demands within a logical field involves a number of steps. First, the relevant equation units must be obtained through equation unit transmission. These obtained equation units then alter the original structure diagram, resulting in a new structure diagram with new input variables. These new input variables constitute new demands. Finally, the logical subject fulfills these new demands through its new life activity patterns.

③ Control within Logical Fields

The mutual shaping between logical subjects and logical fields includes the control exerted by the logical field on the logical subject. This control is achieved by transmitting equation units that modify the structure diagram of the research object. Examples include Earth's gravity and human laws. The control exerted by the logical field is expressed through the transmission of equation units. For instance, body weight can be transmitted through gravitational interactions, while human laws can be transmitted through education.

④ How to Obtain Control within Logical Fields

When a logical subject exists within a logical field, the logical field can exert control over that logical subject. Control is transmitted in the form of equation units within the logical field. The function of the logical field is to transmit equation units, such as the gravitational field transmitting gravity or the government network transmitting laws. The prerequisite for a logical subject to be controlled by a logical field is to be situated within that field. The logical field controls the logical subject due to the laws of mutual shaping. The

expression of control is realized through the transmission of equation units and the subsequent modification of the research object's structure diagram. Control influences the life activities and life cycles of the logical subject, while the controlled logical subject can transmit such control within its own structure diagram.

It is important to note that the logical structure school emphasizes the fact that, while logical fields exchange logic, the transmission within logical subjects also involves logic. For the purposes of understanding and research, the logical structure school represents this transmitted logic as equation units, using constants, variables, equations, systems of equations, or structure diagrams of varying sizes to denote logic. For instance, when sunlight falls on the Earth, the logic is represented by "sunlight". To facilitate understanding and research, sunlight can be expressed as an equation unit. (Citing references [2]-[5])

3. The Theory of Logical Networks

3.1. The Purpose of the Logical Structure School and the Theory of Logical Networks

Guided by its core purposes, the Logical Structure School first established the concept of logical space-time. Building upon this foundation, they then introduced the concept of the logical field, utilizing logical space-time as its environment. Further expanding upon this framework, they developed the theory of the logical network, employing the environment of the logical field. The tools employed to describe and study logical networks include bionic logic, life-giving logical equation structure diagrams, and logical mathematics and physics.

3.2. *Structure of Subjective Initiative* and the Theory of Logical Networks

The logical network represents a crucial component of the structure of subjective initiative. The logical network external to the structure of subjective initiative is referred to as the "external network", while the network internal to the structure is known as the "internal network". The structure of subjective initiative utilizes both external and internal networks to facilitate logical communication with its internal and external environments. Based on bionic logic, the internal network within the subjective initiative is also referred to as the "nervous system".

3.3. Subjective Initiative Structure Engineering and the Theory of Logical Networks

Subjective initiative structure engineering refers to the engineering process involved in producing structures of subjective initiative. This process encompasses the production of internal logical networks, as well as the development of mechanisms for sending and receiving information between the subjective initiative and external logical networks, akin to postal services within commercial or societal organizations.

Constructing both internal and external logical network functions for the structure of subjective initiative is a critical task and serves as a vital foundation for the communication function of subjective initiative.

3.4. Life-Giving Logical Equation Structure Diagrams and the Theory of Logical Networks

The tools for describing and studying logical networks include bionic logic, life-giving logical equation structure diagrams, and logical mathematics and physics. The network diagram within the life-giving logical equation structure diagram of a logical field represents the external network diagram. In this network diagram, each node represents a logical subject, and the weighted directed paths connecting these nodes represent the transmission paths of equation units, with weights indicating the order of transmission. Similarly, the network diagram within the life-giving logical equation structure diagram of a logical subject represents the internal network diagram of that particular logical subject. In this case, the nodes represent equations or equation structure diagrams of varying scales, and the weighted directed paths connecting these nodes depict the transmission paths of the equation units. Equation units encompass constants, variables, equations, and equation structure diagrams of various sizes, while the respective weights indicate their order of transmission.

3.5. *Bionic Logic* and the Theory of Logical Networks

Bionic logic works together with logical physics to create life-giving logical equation structure diagrams, while logical mathematics is employed to formulate logical equations. Both internal and external logical networks rely on the framework provided by these life-giving logical equation structure diagrams. Bionic logic therefore plays a significant role in describing and researching logical networks, and utilizes real-world logical networks as an inspiration to construct internal and external logical networks tailored to the logical communication needs of the structure of the subjective initiative.

3.6. Case Study

Currently, logical networks primarily transmit equation units, as exemplified by the internet. However, in a more advanced stage of development, logical networks could potentially transmit entire logical subjects, similar to the concept of a time machine. This remains a highly speculative and enigmatic concept, whose technological roadmap has not yet been fully grasped by the logical structure school. They can only affirm that the fantasy of a time machine is linked to the ideal of logical networks transmitting logical subjects.

3.7. Proposing the Third Applied Classical Theory

This section introduces the third applied classical theory proposed by the Logical Structure School—*The Logical Network*. The key points are as follows.

3.7.1. Logical Networks

A logical network refers to a network that facilitates the interaction between logical subjects. It encompasses a broader scope than the commonly understood internet or 5G networks. Natural networks within this framework transmit logical subjects, with the interactions themselves being considered logical subjects. Artificial networks currently transmit equation units but may evolve in the future to transmit entire logical subjects. Equation units include constants, variables, equations, and equation structure diagrams of varying sizes.

3.7.2. Natural Networks in the Universe

Numerous natural networks exist in the universe, such as the water network on Earth, the movement of winds and ocean currents, the transmission of crust dynamics and geocentric changes to the Earth's surface, interactions and transmissions between microscopic particles, gravitational networks in macroscopic space, transmission of light and radio waves, temporal networks, and spatial networks. Natural networks also include human social networks. There are numerous types of social networks, starting with the internet and 5G, followed by transportation networks like roads, railways, waterways and air routes, as well as urban and rural networks, all of which can be categorized as "hardware networks". In addition to these, there are also "software networks" such as political networks, legal networks, cultural networks, educational networks, and religious networks.

In short, wherever there is a phenomenon of logical propagation, there exists a logical network.

3.7.3. What is a Logical Network?

① A logical network is the attribute of a logical field, and is composed of logical structures and their interactions. This composition gives rise to a network formed by logical propagation and logical transmission phenomena, referred to as the "logical network".

② Logical networks transmit logic. As previously mentioned, there are many different logical networks, including propagation networks for radio waves, interactive networks of microscopic particles, the water network on Earth, the transmission network of forces within the Earth's crust, and human networks like the highway system or the legal framework. In addition, the propagation of radio waves, microscopic interactions, water energy, crustal dynamics, transportation of goods on highways, and legal constraints all involve logic. In this sense, logical networks serve the purpose of transmitting logic.

Note that the manifestation of logic is in the form of logical subjects, implying that the transmission between logical subjects is also manifested as logical subjects.

③ The carriers of logic transmission are logical subjects, and include constants, variables, equations and structure diagrams of various sizes (collectively known as equation units). In other words, logical subjects are the forms of transmission, and could be anything from a truck to a court, or even a package. However, the essence of transmission lies in the logic itself—a form of logic that

influences the receiving logical subject by impacting its equation structure diagram.

④ Logic transmission involves modified transmission. The process unfolds as follows: A logical subject receives a logic transmission, which in turn influences and alters its equation structure diagram. Based on its life activity patterns, the modified logical subject then transmits its own logic to a new logical subject.

3.7.4. The Role of Logical Networks

① Logical networks constitute a crucial attribute of logical fields. Constructing a logical field necessitates the construction of a logical network. The quality of this logical network reflects the quality of the logical field, and the function of a logical network is to transmit logic; the form of transmission is that of logical subjects, including various equation units.

② The development of the intelligent age necessitates the study and construction of logical networks. This extends beyond the simple notion of the internet and 5G. Intelligent machines, just like humans, need to navigate and utilize both natural and artificial logical networks. For instance, intelligent machines are subject to the universe's gravitational network, while the regulation of intelligent machine societies also requires its own legal networks.

3.7.5. How to Construct and Utilize Logical Networks

Both the development of humanity and the advancement of intelligence require the construction and application of logical networks. The nature of logical networks, which disseminate logic, means that their construction and application encompass all network engineering projects undertaken by humanity, including aerospace and deep-sea engineering, legal and educational engineering, as well as market engineering and legal engineering.

3.7.6. The Theory of Logical Networks

① The environment of a logical network is the logical field, and the environment of the logical field is logical space-time. The tools for describing and studying logical networks include bionic logic, life-giving logical equation structure diagrams, and logical mathematics and physics. Bionic logic and logical physics work together to create life-giving logical equation structure diagrams based on bionic principles, while logical mathematics is employed to formulate equations and equation unit generators;

② A logical network is essentially the weighted directed set of paths of equation units within a life-giving logical equation structure diagram, with weights indicating the order of transmission. Equation units include constants, variables, equations, and equation structure diagrams of varying scales. A logical network is a structure diagram composed of weighted directed paths and nodes, with the weights indicating their order of transmission. For a specific logical subject, its external network is referred to as the "external network", where nodes represent individual logical subjects. Conversely, its internal network is called the "internal network", with nodes representing individual equations or equation units of varying scales;

③ The transmission paths within a logical network, comprising weighted directed paths and nodes, are referred to as "logical channels", with weights indicating their order of transmission. Logical channels can be categorized as natural channels or artificial channels. Natural channels transmit logical subjects, like the Sun shining on the Earth or a train transporting passengers between cities. Current artificial channels primarily transmit equation units, such as the internet, or signal cables within computers. The internal network of the structure of subjective initiative aims to emulate the human nervous system. At a more advanced stage, artificial channels may also be able to transmit entire logical subjects.

4. The Theory of Life Communication

4.1. The Purpose of the Logical Structure School and the Theory of Life Communication

Based on its core mission, the Logical Structure School proposes the theory of life communication. Life communication utilizes the logical field and the logical network as its logical environment. The logical field provides nodes for the external network communication structure diagram, while the logical network furnishes directed paths for the same. Both the internal and external network communication structure diagrams for life communication are directed graphs and can be studied using discrete graph theory.

4.2. Life-giving Logical Equation Structure Diagrams and the Theory of Life Communication

The life-giving logical equation structure diagram serves as a tool to describe and activate logical fields, logical networks, and logical subjects. It also plays a crucial role in depicting and activating the process of life communication.

