Establishing Knowledge Systems in the Most Rigorous Order— from Purely Logical Beliefs to Methodology and Universal Truths

Abstract:

Knowledge is correct and reliable when its foundation is correct, but humans never have the correct beliefs and methodology. Thus, knowledge is unreliable and the foundation of knowledge needs to be reconstructed. A pure rationalist only believes in logic. Thus, all matter and experience must be propositions derived from logic. The logically necessary consequence of this belief is truth; logically possible consequences are phenomena, and logically impossible consequence are fallacies and evils. This paper introduces belief and its logical consequences, such as discovering first knowledge, both logically and illogically, establishing logical methodology, deducing truths purely through logic, and discovering unprovable truths by imitating the Universe. Logic and illogic are undeniable beliefs, and the reality of the Universe is the ultimate cause of everything.

Key words: purely logical belief; first knowledge; pure rationalism; undeniability; good and evil; imitating the Universe; logical necessity; logical impossibility; ultimate theory; empiricism

Introduction

The following concepts are constructed purely logically; thus, they are independent of any empirical evidence and are universally valid in all disciplines. Moreover, they retain the most important part of their traditional definitions.

The most basic and important knowledge of the world is belief, also called “first knowledge,” which produces other types of knowledge. For a person, reality is the nature of the external world, whereas belief is the nature of his mind. Humans often have a combination of beliefs, such as matter, experience, religion, logic, democracy, freedom, law, tradition, self-interest, wealth, life, consanguinity, truth, and so on. If a theory does not include any content that cannot be explained logically, it is the ultimate theory.

If logic is the only belief, it is purely logical belief, or PLB. Purely logical reasoning, or PLR, represents causal inferences starting from PLB. According to PLB, it is necessary to exist in a world in which everything is logical, called a purely logical world, or PLW. Methodology is a set of research methods. Purely logical methodology, or PLM, stands for PLB-based research methodology. Pure logic is the PLB-based ultimate theory, including PLB and its consequences.

When temporary knowledge is wrong, this is called an error, such as knowledge about phenomena or behaviors; when eternal knowledge is wrong, it is called fallacy, including wrong beliefs, methods, rules, laws, and so on. The right belief is the most important knowledge, and the greatest challenge mankind faces is fallacious beliefs. There is no proof that humans have discovered the right belief or methodology. Thus, any knowledge may be erroneous.

Through logical analysis, this paper explains that PLB is the only logical belief and reality. Empirical truths are fallacies. Hence, there are several levels of judgment. Logical, or most logical, means as logical as possible. However, illogic is not logical error. Instead, it is logical impossibility that represents something that is impossible to be logical; this is the most serious error, which is called fallacy. A logical necessity is the inevitable or invariant consequence of PLB, which is called truth. Truth has been widely accepted as empirical truth, or something that accords with fact, but this is a fallacy. Most empirically true knowledges are not logical necessities, or not logically true; hence, they are temporary knowledges. A logical possibility is a variable consequence of PLB, called a phenomenon. Logical impossibility, possibility, and necessity together form a PLW. The change of a phenomenon is determined by rules. The rules are divided into good and evil, according to whether they represent truth. For example, the earth's rotation is a phenomenon, not truth; laws are rules but they are mostly evils. Good is the best rule, while evils are not. Evils have its own causal inferences. Thus, empiricists attempt to study evils; yet they even treat their inferences as truths. However, as pure rationalists or logical extremists, they only believe in PLB. In various combinations of empirical evidence and logical evidence, the correct or logical way is to be extremely logical. Evil will be eliminated by excluding empirical evidence.

The main questions about truth include: Are there truths for belief and methodology? How can we discover all the truths the best way, or most logical way? How can we organize all knowledge the best way? What is the reality behind phenomena and basic natural laws? What is the ultimate theory? What is good? These questions, especially the first three, are the focus of this paper.