A life-giving logical equation structure diagram comprises equations, systems of equations, structure diagrams of varying scales, clock equation systems, equation unit generators, and "post offices". These post offices act as nodes within the internal network communication structure diagram. When a logical subject transmits an equation unit to the external network, the post office also serves as a node within the logical network communication structure diagram. Both internal and external network communication structure diagrams adhere to the principles of directed graphs in discrete graph theory, and can be analyzed using this framework.

The Logical Structure School emphasizes the correspondence between the "post office" within the equation structure diagram and the following: mailboxes within the elementary structural elements of the three-tiered logical structure, post offices within the intermediate structural organs, and sensory organs and nerves within the brain tissue of the advanced structure.

4.3. *Bionic Logic* and the Theory of Life Communication

Bionic logic functions as a tool for constructing life-giving logical equation structure diagrams and describing life communication. It encompasses both the

simulation of life and the application of logical mathematics. Studying internal network communication within a logical subject necessitates the simulation of humans. For researching external network communication within a logical network, the focus shifts to simulating human society, the Earth, galaxies, and even the entire universe. Logical mathematics is employed to create communication structure diagrams, while logical physics assists in the bionic process.

4.4. Case Study

The Logical Structure School proposes a development roadmap for life communication. Currently, artificial channels primarily transmit information in the form of equation units. In the future, these channels could potentially transmit both information and logical bodies at the same time, creating a form of hybrid transmission. Ultimately, the goal is for artificial channels to directly transmit logical subjects, similar to existing natural channels. Consider the example of the courier industry: at the moment, it relies entirely on natural channels. In the future, intercity transportation could utilize high-speed rail and air travel, with drones handling last-mile delivery, significantly improving speed and efficiency. Further down the line, high-speed autonomous drones could be deployed throughout the process, shortening delivery times even further. Eventually, high-speed versatile robots capable of seamless transportation and delivery across land, sea and air could be employed, pushing speed limits even further. As the speed of robots increases indefinitely, the speed of natural channels would asymptotically approach that of artificial channels. When the speeds become equivalent, natural channels would effectively transform into artificial channels, thus realizing the ideal of artificial channels transmitting logical subjects.

4.5. Proposing the Fourth Applied Classical Theory

This section introduces the fourth applied classical theory proposed by the Logical Structure School - *Life Communication*. The key points are as follows:

4.5.1. Principles of Communication

① Building upon the established theory of logical networks, which provides the concept of logical channels, the Logical Structure School has developed the theory of life communication. Logical channels are categorized as either natural or artificial. Life communication through natural channels involves the transmission of logical subjects. Currently, life communication through artificial channels is limited to transmitting information in the form of equation units. However, the ultimate goal for artificial channels is to transmit entire logical subjects. The Logical Structure School is still working towards a comprehensive technological roadmap to achieve this advanced objective. This paper focuses solely on information-based life communication through artificial channels, specifically the transmission of equation units. Using human life communication as a model for bionic logic, the study aims to understand life communication within the three main intelligent entities: artificial intelligence, robots, and intelligent societies.

② The information transmitted here, represented by equation units, still takes the form of life-giving logical equation structure diagrams. These units could be constants, variables, equations, or structure diagrams of varying scales. Depending on the specific requirements, they can be equipped with clock equation systems and equation unit generators, and also with structure diagram post offices. This means that clock equation systems, equation unit generators, and structure diagram post offices are optional components for transmitting equation units.

③ The Logical Structure School employs life-giving logical equation structure diagrams to represent logical fields, logical networks, and logical subjects. Activating these diagrams allows for the simulation of their real-world application, enabling the realization of actual life communication by mimicking human logic. Activation involves transforming the structure diagrams described in natural language into representations that will be understandable to machines using target languages. Examples include the compilation of source code into object code in traditional software engineering and the translation of human consciousness, expressed in natural language, into biological language within the brain. The Logical Structure School posits that activating life-giving logical equation structure diagrams requires developing a novel set of methods that continue and build upon the experiences of traditional software engineering, while also incorporating innovations inspired by bionic logic that mimics the human brain.

4.5.2. Communication Address

Life communication activities necessitate the establishment of comprehensive communication address systems for logical fields, logical networks, and logical subjects, similar to the postal system currently used in our daily lives. Towns are equipped with postal codes, streets and neighborhood names, as well as residences with specific addresses. This comprehensive postal system forms the foundation for efficient mail delivery. While researching the organizational methods for equation structure diagrams, the Logical Structure School stated:

"Life-giving logical equation structure diagrams are designed to describe life. The emergence of life relies on the support of a vast number of cells, cellular tissues, and organs. If each cell requires a dedicated logical equation structure diagram to describe it, then a single cellular tissue would necessitate a collection of scholarly works spanning an entire discipline, while an organ would demand the compilation of all existing academic disciplines. With an overwhelming quantity of equations, systems of equations, structure diagrams, documents, books, disciplinary compilations, and academic system compilations, the question arises: How do we organize them? First, we assign each entity a unique and descriptive name. Then, we create a character encoding system, translating these descriptive names into unique codes. The organization of equations can be modeled after the Chinese ID card encoding system, where codes are divided into segments, with segments arranged from right to left representing equations, systems of equations, structure diagrams, documents, books, disciplinary compilations, and academic system compilations, respectively. This system provides each equation with a fixed

address, facilitating communication and variable transmission through these addresses."

Building upon this theory, the Logical Structure School establishes a communication address system:

① The guiding principle for constructing this address system is to build on the experiences of traditional computer science and computer network communication technologies while incorporating bionic logic principles. This will involve the simulation of the human postal and courier systems, as well as the life processes governing communication within the human brain and body.

② Establish an external network communication system: All logical subjects within the logical field are assigned subject names that reflect their meaning and position within the field. Within the logical network, all artificial channels are defined by their starting logical subject, ending logical subject, path weights (indicating order), and path descriptions.

③ Establish an internal network communication system: The "internal network" refers to the artificial channels within a single logical subject. Every equation unit within a logical subject is assigned an address, and this system extends down to the individual components within each equation unit, ensuring every equation possesses a unique address. Artificial channels within the logical subject are represented by the directed paths between equation units and within equation units themselves. Each path segment is defined by its starting equation, ending equation, weight (indicating order), and path description.

④ Emulate the postal and courier systems of natural channels, with each equation unit to be transmitted assigned a communication address consisting of "sending logical subject internal network address + logical network path diagram + receiving logical subject internal network address" to encode and activate the natural language communication address.

4.5.3. Communication Process

The life communication process mirrors the process of sending a package, and consists of three stages: transmission from the sending logical subject's internal network, transmission of information (equation unit) through the logical network, and delivery within the receiving logical subject's internal network.

① External Network Communication

External network communication refers to the transmission of equation units through the logical network. The logical network is a path structure diagram, with nodes representing logical subjects and paths depicted as weighted directed paths (indicating order). This structure adheres to the principles of directed graphs in discrete graph theory and can be studied using this framework.

② Internal Network Communication

Internal network communication consists of two parts: transmission from the sending logical subject's internal network, and delivery within the receiving logical subject's internal network. The internal network path structure diagram is provided by the life-giving logical equation structure diagram of the logical subject,

with nodes representing post offices, and paths represented as weighted directed paths (indicating order). Two approaches can be used to study this process: building on the experiences of computer science and computer network communication technologies and applying bionic principles by emulating the human brain and body's communication systems, particularly the nervous system.

4.5.4. Elementary Structure Communication

In life theory, cells possess memory and the ability to communicate; here is a reference to the element set to store and send/receive information to a mailbox. The storage set of each element has a certain number of logical equation structural diagrams, while the element description set, attribute set and functional set also possess the various necessary structural diagrams of the logical equation. The element has the ability to solve logical equations, where the variables needed for logical equations are input from one element's mailbox to this element's mailbox, before being transferred to the logical equation corresponding to the storage set or corresponding logical equation of the element class. The variables generated by solving equations in this element are either used by the element itself, its other equations, or transmitted to other elements. Variables cause changes in the logical equation and the structural diagram of logical equations, resulting in changes in logical structures. This is known as information reasoning. Variables caused by information reasoning can control the state of the structure, while changes or continuous changes in the structure state lead to structural reasoning.

4.5.5. Intermediate Structure Communication

The tissues and organs of life also possess memory and the ability to communicate. In simulating the theory of life, mailboxes are set up for the intermediate logical structures of tissues and organs. In this way, each element has one or more of the following: one or more structural diagrams of the logical equation, tissue and organ memory. The intermediate structure obeys the laws for solving equations and logic transmission of the primary structure, as well as the laws for solving equations and logic transmission of tissues or organs. That is, it acts as the post office for the external tissue or organ as it transmits information to the post office of another tissue or organ. It then transmits this information to the logical equation structure diagram in the memory from the post office; tissues and organs also have the ability to solve equations, and the variable obtained is sent to its corresponding element or other tissue or organ post office. Other tissue or organ post offices are forwarded to their own element mailboxes, generating both information reasoning and structural reasoning.

4.5.6. Advanced Structure Communication

① Emulating the nervous system described in life theory, postal pathways are established and referred to as "nerves". Nerves are organs or tissues controlled by the subjective initiative organization. The subjective initiative in elementary structures operates based on physical laws, while in intermediate structures, it

functions according to environmental laws. In advanced structures, the subjective initiative is directed by the brain. Advanced structures possess nerves, while intermediate structures have post offices, and elementary structures contain mailboxes.

The advanced structure features three layers of structural diagrams of the logical equation, consisting of logical equation structural diagrams for elements, for tissues or organs, and for brain memory. The variables from the internal primary or intermediate input to the brain memory are solved by the subjective initiative function located in the brain memory. The value obtained is then transmitted via nerves to the tissue or organ mailbox, which sends them on to the element mailbox, leading to information reasoning and structural reasoning. The logical equation structural diagram of the brain memory can also be transmitted to the outside through the output organs of the advanced logical structure.

② Internal networks for logical subjects are used for information reasoning

Non-living entities perform reasoning through mailboxes, by means of various elements solving equations. The sending and receiving of variables within mailboxes trigger logical and structural changes, affecting relevant scientific equations. Plants utilize "post office reasoning", where organs and tissues solve equations. Post offices within organs and tissues of intermediate structures receive and transmit variables, which are then relayed to elemental mailboxes, inducing logical and structural changes, and impacting the plant-related equations. Animals and humans employ brain-based reasoning, with nerves transmitting different variables. This involves the brain solving equations, with nerves acting as messengers, organs and tissues receiving and transmitting through their post offices, and elemental mailboxes performing similar functions. These processes result in changes within life equations.