Traditional methodology is not limited to a specific methodology, but includes all historical ones, which are partially based on empirical evidence, including but not limited to statistical data, scientific experiments, historical records, religious doctrines, and national traditions. Among humans, there has never been a real rationalist, and they have always been empiricists, though to various degrees. Thus, traditional researchers are also called empiricists in this paper, as they believe in some empirical knowledge. It is possible for empiricists to have empirical beliefs unconsciously, and to use empirical knowledge indirectly, because traditional logical rules are based on empirical induction. On the other hand, real rationalists may use much empirical evidence, but with no empirical belief, like imitating the Universe. PLB is the first step to becoming a real rationalist, and PLM and PLR are the next steps.

Although humans have discovered many propositions, even a few truths; without correct belief and methodology, there has never been correct judgment of truth. Thus, it is most likely that society contains a large number of fallacies and evils. This paper offers the basic framework of a correct knowledge system, including how to identify fallacies and evils. However, the difficulty lies in the correct part of the readers’ beliefs. The belief in logic, truth, and freedom helps to judge the theory, and logic the best.

If one prefers empirical evidence, given that some examples or previous theories are not well explained, the literature might help. The author’s own beliefs are the result of a long evolutionary process. He improved his belief and methodology by doubting empirical evidence, and finally abandoned it completely. Most previous discoveries are not addressed in this paper, as some are obsolete and some did not yield new progress. The emphasis is on new progress, not reviews. The author made a strict distinction between logical evidence and empirical evidence. However, he recognized some empirical evidence, like those who favor PLB and oppose empiricism. They are not evidence for PLB, but evidence for empiricism disaccords with itself; it is even inferior to PLB in terms of empirical evidence.

In this paper, he would rather discover truth than convince others. (a) He had been fallacy-averse and alerted to fallacies and evils, but not alerted to minor errors. However, empiricists cannot agree with him. (b) He had never been risk-averse, and sought balance between reducing fallacies and discovering truth, and made some bold conjectures that do not affect the rightness of the core theory. It is easier to judge fallacy than to discover truth; hence, the value of discovering one truth is greater than the loss of discovering one fallacy. (c) Because of his early experiences and fallacious beliefs, he has long been belief-averse, and thought that belief should be eliminated. Hence, he regarded methodology as the basis of science and constantly improved his methodology. He focused on the idea that truth must be unconditional and he made some discoveries. However, a logical foundation cannot be established without correct belief. In this paper, those theories are reconstructed, simplified, and strengthened by PLB. Reconstruction itself offers examples and exercises for PLB and PLM.

His motive for study was to defeat all evil, and to take the discovery of truth as his approach. He mainly experienced three kinds of evil; thus, he focused on three groups of topics. (a) He was forced to accept evil beliefs, such as state leaders, communism, and materialism. Then, his distrust of the government and education extended to all knowledges; however, he did not accept nihilism and he believed in the existence of absolutely correct belief and truth. The main achievements were PLB and PLR, [1], which are reconstructed in Sec. 4. (b) After a long life in an evil social system, he longed to establish a perfect society with the best social rules. The main achievement was imitating the Universe to establish a perfect society, [2], which is reconstructed in Sec. 5. (c) Because of a lack of correct methodology for guiding research, he studied methodology from childhood. The main achievements included imitating the Universe to establish perfect thinking, [2], and using military principles to explore the unknown world, [3], which are reconstructed in Sec. 7.

The formulation of PLB and PLM has several sources. (a) At first, due to the lack of empirical conditions, logical inference was the easiest route for the author. Fortunately, it is also the best route to eliminate evils, whereas politics, punishment, and the army cannot. (b) Einstein's thought experiment reminded the author that correct logic might be a more important variable than empirical evidence. (c) There were both positive and negative influences from the modern sciences. From physics, he learned basic natural laws, together with a belief and methodology based on experiments. From philosophy, he learned metaphysics, logic, and liberalism, together with materialism and empiricism. (d) From axiomatic theory, he initially hoped to establish an axiom-based ultimate theory. He turned to belief-based theory because negation of an axiom must be another axiom, while correct belief is undeniable. (e) Fortunately, truth, logic, and freedom were always included in his belief combination; thus, his beliefs are adaptable. When he discovered beliefs and knowledges that contradicted his beliefs, he changed his beliefs.