③ Internal networks for logical subjects are used for information-based structure control

Information reasoning triggers logical changes, leading to changes in the structural diagram of the logical equation and changes in other variables. Any changes in new variables and other values may change the data of the control structure, giving rise to the formation of another control structure. For example, when a person walks and becomes anxious, they increase the variable of step frequency, which in turn changes the logical equation structure diagram related to the human body. These changes in the structural diagram results in changes to the body structure, leading to an increased pace in the person's walking speed.

④ Internal networks for logical subjects are used for structural reasoning

Based on life theory, variables within logical equations control the equations themselves, which in turn control the structure, giving rise to structural reasoning. For instance, when a person feels thirsty, the "thirst" variable within the drinking water equation changes, leading to an increase in the "drinking action" variable within that same equation. This creates a new logical equation within the individual's brain, representing the subjective initiative to drink a large amount of water.

This equation is transmitted through nerves, organ and tissue post offices, and elemental mailboxes, ultimately leading to a variable group instructing the body to consume a large quantity of water, giving rise to structural reasoning. Information reasoning involves generating a goal, while structural reasoning involves generating the means and processes.

4.5.7. Artificial Intelligence Communication

Artificial intelligence communication shares similarities with both computer communication and human brain communication. Studying human brain communication is crucial for advancing artificial intelligence. This involves analyzing both internal network communication within a logical subject and external network communication through logical networks. The research object in artificial intelligence communication is the communication of the structure of subjective initiative, specifically the life communication processes within advanced logical structures.

4.5.8. Robot Communication

Robot communication also involves logical subject communication. However, instead of emulating the human brain, it draws inspiration from the entire human system, entailing communication within both internal and external networks of a logical subject composed of a structure of subjective initiative and various controlled machines. This type of life communication is a novel endeavor for humanity, demanding both imagination and a spirit of innovation.

4.5.9. Intelligent Society Communication

Communication within an intelligent society focuses on the artificial channels and external network communication within an intelligent society, essentially studying logical networks.

① Logical Network Communication

The logical network is an attribute of the logical field, and this attribute arises due to extensive interactions and widespread modifications within the logical structure of the logical field.

② Logical Network Communication within Elementary Structures Only

Logical subjects consisting solely of elementary structures are objective structures devoid of life. Logical network communication within these structures involves interactions and modified transmissions influencing elemental mailboxes to transmit logical equations. After this external transmission, internal transmission occurs, leading to structural changes resulting from the logical equations. These changes then trigger further modified transmissions externally. Information here refers to equation units.

③ Logical Network Communication within Intermediate Structures

Logical network communication within intermediate structures occurs at two levels: the previously described elementary structure logical network communication, and communication through post offices within organs and tissues driven

by environmental variables. The information transmitted in both cases is in the form of equation units sent through interactions and modified transmissions. Upon receiving equation units, post offices transmit them internally to elemental mailboxes, similar to the previously described internal network. After completing communication at both levels, the logical subject transmits modified equation units externally through both post offices and mailboxes.

④ Logical Network Communication within Advanced Structures

Logical network communication within advanced structures operates at three levels, encompassing the two levels of communication present in intermediate structures and an additional layer involving the brain, nerves, and sensory organs. The communication process below the intermediate structure level functions as previously described. The third level utilizes sensory organs to receive various equation units, the brain to process them, and nerves to output modified transmissions.

5. The Theory of Life Reasoning Activities

5.1. *The Purpose of the Logical Structure School* and the Theory of Life Reasoning Activities

The purpose of the Logical Structure School is to "use objective logic to research problems and subjective logic to solve them". Following this principle, the school uses objective logic to construct the objective structure of a logical subject, before using subjective logic to construct its subjective structure. This subjective structure embodies consciousness. This chapter, along with the following four (*The Theory of Life Cycles, The Theory of Life Data, The Theory of Life Programming*, and *Life Learning Strategies*), delves into the study of consciousness within logical subjects, particularly focusing on the consciousness of the structure of subjective initiative, as well as that of the three main intelligent entities: artificial intelligence, robots, and intelligent society.

In traditional computer science, the objective structure is akin to hardware, while the subjective structure corresponds to software. Humanity asserts its control over computers by using software to manipulate hardware, essentially reflecting the act of human consciousness controlling the machine. Through bionic principles, we understand that if human consciousness could be translated into biological language, it could then also control the human body as an objective structure. The Logical Structure School utilizes life-giving logical equation structure diagrams to depict the subjective structure of logical subjects. This representation serves three main purposes: it enables people to induce the desired consciousness within logical subjects through their subjective structures; it allows logical subjects to develop the necessary autonomous consciousness through their subjective structures; and it enables logical subjects to be controlled using either human-induced consciousness or the logical subject's own autonomous consciousness. Regardless of its origin, the consciousness of a logical subject must possess the ability to control the subject itself; this represents the

fundamental requirement for intelligence. This chapter examines how life-giving logical equation structure diagrams express consciousness within logical subjects, and how this expressed consciousness exerts control over the logical subject.

5.2. *Structure of Subjective Initiative* and the Theory of Life Reasoning Activities

The primary research object within intelligence research is the structure of subjective initiative, which is essentially a logical subject. Artificial intelligence represents a single structure of subjective initiative, while robots embody a structure of subjective initiative equipped with a set of machines, and intelligent societies consist of multiple structures of subjective initiative along with their communication networks. The structure of subjective initiative requires consciousness to control its objective structure. This consciousness can be either human-induced or autonomous. Life-giving logical equation structure diagrams serve as the tool for expressing consciousness. Upon activation, a structure diagram represents the consciousness of the subjective initiative and gains the ability to control its objective structure.

A life-giving logical equation structure diagram is used to control a logical subject, something which is achieved through the manipulation of variables within the diagram, enabling life activities. In essence, variable reasoning facilitates the realization of life activities.

5.3. *Subjective Initiative Structure Engineering* and the Theory of Life Reasoning Activities

Subjective initiative structure engineering encompasses three processes: producing artificial intelligence, producing robots, and producing intelligent societies, all of which involve the production of both objective and subjective structures. Producing subjective structures entails constructing and activating life-giving logical equation structure diagrams. These diagrams are used to express the consciousness of the structure of subjective initiative, including both human-induced and autonomous consciousness. This consciousness, in turn, governs the objective structure.

5.4. *Life-Giving Logical Equation Structure Diagrams* and the Theory of Life Reasoning Activities

The primary tool for studying and developing the subjective structure of logical subjects is the life-giving logical equation structure diagram. When activated, this diagram embodies the subjective structure of logical subjects, logical networks and logical fields, allowing logical subjects to generate either human-induced or autonomous consciousness. Studying the consciousness and objective structure control of an intelligent machine equates to analyzing and developing its corresponding equation structure diagram.

5.5. *Bionic Logic* and the Theory of Life Reasoning Activities

The complete toolkit for studying consciousness within the structure of subjective initiative consists of three components: bionic logic, life-giving logical equation structure diagrams, and logical mathematics and physics. Logical physics facilitates the bionic process, logical mathematics aids in constructing logical equations, while bionic logic plays a critical role in simulating the emergence and operational principles of human consciousness to construct further consciousness within the structure of subjective initiative. If simulation proves infeasible, artificial design can be employed.

5.6. Case Study

The equation unit generator within a life-giving logical equation structure diagram is tasked with generating new equation units. This functionality endows the logical equation structure diagram with human-like thinking capabilities. The complexity and dimensionality of intelligence hinge upon the sophistication of the equation unit generator, while the advancement of a structure of subjective initiative is directly related to the advancement of its equation unit generator. In science fiction, robots exhibiting human-level intelligence possess equation unit generators capable of human-like thought processes. The technological roadmap for the development of artificial intelligence, robots and intelligent societies is essentially the roadmap for the development of their respective equation unit generators. Enhancing the life activity capabilities and learning abilities of the structure of subjective initiative relies heavily on the advancement of the equation unit generator.

5.7. Proposing the Fifth Applied Classical Theory

This section introduces the fifth applied classical theory proposed by the Logical Structure School - Life Reasoning Activities. The school posits that consciousness within logical subjects arises from information reasoning, and that the control exerted by this consciousness over the objective structure stems from structural reasoning. Both information reasoning and structural reasoning contribute to the emergence of life activities within logical subjects. The study of life activities relies on life-giving logical equation structure diagrams to represent consciousness. Analyzing these structure diagrams requires bionic logic and logical mathematics. The key points are as follows.

5.7.1. The Life Activity Process of Logical Subjects

① Constructing and Activating the Life-giving Logical Equation Structure Diagram

For a logical subject to exhibit life and engage in life activities, it must first establish its own life-giving logical equation structure diagram. This structure diagram needs a thorough and robust address system, akin to how all apartments and units within a residential complex require unique addresses, regardless of

occupancy. This address system must also allow for seamless expansion.

② Generating Inputs

A single life activity cycle of a logical subject commences with the input of an equation unit into the activated logical subject's equation structure diagram. Equation units encompass constants, variables, equations, systems of equations, and structure diagrams of varying scales. Input methods include mailbox input for elementary structures, post office input for intermediate structures, and sensory organ and nerve input for advanced structures. Equation units entering through elementary structure mailboxes are incorporated into the elementary structure diagram, while those entering through intermediate structure post offices join the intermediate structure diagram, and those entering through advanced structure sensory organs and nerves are integrated into the advanced structure diagram. Crucially, the mailboxes in elementary structures, post offices in intermediate structures, and sensory organs and nerves in advanced structures must all identify suitable addresses for incoming equation units and place them accordingly. In addition, they establish weighted directed paths (with weights indicating order) for variable transmission between incoming equation units and existing equations. This process resembles a company assigning accommodation to newly hired employees.

③ Information Reasoning

The introduction of equation units gives the existing equation structure diagram a new configuration. The equation unit generator then optimizes this new diagram, generating new equation units and weighted directed paths (with weights indicating order) for variable transmission. This inevitably leads to changes in the output of the equation structure diagram. The process of utilizing this new equation structure diagram to compute the new output constitutes "information reasoning." The output also incorporates weights to indicate the order of certain variables. The variable names associated with output variables carry semantic meaning, either describing the specific operation being performed on an object, or indicating a collective term for a batch operation. For instance, the human brain outputting the instruction to "touch ear three times" involves "touching the ear" as the operation object; "eating", on the other hand, represents a collective term for a batch operation, encompassing the various coordinated actions involved in the act of eating.