As he could not ensure his inferences were always correct, he tried to reach important conclusions through several independent inferences, like (a), (b)... He realized, the further away an inference is from belief, the less reliable it is. Therefore, he tried to judge propositions directly from belief, like logically necessary and impossible.

He once thought about a problem: If all traditions were fallacious and evil, would it be possible to overcome traditional inertia? Increasing the independence of research is one of the keys [3]. This research proved that it was possible to finish a study in a manner independent of scientific tradition, to overcome a long history of evils, to discover other routes for the evolution of science and society, to establish the ultimate theory of everything, and to unify truths for all intelligent life on the common ground of logic. They seemed empirically impossible, but logically inevitable. Humans have free will, and there are many different evolutionary paths. As proved in the following sections, humans chose the wrong beliefs; thus, they are on the wrong paths.

1. Establishing PLB

The theory of first knowledge makes the world a logical necessity. It explains infinite existence from unique first knowledge, which is also the most reliable knowledge. This section aims at theorizing and optimizing first knowledge.

Belief should be a logical necessity, be first knowledge, be undeniable, and be productive by acting on itself. (1)

As explained in detail throughout this paper, to establish the most logical knowledge structure,
It is necessary to discover knowledge in the order of first knowledge, research methodology, truth, and other knowledges. (2)

Because earlier knowledges are necessary for later knowledges,
Reliability declines in the order of first knowledge, methodology, truth, and other knowledges. (3)

There is no reliable knowledge when belief and methodology are incorrect, because they are necessary to discover and evaluate knowledge.

First knowledge is the production mechanism of all knowledge and it can be discovered by analyzing the mechanism microscopically. (4)

The candidates for first knowledge are also candidates for beliefs. For any knowledge, logic is necessary knowledge to discover knowledge, evaluate its reliability and importance, and judge its truthfulness. If first knowledge is logical, it must be universally necessary, because no other knowledge can guide or limit first knowledge logically.

If the follow-up theory is wrong, the logical choice is to revise the theory. The second choice is that there is no logical knowledge system; thus, no logical first knowledge and an ultimate theory.

If PLB is false, the logical conclusion is that there is no logical knowledge system in this world. (5)

No alternative knowledge can logically become first knowledge.

In a logical knowledge system, any attribute of knowledge, including reliability, value, and correctness, should come from how well they satisfy first knowledge. For empiricists, reliability comes from concordance with empirical evidence; for PLB it comes from concordance with logic. However, empiricism itself needs to be logical first. If first knowledge is wrong, all evaluations could be wrong.

The first evaluation should be how logical first knowledge is. (6)

This assesses how logical the foundation of a knowledge system is. Without this first evaluation, other evaluations are uncertain knowledge. Therefore, traditional judgment for reliability and value is unreliable from the perspective of PLB. For example, some beliefs, like religious doctrines, are based on historical records. However, without logic, it is impossible to identify their authenticity, let alone whether they are true. Thus, the reliability of the doctrines cannot surpass logic.

The correct belief is clear when studying first knowledge microscopically. (7)

If something is empirically reliable, it is logical to ask why empiricism is reliable; e.g., why sensation and perception are reliable. As sensation must be related to natural laws and possibly related to social laws, why are these are reliable? By studying the details of a knowledge, it will expose the correct basic belief hidden beneath the macro knowledge, similar to discovering elementary particles hidden beneath macroscopic phenomena.

Logic-illogic is the uniquely necessary first knowledge. (8)

Knowledge production is the consequence of correct belief, while undeniability is the cause of correct belief. The latter leads to first knowledge, as well. For a person,
Freedom of belief allows coexistence of all beliefs, and the ultimate belief is the sum of the undeniable ones. (9)

The key points are as follows. (a) Freedom of belief covers all beliefs, not choosing one belief freely. (b) Belief should be negated correctly. Negation of logic is illogic, not empiricism. (c) Negation cannot be ignored. From (12), inequality between an existence and its negation should be explained logically; thus, it is necessary for a third party to exist. For a single first knowledge, there is no third party; thus, it must be equal to its negation. For the same reason, a single first knowledge cannot be partially correct and partially wrong. Pure empiricists cannot select empirical evidence, unless there is a combination of first knowledge. If they select evidence benefiting themselves, self-interest must be part of first knowledge. However, combinations can never be logically consistent (see Sec. 2). (d) Deniable beliefs should not be observed because they will be offset by their negations, like belief and unbelief in law. However, the negation of logic is illogic. They correspond to ordered relations and disordered relations, or deduction and induction, respectively; and together form logic-illogic. (e) The sum of undeniable beliefs is observable, and defined as first knowledge. (f) The belief of freedom is usually treated as a rule for behavior. However, it should interact with belief first. It offers freedom to beliefs. As the rule for beliefs, it is invariant because it is impossible to be more logical, or freer, by violating the rule.

By now, there are three purely logical approaches to discover and judge correct belief. (a) Choose belief illogically, guided by (9). Then, the existence of belief and reality is inevitable and should be identical. (b) Choose belief logically, guided by (4)-(8). Then, logic is the most reliable knowledge, and becomes belief. (c) If the idealized scientific theory, or the ultimate theory is the most logical theory, the theory can be discovered by pushing it to the limit of most logical, and reality must be logic too. Because of (a) and (b), every intelligent life has to make logic the first knowledge and be able to discover logical consequences of a belief, as shown in this paper. However, if belief is not the reality, these consequences would be discordant with the external world, and it would be impossible to establish a knowledge system purely logically to explain everything, to establish ultimate theory..., it would be even impossible for intelligent life to originate because it would not be the fittest. Survival of the fittest partially and empirically proves that belief and reality are identical.

Beliefof logic-illogic is undeniable. (a) If illogic is belief, freedom of belief will lead to the existence of first knowledge and its consequences. (b) If logic is belief, it is impossible to logically prove that illogic does not exist. The law of non-contradictory is empirical, not logical truth. (c) It is supported by some logical evidence, such as the existence of undeniable propositions, and the non-existence of undeniable evil. To prove the existence of undeniability, it is easy to construct some undeniable propositions, such as "truth exists" and "unconditional propositions exist." If they are incorrect, "truth does not exist" will become truth and "unconditional propositions do not exist" will become an unconditional proposition. The sum of such propositions would be that undeniable unconditionally exists, undeniability is undeniable, “undeniability is undeniable” is undeniable, and so on. Undeniability can be replaced by logic. However, it is impossible to enumerate undeniable propositions, and therefore, impossible to construct or understand basic concepts, including logic, reality, undeniability, and ultimate cause, by decomposing the concept of undeniability.

If empirical evidence is preferred, there is some for PLB. (a) Any evidence, such as experiencing and recording, requires logic. (b) Perceptions and records can be wrong; thus, they need to be judged and corrected by logic. Even if the result of judgment is that they are reliable, their reliability cannot exceed that of logic. (c) As proved in Sec. 4, there is knowledge, and even a purely logical world, without the help of empirical evidence. Moreover, without logic, there can be no reliable empirical knowledge, including empiricism itself. Therefore, it is impossibly logical to question the truthfulness of logic by empiricism. For example, religion needs logic, but logic does not need religion. Therefore, gods may exist but they are impossible to be beliefs. For their doctrines, if they discord with logical truths, are evil; if they accord with truths, the correct belief is still logic-illogic.