Note that outputting new variables requires attaching weights to the corresponding variable names to establish their order of output, which subsequently dictates the order of structural reasoning.

④ Control Exerted by Information Reasoning on Logical Subjects

Information reasoning modifies the original equation structure diagram, altering the subjective structure of the logical subject and generating new outputs. These new outputs are then poised to change the objective structure of the logical subject. The modification brought about by information reasoning constitutes its control over the logical subject.

Elementary-level information reasoning results in changes to the subjective structure of elementary structural elements, specifically their logical equation structure diagrams. This represents the influence of elementary-level information reasoning on the elementary structure, leading to elementary control.

Intermediate-level information reasoning encompasses both elementary-level and intermediate-level reasoning processes. This leads to changes to the subjective structure of organs and tissues within intermediate structures, a fact which is also reflected in their logical equation structure diagrams. This represents the impact of intermediate-level information reasoning on the intermediate structure, resulting in intermediate control. Intermediate control can manifest as elementary control, intermediate control, or joint control involving both elementary and intermediate levels.

Advanced-level information reasoning includes both elementary and intermediate levels, along with advanced-level reasoning processes. It induces changes in the subjective structure of the advanced logical structure, specifically its advanced logical equation structure diagram. This represents the influence of advanced-level information reasoning on the advanced structure, giving rise to advanced control. Advanced control encompasses a wider range of possibilities, including elementary control, intermediate control, joint control between elementary and intermediate levels, advanced control, joint control between advanced and elementary levels, joint control between advanced and intermediate levels, and joint control involving all three levels.

⑤ Structural Reasoning

Based on their weights and variable names, the new output values obtained through information reasoning perform actions in a specific order, modifying the objective structure of the logical subject. This process constitutes "structural reasoning".

Due to the changes in the equation structure diagram before and after information reasoning, the structure transitions from one state to another. For instance, if a person initially stands still and then takes a step forward following a process of information reasoning, this movement represents structural reasoning - the act of the body moving forward as dictated by information reasoning. Structural reasoning is of great significance to the development of intelligent machines, and also to the improvement of intelligent control.

⑥ Modified Transmission

After undergoing changes in both its subjective and objective structures, the logical subject transmits modified information to other logical subjects within the logical field.

5.7.2. Information Reasoning

Information reasoning involves three levels: Primary Reasoning, Intermediate Reasoning and Advanced Reasoning:

① Elementary Reasoning

Elementary reasoning refers to information reasoning within elementary

structural elements. These elements consist of storage sets, mailboxes, and their own internal structures. Storage sets contain logical equation structure diagrams relevant to the specific element, encompassing material equations, biological equations, and other related data. Mailboxes receive external equation units, including constants for assigning values to variables. Based on the received constants assigned to specific variables, the element's internal structure enables equations to be solved. The resulting solutions for certain variables represent changes within the element's subjective structure. These solutions are then transmitted through the mailbox in the form of modified information. Each transmission of modified information signifies an instance of elementary information reasoning.

② Intermediate Reasoning

Intermediate reasoning encompasses two layers of reasoning: elementary information reasoning and intermediate information reasoning. This type of reasoning utilizes logical equation structure diagrams stored within the memory of the intermediate structure. The memory also stores relevant data, particularly data logic. Post offices within the intermediate structure receive various equation units, including constants for assigning values to specific variables. Based on its internal structure, the intermediate structure solves equations using the assigned variables. The resulting variable solutions represent changes within the logical structure and are transmitted through the post office in the form of modified information. Each transmission of modified information constitutes an instance of intermediate information reasoning.

The two levels of reasoning in the intermediate structure also require communication to achieve interaction.

③ Advanced Reasoning

Advanced reasoning encompasses both elementary and intermediate levels, along with advanced-level reasoning processes. It involves logical equation structure diagrams and relevant data stored within the brain's memory, the advanced logical structure's equation-solving capabilities, and a sensory input. The process begins with sensory organs receiving input in the form of constants for assigning values to variables. This information is transmitted to the brain through nerves, assigning values to variables within equations stored inside the brain's memory. The advanced logical structure, making full use of its ability to solve equations, determines values for specific variables, resulting in changes within the advanced logical structure's subjective structure. These changes are then relayed through nerves to internal post offices or mailboxes, or directly to output organs. Each transmission of modified information signifies an instance of advanced structural information reasoning.

The three levels of advanced reasoning (primary, intermediate and advanced) can communicate with each other, thus performing a process of interaction.

④ When the input received by elementary, intermediate, or advanced structures is not a constant but another equation unit, it will still alter the equation structure diagrams of these structures, prompting them to generate new outputs

and modified transmissions.

5.7.3. Laws Governing Life Activities of Logical Subjects

Exploring the laws governing the life activities of logical subjects requires the understanding that these laws are composed of three processes. The first process required is information reasoning, which includes information perception and collection; this might be the information received by sensory organs, such as eyes and ears, in living organisms. This information then undergoes equation analysis, akin to what we commonly refer to as "thinking". In humans and animals, this analysis is usually performed by advanced structures like the brain. In simpler structures, biological and physical reactions replace the role of the brain. Information reasoning produces the necessary output or response information. The second process involves the control exerted by the brain in advanced structures, or by reactions in simpler structures, over the movement of the logical subject's components to generate the required output information. The third process is structural reasoning, which refers to movement and other changes in the logical subject's objective structure driven by the results of the information reasoning. This ultimately results in the desired information output.

People serve as the most important research object when studying life activities. Consider the situation of a person feeling hungry through sensory perception. The information analysis conducted by the person's brain concludes that they need to eat in order to satiate their hunger. This represents an instance of information reasoning performed by the brain. To achieve the output of feeling full, the brain utilizes the results of information reasoning to direct the body to engage in structural reasoning. This includes a series of actions such as going to a restaurant, paying for food, and consuming it. Ultimately, the act of eating leads to the information output of feeling full.

Life activities are also present in simpler structures. For instance, if a slope experiences loosening of soil and rocks, despite lacking a brain, its physical structure, guided by physical laws, performs equation analysis and deduces the output information of a potential landslide. This information reasoning, governed by physical laws, then controls the slope's structural reasoning, leading to the life activity of a landslide, ultimately resulting in the information output of the landslide occurring.

Studying the life activities of logical subjects is of significant importance for intelligence research.

5.7.4. Life Activities within Intelligent Societies

To study life activities within intelligent societies, we first need to employ life-giving logical equation structure diagrams to represent and activate each logical subject and their communication networks. This creates a model of the logical field and the logical network within the intelligent society. Consider the example of an intelligent factory. The top-level logical subject is the factory manager, intermediate-level logical subjects are represented by middle management personnel, and the base-level logical subjects are workers, embodied by robots (subject +

machine). These logical subjects communicate with each other through the logical network within the logical field of the intelligent factory. When the factory manager (logical subject) receives an input in the form of an equation unit, they engage in information reasoning and structural reasoning. Finally, the factory manager transmits modified information (work instructions) to the management personnel (logical subjects), after which the management personnel then perform their own information reasoning and structural reasoning before relaying modified information to the worker robots, assigning them tasks. The worker robots, after conducting their own information reasoning and structural reasoning, also transmit modified information, which represents the execution of their assigned work. Of course, the management personnel also send feedback in the form of modified transmissions back to the factory manager, and the worker robots similarly provide feedback to the management personnel.

The functioning of intelligent armies and intelligent governance follows a similar pattern. However, the Logical Structure School is currently not involved in studying armies or governance.

6. The Theory of Life Cycles

6.1. Purpose of the Logical Structure School and the Theory of Life Cycles

The Logical Structure School advocates "using objective logic to study issues and subjective logic to solve them". Studying subjective logic necessitates exploring consciousness, and understanding consciousness requires examining its temporal dimension, namely, life cycles. Consciousness resides within life itself, and life and its associated life activities necessitates temporal regulation. Similarly, consciousness and the life activities governed by it require temporal frameworks. Therefore, intelligence research must delve into the study of time, specifically the study of life cycles.

6.2. *Structure of Subjective Initiative* and the Theory of Life Cycles

The study of the structure of subjective initiative conducted by the Logical Structure School draws heavily on the logic of emulating humans. Human logic inherently operates within temporal constraints, implying that human life unfolds within a life cycle, and even human society itself has a life cycle. Consequently, any research on the structure of subjective initiative must consider the theory of life cycles.

6.3. Subjective Initiative Structure Engineering and the Theory of Life Cycles

The Logical Structure School's approach to subjective initiative structure engineering also emphasizes bionic principles, mimicking the logic underlying human life processes. Consequently, the engineering phases within subjective initiative structure engineering are modeled after human life stages. The ultimate goal is to

achieve a defined life cycle for the engineered product, inspired by various human life cycles, since human life cycles are considered to be the most rational and scientifically sound intelligent cycles.

6.4. Life-Giving Logical Equation Structure Diagrams and the Theory of Life Cycles

The theory of life cycles is both studied and implemented by means of life-giving logical equation structure diagrams. Similar to other structural components within a logical subject, the specific structure diagram responsible for depicting and realizing life cycles is termed the "clock equation system". Note that the clock equation system also requires activation, following the same activation principles as other structure diagrams.

6.5. *Bionic Logic* and the Theory of Life Cycles

The theory of life cycles proposed by the Logical Structure School is deeply rooted in bionic logic research, drawing inspiration from the human body and human society. The temporal cycles governing life and life activities are modeled after those observed in humans and human societies, while the temporal cycles of consciousness and conscious activities are inspired by the human brain.

6.6. Case Study

Many people fantasize about having perfect memory, of never forgetting anything. This would enable them to effortlessly recall information after a single exposure, excelling in any exam. However, this notion is fundamentally flawed. Without forgetting, doubt cannot exist. Without doubt, there would be no opportunity to exercise the imagination and creativity needed for exploration. If early humans were perpetually fixated on the danger of fire, constantly reminding themselves to avoid it, how could they have studied and harnessed its power? Similarly, if humanity clung to the belief that Earth was the center of the universe, how could we have discovered that it actually revolves around the Sun? The same principle applies to life-giving logical equation structure diagrams. If these diagrams remained immutable, how could the equation unit generator exist to construct new diagrams, simulating thought processes and generating new knowledge? Forgetting, in its proper form, is essential for human survival and development. This "correct" form of forgetting things necessitates life and consciousness operating within temporal frameworks, implying the need for life cycles to regulate consciousness, conscious activities, life itself, and life activities. Life cycles ensure the adaptability of equation structure diagrams, allowing the equation unit generator to function effectively by capitalizing on this adaptability. This, in turn, enables the equation unit generator to simulate thought processes and generate new knowledge.