Fallacious knowledge originates from fallacious first knowledge, and from discovering knowledge in the wrong order. For example, belief in learning, books, and teachers are empirical and cannot satisfy (1); thus, they are fallacious and might lead to learning more fallacies. Learning may be a method for non-intelligent life, such as babies, who cannot believe in PLB. That learning knowledge is beneficial is not evidence for its correctness, because it is not logical. If logic is a belief, it is necessary to discover knowledge in the correct order. It is the most beneficial, though it is not feasible for non-intelligent life.

If humans acquire knowledge in the wrong order, correct knowledges often coexist with wrong knowledges. By organizing knowledge in the correct order, wrong knowledges will be identified. For examples, fallacious belief cannot satisfy (1); fallacious research methodology, such as instinct, cannot be established purely logically.

First knowledge produces itself; thus,

A logical cycle is necessary for establishing first knowledge. (10)

The cycle has some unique properties waiting to be discovered. (a) It is a complete cycle, without any other existence. Circular reasoning consists of incomplete cycles. “Using method to judge method” is incorrect unless the method is purely logical. (b) It is an expanding cycle, and thus, it is open and creative, similar to the expanding Universe.

Belief has some properties contrary to all the other types of knowledge. (11)

These include the conditions in (1). These properties are logical necessities for correct belief. Without a logical cycle, it is impossible to logically produce first knowledge. Moreover, truths have some specific properties as well, such as being logically necessary, universal, eternal, and unconditional. It is fallacious to apply the properties of most knowledges to truth and belief.

Humans should be in awe of correct belief or truth, at least, instead of fallacies and evils, such as self-interest, political power, gods, lies, and fictional characters. However, humans focus much more on the empirical than on the logical, and many logical impossibilities are popular.

PLB assumes that the Universe is a PLW, in which,
Every form of existence is purely logical. (12)

This is the most basic rule for the world. Thus, logical inferences run automatically in a PLW. That the human brain is necessary for logical reasoning is wrong empirical induction.

In (1), logic is the origin for other conditions. First knowledge makes the discovery of knowledge logical; self-interaction makes the Universe logical; undeniability makes the cause of logic logical.

Some explanations are necessary. (a) Existence includes both tangible existence, like matter, and intangible existence, such as natural laws and reality. The division of tangible existence and intangible existence is empirical, not purely logical. (b) For existence, being purely logical requires all properties to be logical, instead of some properties. For example, in modern physics, some eternal properties, such as charges and quarks, cannot be explained purely logically. (c) From (12), existence independent of logic should not exist; thus, it must be logic, its causes, or its consequences. (d) Not only following a rule leads to some logical inferences, but following its negation does too. For example, following no law is a logical necessity, corresponding to illogic. However, an inference would be a logical impossibility unless all logical impossibilities in the inference are excluded. (e) The correct ultimate theory must be based on PLB. There are two possibilities for other candidates, impossibly logical or impossibly ultimate. In the process of tracing the causes of various types of existence, at first, there are different reasons for different types of existence, such as the electron and gravity. If they are ultimate, they are impossibly logical. If they are logical, they are impossibly ultimate. Finally, all the causes must converge on logic, which is both logical and ultimate.

There is also empirical support for PLB.

The most reliable empirical evidence is that everything has a reason. (13)

This is supported by the fact that human behavior, particle motion, and even social rules have reasons. Then, it looks strange to assume that natural laws have no reason. It is impossibly logical. Abandoning the assumption not only accords with PLB, but also with (13). The empirical evidence that the reasons for natural laws have not been discovered and that natural laws describe phenomena very well do not require the assumption to be correct.

Any knowledge should be possible to be purely logical. (14)

(a) This is logically necessary, because logical impossibilities must be excluded. (b) It is more practical than (12), which is a precise standard but sometimes unfeasible. (c) Problems are allowed to be solved later, even unsolvable. For example, as long the Universe is a logical necessity, it is not necessary to know the history of the Universe.