6.7. Introducing the Sixth Applied Classical Theory

This section introduces the sixth applied classical theory proposed by the Logical

Structure School—*Life Cycles*. The key points are as follows.

6.7.1. Why Study Life Cycles?

① Both Life Attributes and Life Activity Attributes Require Time

Life attributes inherently necessitate time. Plants, animals and humans all possess lifespans and undergo growth processes governed by time. Life activity attributes also require time. Plants follow temporal cues for flowering and fruiting. Animals adhere to time-based patterns when foraging. Humans exhibit circadian rhythms, influencing their sleep cycles and work schedules.

② The Beginning and End of Life and Life Activities are Defined by Time

The commencement of life is marked by time, evident in events like birth dates in humans, or germination seasons in plants. Similarly, the end of life is also time-dependent, with the lifespans of plants, animals, and humans determining their time of demise. The initiation and termination of life activities are also governed by time. For instance, pollination, flowering, and fruiting in plants adhere to specific temporal windows. In the same way, fertilization, pregnancy, and birth in animals all follow time-based patterns. This is even more pronounced in humans, where education and employment are bound by specific time-frames. Even the organization of human society relies on time to define the start and end points of various life activities.

③ Consciousness Attributes Require Time, and the Beginning and End of Consciousness are Determined by Time

The attributes of consciousness are inherently time-dependent, and the emergence and cessation of consciousness are also time-bound. The Logical Structure School focuses on consciousness modeled after the logic of human consciousness. Both individual human consciousness and the collective consciousness of human society operate within temporal constraints. For instance, the consciousness associated with preparing for exams arises during a student's academic life, with its beginning and end points marked by enrollment and graduation dates. Similarly, work-related consciousness in human society emerges during an individual's period of legal employment, with its start and end points dictated by working hours, employment commencement, and retirement.

④ Consciousness Utilizes Time to Control Life Activities

Emulating human logic reveals that humans frequently employ time as a regulatory mechanism for their life activities. This is evident in activities such as commuting to work, picking up children after work, and sleeping at night. Most methods employed by individual human consciousness, and by the collective consciousness of human society to control life activities, involve temporal frameworks.

⑤ Establish Life Cycles for Bionic Consciousness

Given the inherent temporal nature of life attributes, life activity attributes, consciousness attributes, and their time-dependent beginning and end points, combined with the observation that consciousness utilizes time to regulate life activities, the Logical Structure School deems it essential to establish a theory of life

cycles when emulating human consciousness logic. This idea is a crucial component of intelligence theory.

6.7.2. Representing Life Cycles and Lifetimes Using Clock Equation Systems

The method employed to establish the theory of life cycles and to represent life cycles and lifetimes is the "clock equation system". This system encompasses constants, variables, equations, systems of equations, and equation units of varying scales. Internally, it utilizes directed paths for transmitting constants and variables to facilitate communication between equations. Externally, it employs directed paths for sending constants and variables to external equations, regulating the cycles of life, life activities, consciousness, and those life activities governed by consciousness.

Note that the clock equation system also incorporates an equation unit generator, enabling the generation of new clock equations. This reflects real-world phenomena like the potential for extending human lifespans or increasing working years.

6.7.3. Transmission and Storage of Clock Equation Systems

We understand that both artificial channels within logical networks, and internal channels within logical subjects, are responsible for transmitting equation units. These units include constants, variables, equations, systems of equations, and equation units of varying scales. The clock equation system becomes part of this transmission process by attaching itself to these transmitted equation units. This is achieved by establishing directed paths for transmitting clock constants or clock variables, connecting the paths to the equations within the original equation units.

The storage of clock equation systems follows a specific mechanism: the equation system accompanying a transmitted equation unit is stored alongside the unit itself. Clock constants or clock variables transmitted to equation variables are stored within the corresponding variable's description set, attribute set, and function set. In turn, these sets can be represented within an equation structure diagram.

6.7.4. The Life Cycle of Logical Subjects

① Clocks within Logical Subjects

Logical subjects possess clocks at three levels: clocks within elementary level elements, clocks within intermediate level organs and tissues, and clocks within the advanced level brain.

The clock within the element determines the lifecycle of the element. This clock is a logical equation structure diagram that generates the value of the lifecycle variable, which can also trigger information reasoning and structural reasoning.

The clock in the tissues or organs determines their lifecycle. This clock remains as a structural diagram of a logical equation, still generating the value of the lifecycle variable of these tissues or organs, and can also trigger both information

reasoning and structural reasoning.

The clock in the brain determines its lifecycle. This clock remains as a logical equation structure diagram, still generating the value of lifecycle variables for the brain, which can also trigger information and structural reasoning.

② The Life Cycle of the Structure of Subjective Initiative

The Logical Structure School primarily focuses on the structure of subjective initiative when studying logical subjects. Taking humans as an example, intelligence persists as long as the brain remains active. Once the brain ceases to function, intelligence also vanishes. The core of the advanced structure within a logical subject is the structure of subjective initiative. This structure forms the brain, which possesses a clock. The life cycle variable of this clock is determined by a logical equation structure diagram. The brain's structure is responsible for solving the clock equation to determine the value of the life cycle variable. This variable, in turn, dictates the brain's ability to survive, as well as the presence or absence of intelligence within the advanced logical subject. The life cycle variable of the structure of subjective initiative possesses both information reasoning and structural reasoning capabilities.

7. The Theory of Life Data

7.1. The Purpose of the Logical Structure School and the Theory of Life Data

Guided by its core principles, the Logical Structure School proposes a theory of life data. This theory advocates replacing raw data with class data, shifting from centralized raw data storage in databases to distributed class data within the value sets of variables across equation structure diagrams. It also advocates the substitution of statistical analysis with equation analysis, leveraging equation unit generators to create logical equation units instead of relying on databases to produce statistical results.

7.2. Structure of Subjective Initiative and the Theory of Life Data

Class data within the structure of subjective initiative resides within the value sets of variables across various equation structure diagrams, specifically those associated with elementary structures, intermediate structures, and advanced structures. This implies that data is inherently linked to and dependent upon life-giving logical equation structure diagrams.

7.3. Subjective Initiative Structure Engineering and the Theory of Life Data

Subjective initiative structure engineering encompasses the creation of structures for subjective initiative, which translates to the production of life-giving logical equation structure diagrams. This process involves constructing equation unit generators, logical equations, variable sets, and the address system required for the equation structure diagram.

7.4. Life-Giving Logical Equation Structure Diagrams and the Theory of Life Data

Within the framework of life data theory, data is intrinsically linked to life-giving logical equation structure diagrams. Databases, in this context, are represented by the value sets of individual equation variables, and data analysis in life data theory is synonymous with logical equation analysis, a form of logical mathematical analysis. The results of this analysis are not statistical data but rather empower the equation unit generator to produce equation units, simulating thought processes and generating new knowledge within intelligent machines.

7.5. Case Study

Traditional data analysis often generates indices, such as economic indices. However, life data theory uses life-giving logical equation structure diagrams for data analysis. Index calculation formulas are transformed into structure diagrams, shifting economic index analysis to economic structure diagram analysis. Utilizing complex analysis, clock analysis, and analysis powered by equation unit generators, equation units are produced to replace indices. This revolutionizes economic index research and extends its applicability to other domains. Structure diagram analysis enables both comprehensive analysis and cross-domain analysis.

7.6. Introducing the Seventh Applied Classical Theory

The Logical Structure School introduces the seventh applied classical theory - Life Data. The key points are as follows:

7.6.1. Replacing Raw Data with Class Data

The data found within life data is class data. Each data point comprises a description set, an attribute set, and a function set. These sets for a single data point can be represented within an equation structure diagram. Similarly, all values of a variable, representing a group of data, can also be depicted within a single diagram. Extending this principle, an equation structure diagram can accommodate equations, variables within equations, variable sets, and all class data within those value sets. Traditional data is considered raw data, consisting only of descriptions. Life data replaces this raw data with class data.

7.6.2. Replacing Centralized Storage with Distributed Storage

Life data is distributed across the value sets of variables within equation structure diagrams, adhering to a distributed storage model. Conversely, traditional data is centralized within databases. Life data replaces centralized database storage with a distributed approach.

7.6.3. Replacing Database Analysis with Equation Structure Diagram Analysis

Traditional data analysis involves mathematical analysis of raw data that is centrally stored within databases. In contrast, data analysis within life data entails logical mathematical analysis of class data that resides within the value sets of

variables across equation structure diagrams. This form of logical mathematical analysis is termed "equation analysis". Equation analysis encompasses the following key points:

① Structure Diagram Complexity and Analysis: This analysis allows for the presence of massive amounts of class data within variable sets and the storage of this data within equation structure diagrams;

② Clock Equation Systems and Analysis: This analysis assigns "life" to data, imbuing it with temporal properties, enabling data activation and termination;

③ New Data Generated by Equation Unit Generators Replacing Traditional Data Analysis Indices: Data analysis in life data is ultimately performed by the equation unit generator. The output of this analysis is not a set of statistical indices but rather new equation units, new variable sets generated by these equation units, and new variables themselves. Unlike traditional data analysis, which utilizes functions to produce indices, data analysis in life data employs equation analysis. This equation analysis leverages the equation unit generator to perform data analysis, generating new equations, new variables, and new variable sets, ultimately leading to thought processes and the generation of new knowledge through data analysis.

7.6.4. Logical Relations

Previous discussions covered theories such as logical fields, logical networks, and modified transmission. Logical fields give rise to logical relations as a result of interactions, logical networks transmit logical relations, while modified transmission reflects the influence of logical relations on logical subjects. Logical relations encompass all forms of interaction between logical subjects. This section introduces a unified representation for logical relations: they are considered to be a type of logical subject themselves, and are described and activated using life-giving logical equation structure diagrams.

7.6.5. Class Data

Class data is stored within the value sets of equation variables in life-giving logical equation structure diagrams, defined as follows:

Class Data = Description Set + Attribute Set + Function Set;

The description set provides a description of the class data, the attribute set contains the logical equations that define attributes, while the function set houses the logical equations that determine functionality. If the attribute set and function set are omitted, leaving only the description set, the class data reverts to raw data.

Class data specifically refers to data within the framework of life data theory, representing a class endowed with logical meaning within equations. This class includes description sets, attribute sets, and function sets, distinguishing it from traditional raw data through its class structure. Statistical operations, calculations, and processing of class data can target records within the description, attribute, and function fields. Class data can also exist in simplified forms; for instance, it might contain only descriptions, omitting all attributes and functions, essentially

mirroring raw data. Class data is the preferred data type within the Logical Structure School.