Deduction is the only choice for discovering belief, and the first choice for truth; induction is the second choice for discovering truth, and the only choice for unprovable truths. (15)

To establish science in a logical order, it is usually best to deduce methodology and truth from first knowledge. However, it is not truth because there is also illogic and induction. For empiricists, the best approach means the most direct, reliable, and cost-effective approach. Then, it is usually wrong to discover truth empirically, which is equivalent to making causal inferences from possible consequences of PLB to necessary consequences. A conclusion would be more reliable by deducing it from PLB, the most reliable knowledge of truth than from the possible consequences of PLB, because the inference is shorter for the former, and that inference from possible consequence to necessary consequence is error-prone.

For pure rationalists, if there is empirical evidence, the logical conclusion must be:
Empirical evidence is the product of logic. (16)

This seems empirically impossible but it is logically inevitable.

Any knowledge must conform with first knowledge. (17)

Empiricists treat logic as empirical knowledge; thus, empirical verification is necessary. For pure rationalists, logic is first knowledge, and empiricism is a possible knowledge that needs logical verification. Empirical verification is unnecessary, even when it is feasible.

Since knowledge discovered on a fallacious foundation is possibly wrong, science needs reconstruction.

It is necessary to inspect all knowledge from the perspective of PLB. (18)

The inspection includes the correctness of first knowledge, the accordance of knowledge with first knowledge, and the correctness of inference. First knowledge influences the reliability of knowledges and inferences, not only directly, but also indirectly through various variables, such as abilities, methods, logical rules, education, research, and the publication system. They influence not only the correct rate of inferences and discoveries, but also that of reviews. Thus, there are wrong research directions and judgments about theories.

2. Logical relationships between beliefs

In Sec. 1, logic-illogic was proved to be a belief. In this section, other beliefs are excluded logically. It is possible that first knowledge is a combination of beliefs, including all independent basic types of knowledge for further reasoning. If one believes religion purely because it is a tradition, tradition is a belief because it is more basic. There are various belief combinations. However, they usually include belief in logical evidence and empirical evidence, at least.

When there are contradictions between different evidence, the importance of beliefs can be compared, and logic is often regarded as an unimportant belief. For example, in the face of a life-threatening situation, many people prefer to give up other beliefs; though most traditions are never logical, they are widely and unconsciously followed.

Establishing first knowledge logically corresponds to axiomatizing the whole knowledge system. (19)

This is the axiomatization of all knowledge instead of a subject. (a) Each belief corresponds to an axiom. Truths correspond to theorems. (b) From (17), a knowledge must conform to all beliefs simultaneously. Empiricism should exclude empirically impossible knowledge, but it cannot coexist with (14). It is impossible to logically confine a belief, like confining empiricism to the empirical sciences, unless it is not first knowledge. However, no belief can be satisfied by all knowledges other than logic-illogic. Choosing a belief serving inference best represents discrimination against negative results, like discussing religious topics with religious beliefs instead of scientific beliefs. The preference usually comes from other beliefs, like self-interest. (c) Axioms do not contradict each other. Because there is a contradiction between empirical truth and logical truth, only pure rationalists and pure empiricists satisfy this condition; (b) and (c) correspond to logical consistency. (d) Empirical evidence, like the history of science, is not logical evidence for choosing beliefs, because there are many contradictory instances of empirical evidence and empiricism itself cannot make the correct choice. Some would say there have been many discoveries using traditional methodology, but some would say the correct rate has always been low. There are also various standards. Some think the number of discoveries is more, some others think it is less. For pure rationalists, PLB is a complete axiom system, because there is a purely logical inference from first knowledge to methodology and truth; thus, empiricism is unnecessary for truth. (e) Every independent basic knowledge should be included. Axioms about numbers should be beliefs if they are not consequences of other beliefs. If the PLB system is complete, mathematical and physical axioms should be theorems. The inferences in Sec. 4 are logical evidence that this is possible, though it is impossible to finish the work in the near future. (f) In the PLB system, PLB is the only axiom. As long as empirical evidence is always inferior to logical evidence, PLB should be followed. Then, empiricism is not an independent belief or method, and it can be used for select behavior or phenomena, but never truth.