7.6.6. Data Class Groups

All class data within a variable's value set constitute a data class group, referred to as a "class group". Examples include student records within a class, or vehicle registration data for all motor vehicles in the city of Guangzhou. Data class groups represent a novel form of database or data storage. However, as the Logical Structure School aims to revolutionize data science and advocate the abolition of traditional databases and data science, the terms "database" and "data storage" are avoided here, replaced by the concept of "data class groups".

7.6.7. Data Class Group Interaction

Data class group interaction, referred to as "interaction", aims to construct logical equations.

Interaction research represents an advanced stage of logical analysis and logical mining, and the Logical Structure School considers it both a high-level stage of logical equation analysis and a critical step in empowering the equation unit generator to construct logical equations. Interaction research necessitates dedicated research methods. These methods emerge by first combining the object sets of both interacting entities into a unified set - the future logical equation. Each object set corresponds to a variable, and methods are then derived by analyzing the patterns within this unified set. For instance, consider the interaction between COVID-19 outbreaks in Hong Kong and Shenzhen. Each outbreak represents a data set. Studying their interaction requires merging these datasets and identifying common data attributes or trends related to the outbreaks. This can lead to the formulation of a set of logical equations describing the relationship between the two outbreaks. Similarly, when studying the interaction between water quality data and aquatic species data in a pond, both datasets are merged. This merged set represents the future logical equation. The two original datasets correspond to two variables. Elements within the merged set shall incorporate the constraint of water quality impact on each aquatic species element. Interaction research can utilize various advanced techniques and mathematical tools.

Research on data class group interaction involves combining two or more data class groups into a single entity, forming the basis for a future logical equation. This can be considered an addition operation. At least two types of addition operations have been proposed. The first type involves simple set merging, as demonstrated in the Hong Kong and Shenzhen outbreak interaction example, where both datasets share similar data properties. The second type involves embedding the water quality data class group into each element of the aquatic species data class group, as illustrated in the fish pond example. Further exploration is encouraged to discover further addition operations and other operations between data class groups, along with their associated interpretations. Interaction represents an advanced stage of logical analysis and logical mining. This research should incorporate

the relevant social or natural laws that govern the research objects.

Research on data class connections and mutual interference of data class groups can make extensive use of various theoretical results from discrete mathematics. Research on data class connections and mutual interference of data class groups requires the application of many theories present in group theory.

Consider an example involving social laws. We have data class groups representing housing prices, food prices, employment, income, stock prices, and public satisfaction. Without knowledge of their patterns of interaction, we create a unified set by connecting these data class groups using indices derived from their respective datasets. This unified set represents the future logical equation. By observing the real-time fluctuations and interactions between the indices, we can identify interaction patterns and use them to design new operations connecting the data classes within the unified set. This ultimately leads to a logical equation that can monitor socioeconomic and political developments, as well as explore strategies for influencing the core logical variable of public satisfaction.

Similarly, an example involving natural laws can be constructed using the same approach. By creating a unified set from indices representing various factors that influence atmospheric temperature, again representing the future logical equation, we can study the forms of interaction between these data class groups. Once patterns are identified, we can design connecting operations and create a new unified set representing the new logical equation. This equation can then monitor interaction patterns and explore methods for modifying atmospheric temperature, the core logical variable.

7.6.8. Data Class Group Interaction Empowering Equation Unit Generator to Construct Logical Equations

Research on data class group interaction has the potential to empower the equation unit generator to construct logical equations, fostering thought processes and knowledge generation within logical subjects. This holds immense promise for humanity, with the possibility of obtaining advanced mathematical tools that are capable of creating highly intelligent machines.

Data class group interaction operations can take at least two forms. In the first form, an operation is designed to connect various data class groups into a unified set. By analyzing the dynamic changes within this set, which is driven by real-time variable fluctuations, interaction patterns are identified and represented as logical equations. In the second form, pre-existing knowledge of interaction patterns guides the design of connecting operations, merging data class groups into a unified set. This unified set can be expressed as a logical equation, with each data class group corresponding to a specific variable. Monitoring the dynamic changes of key logical variables allows us to understand the dynamic developments within relevant social or natural systems.

7.6.9. Distributed Data in Its Native State

A core guiding principle within this theory is bionic logic, whose goal is to emulate

the data characteristics exhibited by the life activities of plants, animals, and humans. This involves establishing a novel data science paradigm that emphasizes data as being "alive", inherently connected, distributed, and attached to its context. In this way, data analysis evolves into object analysis and group analysis, essentially becoming a form of logical equation analysis. Data regulation shifts from centralized database control to the regulation of data attached to legal entities, moving away from the centralized, unified database model of the industrial age and the era of machine data. This paves the way for the invention of life data in the age of artificial intelligence, a data science framework that is aligned more closely with human nature. Data, in this context, exists in its native state, inherently linked to life-giving logical equation structure diagrams. It resides within the value sets of variables within these diagrams, represented as class data and data class groups.

7.6.10. Equation Analysis

Equation analysis replaces traditional data analysis, with the underlying logic used being that of the corresponding logical equations. Equation analysis encompasses large-scale complex analysis. For instance, in a population census, traditional data analysis involves collecting and centralizing data taken from individuals, conducting analysis, and then implementing new population policies back onto those individuals, following a path that can be summarized as object-database-object. Data logic, on the other hand, replaces the database with an equation structure diagram, and data analysis with equation analysis. The structure of the equation structure diagram can be simplified through research, making it potentially even simpler than a database, further showcasing its advantages.

7.6.11. Class Data within Elementary Structures

Class data within elementary structures is stored within the storage set of the element. This data can form data class groups (variables) and engage in class group interaction (logical equations). The class data obtained in this way is both attached and distributed, linked to the element and its structure diagram. Communication of class data occurs through the element's mailbox. Statistical operations, calculations, processing and editing are performed through the inherent attribute and function sets. Data class groups can combine their attribute and function sets to generate logical equations, effectively replacing databases. The logical effect of class data is realized by assigning values to variables within various logical equations, thereby influencing the element's logical equation structure diagram.

7.6.12. Class Data within Intermediate Structures

Data logic within intermediate structures operates at two levels: the data logic of the elementary structure and the data logic specific to the intermediate structure. Class data is stored within the memory of organs and tissues. This data can form class groups (variables) and class group interaction (logical equations). It is both attached to and distributed among the organ or tissue. Editing class data (variables), class groups (variables), and class group interactions (logical equations)

within the memory can utilize the description sets, attribute sets, and function sets of individual data points, as well as their integrated forms. The logical influence on the organ or tissue is achieved by assigning values to various logical equations, causing changes in variables and subsequently impacting the organ or tissue. The memory of the organ or tissue can communicate with the storage set of the elements, displaying a distributed nature.

7.6.13. Class Data within Advanced Structures

Data logic within advanced structures functions at three levels: the first two levels encompass the data logic of elementary and intermediate structures, while the third level is specific to the advanced structure. Class data within the advanced structure is stored in brain memory. The capacity of brain memory exceeds that of the memory in organs and tissues, which in turn surpasses the capacity of the storage set within elements. Brain memory is able to accommodate large-scale data class groups (multiple variables) and large-scale class group interactions (large-scale logical equation units). Editing involves the large-scale integration of description sets, attribute sets and function sets, while the logical effect on the logical structure remains the assignment of values to logical equations within the brain, just at a much larger scale, thus representing "thought". Brain memory communicates with the external world through nerves and sensory organs (learning) and can also communicate with the memory of organs and tissues. Through nerves, it is also able to communicate with the storage sets of elements, in a distributed nature.

8. The Theory of Life Programming

8.1. The Purpose of the Logical Structure School and the Theory of Life Programming

The Logical Structure School advocates "using objective logic to study issues and subjective logic to solve them". Life programming aims to realize both these principles, by defining life programs as life-giving logical equation structure diagrams. Note that the "equation unit generator", a key component within the structure diagram, lies at the heart of life programs, responsible for their thought processes and intelligence. The equation unit generator represents the technological breakthrough required for "using objective logic to study issues and subjective logic to solve them".

8.2. *Structure of Subjective Initiative* and the Theory of Life Programming

Traditional software runs programs using statements to construct flowcharts. Life programming, on the other hand, employs equation structure diagrams to build logical subjects. A key distinction here is that traditional software lacks the ability to automatically generate programs, while life programs possess the "equation unit generator" specifically for this purpose. For the first time, this equation unit generator also endows artificial programs with thinking capabilities, eliminating

the need for data-driven training, akin to training lower-level animals to mimic intelligence, as seen in traditional software. This represents a significant leap forward in bionic logic being applied to artificial software, guiding human programming towards the correct path of simulating human intelligence using equation unit generators.

8.3. Subjective Initiative Structure Engineering and the Theory of Life Programming

The focus of traditional software engineering is on fulfilling requirements expressed through flowcharts, similar to constructing a building. Life software engineering, however, concentrates on the equation unit generator, using it to realize potential future requirements. This is like building a brain, or even constructing life itself.

8.4. Life-Giving Logical Equation Structure Diagrams and the Theory of Life Programming

Life programming involves designing and implementing equation structure diagrams. The core of the programming lies in designing and implementing the equation unit generator, and empowering it to generate new equation units. The quality of programming hinges upon the quality of the equation unit generator. A more capable equation unit generator signifies higher quality programming and greater intelligence within the program. This, in turn, reflects a higher level of intelligence within the life program itself.

8.5. *Bionic Logic* and the Theory of Life Programming

Life programming involves designing and implementing equation structure diagrams, while the design of both equations and structure diagrams necessitates bionic theory and research. Bionic theory encompasses bionic principles and logical physics. As life programs strive for intelligence, the emphasis here is on emulating the human brain through bionic principles.