PLB is the logical axiom system of all areas of knowledge. (20)

It is consistent, complete, and independent. However, logical consistency in traditional logic is not the same as that in pure logic, which is waiting to be discovered.

Comparing PLB with other beliefs, there are some conclusions. (a) Empirical comparisons, like listing facts and data, are wrong. Sometimes, it helps for the purpose of persuasion. However, after discovering that the persuasion process is not in line with PLB, persuasion should be abandoned. As with an evil process, even if the consequence is good, total evil does not necessarily decrease; if it does not, evil may even increase. (b) If compared purely by logic, PLB is correct. (c) Since there is much more empirical evidence than logical evidence, empiricists are more likely to make more discoveries. However, with fallacious belief, the chances of discovering evils are also much higher. (d) Purely logical approaches are sufficient evidence to discover correct belief, although they are simple relative to the modern sciences. Humans have a habit or belief in more evidence, and sometimes they are even willing to sacrifice other beliefs for more evidence. Verification from multiple independent sources does not increase reliability unless the sources are logical. It is error-prone to judge a cause by its consequences. For example, truth can be verified repeatedly, but the reverse is false. In an evil society, there are more opportunities for fallacy to be verified. For example, the effectiveness of fiscal policy and monetary policy have been empirically verified by numerous studies. However, they can be defeated by one simple fact: there is no correspondence in the Universe. For pure rationalists, a rule could not be truth unless it is proved by PLR, or there are similar laws in the Universe. (e) Even the goal of convincing is neither good nor truth, because it requires the existence of evil. PLB does not include how to deal with evil. Thus, persuasion and war are logical impossibilities, and it is unreliable to judge good and evil from them, such as victory and defeat.

If empiricism is belief, it is impossible to classify empirical evidence into good and bad; thus, empiricists have tried to explain every piece of evidence logically. To prove or ensure that the social status quo is good, they have proposed many theories, such as democracy, truth is relative, existence is reasonable. However, they are not logical. For example, it is a logical necessity to explain why these theories are not universal. If empirical existence is always good, it is unnecessary to object to anything; thus, they tend to be conservative.

Truth is simple, even the simplest. Any superfluous rule is evil. The content of truth should be the only criterion for papers, especially when truth is so scarce. However, the actual situation is that publishers put forward higher expectations, and make these expectations into rules. Papers containing truth sometimes cannot live up to these expectations, like grammar and format. If most good papers can meet those rules, empiricists believe they are good rules. However, they are logical impossibilities. Logically, empiricists expect to help the truth empirically, but they have ignored some logical truths. Evils in different fields seem to be cooperating with each other, such as those in traditional beliefs, educational systems, research methodology, publication systems, law, and political power. Maybe, empiricism is the reason why evils tend to favor evils and against truths.

Humans prefer the empirical to the logical, and even logicians have established basic logical principles empirically. It is even worse for illogic. Physicists have had much stronger belief in logic than in illogic; thus, they were reluctant to accept probability-based quantum theory. Probability and determinism coexist, similar to logic-illogic. Believing in PLB will eliminate evils and evil-based phenomena. There is no irreplaceable thing other than truths, such as irreplaceable love and priceless life. Life and love are phenomena that are impossible to compare with truth. They are over-rated because of the belief of self-interest.