8.6. Case Study

The large models currently used employ vast amounts of textual or image data for knowledge extraction and learning, generating models with billions of parameters. However, this approach to simulating intelligence suffers from several drawbacks. Firstly, the data and computational costs are exorbitant, hindering deeper research into intelligence. Secondly, the path towards intelligence development is scientifically unsound, resembling the training of animals. For instance, training a dog to stand involves rewarding it with a treat for complying with a command and punishing it for disobedience. This method is unlikely to achieve human-level intelligence. In essence, training machine intelligence using massive amounts of data is inefficient, akin to using industrial-age techniques to try to satisfy the needs of the intelligent age. This represents a misguided path. The correct path for

developing intelligence in the intelligent age lies in discovering new theories and technologies specifically tailored to this era. The Logical Structure School proposes logical mathematics as a new theory, and the equation unit generator as a new technology. Machine thinking capabilities need not rely on the data-intensive training employed by large models. Instead, logical mathematics can be leveraged to create equation unit generators capable of producing new equation units, equations, variables, and variable sets. Technologies specific to the intelligent age should be used, in order to create machine thinking for the intelligent society. In this way, an approach that is more like training puppies will be replaced with human learning and development, eliminating the popular large models with equation unit generators, and replacing industrial society's data training with the logical data analysis methods of an intelligent society.

The Logical Structure School aims to replace today's large models with equation unit generators as the cornerstone of intelligence research.

8.7. Introducing the Eighth Applied Classical Theory

The Logical Structure School introduces the eighth applied classical theory - Life Programming. The key points are as follows:

8.7.1. Basic Forms of Life Programs

The fundamental basis of life programs is the life-giving logical engineering structure diagram, which exists at two levels:

First Level: Logical equations, systems of logical equations, logical equation structure diagrams, logical equation files, logical equation books, logical equation disciplinary compilations, and logical equation academic system compilations.

Second Level: Elementary structures, intermediate structures, and advanced structures.

A common practice in computer software design involves decomposing complex tasks into simpler subtasks to reduce workload. Intelligent programming adopts this principle, using simple, fundamental equations to construct structure diagrams, replacing complex equations with sets of simple equations. This facilitates the operation of the equation unit generator. Similarly, variable transmission paths are designed to connect only consecutive equations, with longer paths achieved by chaining multiple equations together.

8.7.2. Basic Components of Life Programs

① Basic Structure Diagram

The basic structure diagram comprises nodes and paths. Nodes represent simple and fundamental equations, while paths depict the transmission routes for variables between consecutive equations.

Depending on their scale, these diagrams are categorized as logical equations, systems of logical equations, logical equation structure diagrams, logical equation files, logical equation books, logical equation disciplinary compilations, and logical equation academic system compilations.

Based on their intelligent structure, they are categorized as elementary structures, intermediate structures, and advanced structures.

② Clock Equation System Structure Diagram

The clock equation system structure diagram also consists of nodes and paths. Nodes represent simple and fundamental clock equations, while paths depict the transmission routes for variables between consecutive clock equations.

Clock equation system structure diagrams are categorized as clock equations, systems of clock equations, clock equation structure diagrams, elementary complex clock equation structure diagrams, intermediate complex clock equation structure diagrams, advanced complex clock equation structure diagrams, and special complex clock equation structure diagrams. The hierarchy of clock equation system structure diagrams fully maps to the hierarchy of basic structure diagrams.

The final path segment within the variable transmission paths of clock equations within the clock equation system structure diagram always connects to various equations within the basic structure diagram, defining the clock for these equations or their corresponding variables.

③ Communication System

Both basic structure diagrams and clock equation system structure diagrams necessitate their own communication systems. These systems are comprised of three components: post offices, directed lines for variable transmission, and directed lines for clock variable transmission. Post offices are responsible for inputting and outputting all equation units (logical information). It is important to note that, emulating collective travel and return in human societies, individual logical equation structure diagram units can receive and send themselves as long as they possess well-defined addresses. Directed lines for variable transmission and clock variable transmission refer to the establishment of transmission routes for the relevant variables between various equations.

④ Equation Unit Generator

The equation unit generator is designed to generate new equation units, and this capability endows the logical equation structure diagram with human-like thought processes.

⑤ Address Systems

Making use of hardware, memory, and external storage, dedicated address systems are provided for the basic structure diagram, clock equation system structure diagram, communication system, and equation unit generator. This involves creating internal encoding within the machine for real-world address names, drawing upon the experience of traditional computer science and computer network technology in designing address systems.

⑥ Multimodal Interface

Logical equation structure diagrams can represent information in various modalities. Equations, systems of equations, and structure diagrams can express information modalities of varying scales. Variables serve as components within a

modality. Equations combine these components into unified modal units. Clock equation systems are established to control and express the temporal characteristics of multimodal information displays. Post offices, directed lines for variable transmission, and directed lines for clock variable transmission are employed to organize different units within the multimodal information, forming a comprehensive multimodal communication system. By realizing the aforementioned functionalities, logical equation structure diagrams can represent both the intelligence within the structure of subjective initiative, and the multimodal nature of this intelligence. This gives rise to a pioneering graph theory tool tailored to the intelligent age. Obtaining a logical equation structure diagram for an object or process allows for capturing its multimodal representation. The underlying principle is that the logical equation structure diagram determines the values, relationships, and states of variables, while modalities are, in turn, determined by these values, relationships, and states. This implies that the logical equation structure diagram can dictate modalities, including text, images, audio, and video. With the advent of logical equation structure diagrams, discrete changes in variables can be manifested as text and images, while continuous changes can be expressed as audio and video. Logical processes can choose between discrete and continuous representations. For instance, a person moving from the School of Science to the Faculty of Arts can be conveyed either through discrete means, like text and images, or through continuous means, like audio and video. This principle can be extended to describe text-to-video conversion using logical equation structure diagrams. The discrete changes within text are represented using a logical equation structure diagram, identifying the relevant variables undergoing these changes. These variable changes are then expressed continuously. The logical equation structure diagram representing these continuous variable changes is finally translated into video, effectively converting text changes into video changes.

Building upon this principle, it becomes possible to equip life programs with multimodal interfaces and user interfaces.

8.7.3. Equation Unit Generator in Life Programs

The equation unit generator employs the following methods to generate equation units:

① The process begins by identifying a set of input variables and the desired output variables. Then, a path connecting the input variable set to the output variable set is established, revealing the logical relationship between them. This relationship then guides the automatic generation of a new logical equation unit, which can replicate the existing input-to-output mapping and introduce new variables, effectively simulating human thought processes and the generation of new knowledge.

② Alternatively, the process can also start by determining the values of a set of input variables and the desired values of the output variables. Then, a path for logical reasoning connecting these two sets of values is determined, revealing the logical relationship between the input and output variable sets. This relationship

then guides the automatic generation of a new logical equation unit, which can replicate existing input-to-output mapping and introduce new variables, again simulating human thought processes and the generation of new knowledge.

③ The equation unit generator can also work together with the communication system, using newly inputted and existing equation units to generate new ones. Alternatively, new input variables leading to new output values can trigger the creation of new equation units, fostering novel approaches to autonomous learning.

④ Advanced equation unit generators can even generate equation units based on self-defined input and output sets.

⑤ Analysis of class data within equation structure diagrams can enable the equation unit generator to construct new equation units.

It is of great importance to assign fixed addresses, clock equation systems, and communication systems to newly generated equation units. The construction and development of equation unit generators relies on the application of bionic logic principles.

Equation unit generator technology will be the "thinking organ" of the structure of subjective initiative, with a more advanced equation unit generator signifying greater thinking capabilities within the structure of subjective initiative. This endows the logical equation structure diagram with human-like thought processes, marking the birth of the first machine thinking technology.

8.7.4. Data Analysis in Life Programs

Data analysis in life programs moves away from database-centric analysis, relying on the equation unit generator to perform it in a logical mathematical way, also known as equation structure diagram analysis. This falls into two categories:

The first category involves analyzing a known equation structure diagram, and determining the values of one or more unknown variables based on the values of one or more known variables.

The second category deals with unknown equation structure diagrams. By treating several class groups as variable sets, the relationships between these groups, referred to as "interaction", are studied, and the results of this analysis is then used to guide the equation unit generator to create new equation structure diagrams.

The data analysis capabilities of the equation unit generator can potentially surpass the performance of the large models currently in use today.

8.7.5. Intelligence in Life Programs

Intelligence in life programs arises from the following components: the complexity stemming from the basic structure diagram, intelligent clocking provided by the clock equation system structure diagram, intelligent communication facilitated by the communication system, thought processes generated by the equation unit generator, and intelligent addressing enabled by the address system. The core of this intelligence lies in the thinking capabilities of the

equation unit generator.

8.7.6. Basic Platform for Life Programs: The Operating System

Traditional software theory has a long history of studying operating systems. For multimedia network operating systems, the focus has been on providing a hardware and network environment for application software to interface with hardware. The Logical Structure School inherits this concept from traditional computer software operating systems, using operating systems to construct a hardware and network environment for equation structure diagram software. This network environment encompasses the realization of both logical fields and logical networks, allowing humans to use operating systems to interact with equation structure diagram software, and performing various information reasoning tasks. Similarly, equation structure diagram software uses the operating system to access hardware, carrying out structural reasoning. By applying and expanding upon traditional operating system theories, this new form of operating system serves as the operational platform for equation structure diagram software.

8.7.7. Process of Life Programming

① Studying Hardware: As life program platforms are essentially large-scale structure diagram programs, they require careful integration with hardware. This involves combining aspects such as storage, communication, addressing, memory, peripherals, and computing power supply.

② Constructing Basic Structure Diagrams and Clock Equation System Structure Diagrams: Bionic logic and logical physics are employed to create these diagrams, while logical mathematics is used to construct specific equations.

③ Researching and Constructing Equation Unit Generators: This process leverages bionic logic, logical physics, logical mathematics, and other relevant intelligence technologies.

④ Creating the Life Program Operating Platform: Similar to traditional operating systems, the operating platform aims to reconcile the relationship between software and hardware. Hence, it is also referred to as the "operating system". It has two main tasks: firstly, to establish the communication system, address system, peripheral support for the multimodal interface, and other necessary hardware interfaces, in a manner analogous to traditional multimedia network operating systems. Secondly, to embed the basic structure diagram, clock equation system structure diagram, and equation unit generator within the prepared hardware environment.

⑤ Activating the Operating Platform for Life Program

⑥ Utilizing the Life Program Operating Platform: This platform supports various interaction modalities, including voice control and voice programming, and using voice commands to instruct the equation unit generator to generate applications. Alternatively, text input describing the desired logic can guide the equation unit generator to create its own applications.

This marks the birth of the first software theory and software development

theory based on equation structure diagrams.

9. Life Learning Strategies

9.1. The Purpose of the Logical Structure School and Life Learning Strategies

The Logical Structure School proposes a software approach based on life programs, with intelligence at their core. Throughout the universe, the intelligence of all life forms stems from learning, while instinct arises from structure. The most advanced learning process combines externally imposed learning with autonomous learning. For instance, when attending school, people engage in rote memorization of objective knowledge (externally imposed learning) while also developing subjective skills through problem-solving and experimentation (autonomous learning). Therefore, the Logical Structure School advocates a learning strategy that combines both externally imposed and autonomous learning.

9.2. Structure of Subjective Initiative and Life Learning Strategies

The core of a life program is the equation structure diagram representing the structure of subjective initiative. This diagram evolves as the equation unit generator produces new equation structure reaction diagrams, which are themselves generated through learning. Consequently, learning becomes the primary method for modifying the equation structure diagram within the structure of subjective initiative, mirroring the principles underlying human educational philosophies.

9.3. Subjective Initiative Structure Engineering and Life Learning Strategies

The core of subjective initiative structure engineering lies in the equation unit generator, which is fundamentally based in the concept of machine learning. Therefore, the learning capability of the equation unit generator, designed to implement the strategy of combining externally imposed and autonomous learning, becomes central to structure engineering. A higher learning capacity signifies a more advanced engineering process.

9.4. Life-Giving Logical Equation Structure Diagrams and Life Learning Strategies

Life learning within the Logical Structure School framework involves learning through equation structure diagrams, resulting in the generation of new logical equations and equation structure diagrams (equation structure reaction diagrams).

9.5. *Bionic Logic* and Life Learning Strategies

Bionic logic serves as the most significant form of externally imposed learning within all life learning strategies. This is analogous to how basic education in humans primarily focuses on literacy and memorization, or how common sense

forms the foundation for human life.

9.6. Case Study

The learning theory proposed by the Logical Structure School involves creating new equation structure diagrams (specifically, equation structure reaction diagrams) that represent learning. In contrast, the learning theory behind large models involves creating new flowchart programs, which is effectively learning by flowchart.

Large models utilize huge amounts of data for training, identifying patterns within this data to develop equations that govern data processing and generate intelligence. This process demands substantial computational resources and follows a path of intelligence development where equations are first generated and then applied. In other words, only externally imposed learning is employed, with no possibility for autonomous learning. Ultimately, this is the same as the intelligence development observed in animals. Conversely, the Logical Structure School advocates for learning through a regulated equation unit generator. The externally imposed learning strategies of bionic logic and logical physics are combined with the autonomous learning strategies of logical mathematics and logical data analysis. This is aligned with the human approach to intelligence development, which integrates both externally imposed and autonomous learning. In language learning, for instance, memorizing texts represents externally imposed learning, while essay writing embodies autonomous learning. In addition, the learning methods proposed by the Logical Structure School do not necessitate the massive data and computational costs associated with large models. These methods represent the most suitable path for intelligence development in the intelligent age. The use of equation unit generators for learning should replace our current reliance on large models.

9.7. Introducing the Ninth Applied Classical Theory

This section introduces the ninth applied classical theory proposed by the Logical Structure School - Life Learning Strategies. The key points are as follows:

9.7.1. Subject of Learning: The Equation Unit Generator

The primary subject of learning within the Logical Structure School framework is the life program equation unit generator. These generators are categorized into three types:

① Equation Unit Generators for Artificial Intelligence

These generators emulate the type of learning carried out by the human brain, producing knowledge and responses akin to those observed in humans. They focus on learning how to perform information reasoning, acquiring knowledge and reactions related to this process.

② Equation Unit Generators for Robots

These generators simulate human learning, generating knowledge and responses similar to those observed in the human body. This knowledge, and its

associated response, is all related to control. In particular, it is important to understand how the life program generates new equation structure reaction diagrams through its equation unit generator to control various intelligent devices connected to the program. This encompasses both information reasoning learning and structural reasoning learning.

③ Equation Unit Generator Groups for Intelligent Societies

This category represents a simulation of human society using a group of equation unit generators, which comprises a leadership group and a populace group. The leadership group learns information and societal reasoning related to governing society, while the populace group receives and acts upon the forms of reasoning generated by the leadership group. Information reasoning from the leadership group often refers to policy development, while societal reasoning is implemented through laws. Learning within the leadership group machines involves understanding how to create machine policies and machine laws, while societal reasoning learning focuses on how to implement these policies and laws on the populace group machines.

④ This paper primarily focuses on information reasoning learning and structural reasoning learning in robots.

9.7.2. Forms of Learning: Equation Structure Reaction Diagrams

Traditional machine learning requires vast amounts of data and substantial computing power to derive program equations, which then provide information for various needs. This approach suffers from three significant flaws: Firstly and secondly, the economic feasibility of this method is questionable due to the exorbitant amounts of associated data and computational costs. Thirdly, the path towards intelligence development deviates from the natural emergence of intelligence within the universe, casting doubt on its long-term prospects. The universe designed a path for intelligence development that mirrors the human path. Traditional machine learning, constrained by current hardware limitations, follows a path that more closely resembles the training of animals. This path is inherently flawed, as data-driven training is unlikely to achieve advanced intelligence.

In response to the needs of the intelligent age, and anticipating future advancements in hardware, the Logical Structure School proposes theories for both individual logical subject learning and collective learning within logical subject societies. This paper primarily focuses on individual logical subject learning, specifically outlining a learning theory for robots. Within this framework, the brain of a robot (represented by the equation unit generator) receives external information and engages in information reasoning through learning, producing equation structure reaction diagrams as its learning outcomes. These diagrams then drive structural reasoning, controlling the intelligent machinery of the robot.

Equation structure reaction diagrams represent the form and outcome of learning within the Logical Structure School framework, embodying both structure diagram learning and logical equation learning. This learning process is synonymous with information reasoning, employing suitable strategies to analyze

external information through information reasoning, and ultimately generating equation structure reaction diagrams. These diagrams represent the knowledge acquired by the logical subject. Equation structure reaction diagrams are themselves life-giving logical equation structure diagrams. Their role is to modify the existing structure diagram of the logical subject. The new logical subject structure diagram is then used for structural reasoning, controlling the robot's actions. These new equation structure reaction diagrams, when used to modify the original diagram, not only replicate existing input-to-output mappings but can also introduce new variables, using the output of the new diagram to control intelligent machinery and achieve new forms of structural reasoning. This simulates human thought processes and the generation of new knowledge.

9.7.3. Learning Strategies

The strategies employed to utilize external information and construct equation structure reaction diagrams include:

1) Bionic Logic Strategies

Bionic logic strategies involve three steps. The first step focuses on emulating the human body, leveraging disciplines like biology, medicine and psychology to study human patterns, particularly thought processes, brain-body control mechanisms, and the functioning of sensory organs. The second step translates these patterns into logical equations, combining them to create equation structure reaction diagrams, which are then stored within the equation unit generator's memory for later retrieval, representing information reasoning, or learning, through bionic logic. The third step involves retrieving these equation structure reaction diagrams to control the robot's actions, representing structural reasoning.

2) Logical Physics Strategies

Logical physics strategies also follow a three-step approach. The first step involves studying the various scientific laws that govern the universe. The second step translates these laws into logical equations, combining them to form equation structure reaction diagrams, which are then stored within the equation unit generator's memory for later retrieval. This constitutes information reasoning, or learning, based on logical physics. The third step uses retrieved equation structure reaction diagrams to control the robot's actions, representing structural reasoning.

3) Logical Mathematics Strategies

While bionic logic and logical physics strategies represent externally imposed learning, logical mathematics strategies embody autonomous learning, since they are able to leverage the principles of logical mathematics to create various autonomous learning methods:

① This method begins by determining a set of input variables and the desired output variables. Then, a path connecting the input variable set to the output variable set is established, revealing the logical relationship between them. This relationship then guides the automatic generation of a new logical equation unit, essentially creating a new equation structure reaction diagram. This new diagram is used to modify the original equation structure diagram of the logical subject. The

resulting new structure diagram replicates existing input-to-output mappings and introduces new variables, using its output to control intelligent machinery and achieve new forms of structural reasoning. This simulates human thought processes and the generation of new knowledge.

② Alternatively, the process can be started by determining the values of a set of input variables and the desired values of the output variables. Then, a path for logical reasoning connecting these two sets of values is determined, revealing the logical relationship between the input and output variable sets. This relationship guides the automatic generation of a new equation structure reaction diagram, which is then used to modify the original equation structure diagram of the logical subject. The resulting new structure diagram replicates existing input-to-output mappings and introduces new variables, using its output to control intelligent machinery and achieve new forms of structural reasoning. This again simulates human thought processes and the generation of new knowledge.

③ The equation unit generator can also work together with the communication system, utilizing newly input equation structure reaction diagrams and existing equation units to generate new equation structure reaction diagrams. Alternatively, new input variables leading to new output values can trigger the creation of new equation units, fostering novel approaches to autonomous learning.

④ Advanced equation unit generators can even generate new equation structure reaction diagrams based on self-defined input and output sets.

4) Logical Data Analysis Strategies

Logical data analysis strategies also fall under the discipline of autonomous learning. They share similarities with data training using large models, since both aim to generate program equations from data. However, there are some key differences: ① Large model data training first follows a path of training, only after which equations can be generated and applied. Logical data analysis can generate equations instantly; ② The pre-generation and subsequent application of equations in large models indicate an externally imposed learning strategy. Conversely, the immediate generation and application of equations in logical data analysis point towards an autonomous learning strategy; ③ Large models rely on flowchart programs for their application, while logical data analysis uses new equation structure reaction diagrams, highlighting a difference in program structure; ④ Large models require substantial data and computational resources, employing a method akin to training animals, and thus represent a flawed approach to intelligence development from the industrial age. In contrast, logical data analysis consumes significantly fewer resources and adopts a human-like learning approach, mirroring the human process of acquiring knowledge first and then developing skills through thought. This establishes a suitable path for autonomous learning in intelligent machines in the intelligent age.

Logical data analysis strategies include the following:

The first category involves analyzing a known equation structure diagram, and then determining the values of one or more unknown variables based on the

values of one or more known variables.

The second category deals with unknown equation structure diagrams. By treating several class groups as variable sets, the relationships between these groups, referred to as "interaction", can be studied. The results of this analysis then guide the equation unit generator to create new equation structure diagrams and new equation structure reaction diagrams.

5) Strategies for Multimodal Interface Selection

Life programs can feature multimodal interfaces. The development of autonomous learning strategies for multimodal interface selection represents an externally imposed learning strategy. This involves combining bionic logic with logical physics to generate new equation structure reaction diagrams for multimodal interface selection. In this way, it is possible to modify the original equation structure diagram of the logical subject and enable dynamic multimodal interface selection.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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