The greatest function and value of PLB is to discover and identify truth, including beliefs, rules, methodology, and even systematic trends. All knowledges are connected by logic. With a single first knowledge, there are no longer isolated concepts, no matter how far away they are from other knowledges. A partially plausible reason may be a fallacy due to a violation of first knowledge. For example, the relativity of social truth contradicts the universality and absoluteness of physical laws, and above all, PLR. The most logical solution must be to uphold the absoluteness of truth and admit that there are many fallacies in society.

A correct causal inference is superior to countless pieces of empirical evidence. (21)

(a) According to traditional methodology, one empirical counter-example may prove that numerous logical inferences are wrong. However, it just denies the wrong inferences. (b) A correct inference can invalidate numerous pieces of empirical evidence and numerous theories and practices based on them. For example, a tax system will lose its foundation if it is proven to be a logical impossibility. (c) Otherwise, it will be difficult to eliminate empirical evils. For example, the evil of consanguinity is widely praised and has influenced many traditions and laws. However, everybody is ultimately a child of logic-illogic, and nobody, including parents, has the right to establish discriminative rules.

3. PLM

PLM includes four approaches: PLR, imitating the Universe, logical induction, and stripping empirical evidence. (22)

The first two are the most reliable, but they only produce truths and affect other knowledge through truths. The third is less reliable, but necessary. The fourth is unreliable and unnecessary, but is the easiest, and it is still better than traditional methodology.

When evidence is satisfactory (23), induction is logical induction. Otherwise, it is fallacious induction, like those inductions based on perception and emotion. For example, regarding what the most important things in life are, there are various inductive results, such as love, happiness, and peace. They are of empirical importance, instead of logical importance; thus, they are not truth. The results are logical possibilities.

It is hopeless to discover truth with a wrong belief and methodology on the basis of wrong empirical evidence, but that is the fact now. Overall, PLM minimizes empirical evidence. Stripping empirical evidence helps to direct more research and inferences to the first three approaches. For example, egalitarianism is in line with much empirical evidence. However, the Universe does not abide by egalitarianism on energy distribution. For PLR, egalitarianism could be truth only when all inferences have identical logic or illogic, but it is impossibly logical. Therefore, egalitarianism must be an evil. (a) It is often difficult to judge whether evidence is evil-based; thus, it is more reliable and much easier to eliminate evidence than to analyze it, especially when there are logical alternatives. (b) The foundation of fallacies and evils can never be purely logical, and empirical evidence is seemingly reasonable support. Thus, stripping empirical evidence weakens fallacies and evils. (c) However, if stripping is incomplete, fallacy will remain. For example, when studying variables in research, after removing empirical inductions, such as teachers and careers, there are still talent and luck.

For PLB, the key of inference lies in the quality of the evidence.

Empirical evidence based on logical necessity is qualified to contribute to reasoning, while evidence based on a logical impossibility is unqualified. (23)

Since some social rules are logical impossibilities, social evidence is unqualified. Natural phenomena are the main components of qualified evidence. Logical possibilities can be evidence, but it is still better to strip them.

PLM requires abandoning empirical evidence in truth-related inferences, not abandoning empirical evidence completely. (a) Most experiences are valuable for making judgments in daily life and technological development. (b) Qualified empirical evidence helps to study truth. (c) The two cannot be mixed up. For example, memory is important for living. However, treating acquaintances and strangers differently is an evil. Even if the concept of bloodline may exist, discrimination cannot. In a perfect society, everyone is worth contacting and even loving. (d) Evils usually originate from turning logical possibility into truth, or phenomena into rules. For example, if the law required couples to love for life, or lovers promised to love forever, evils are created. The examples also demonstrate that evil can also be personal.

Traditional methodology accepts all kind of premises, such as wrong axioms, and evil laws. However,
The best premises are logical necessities, never logical impossibilities. (24)

Premises can also be logical possibilities. PLM rejects all logically impossible premises, minimizes logically possible premises, and keeps logical necessities. For example, in the trial of a case, traditional lawyers only study the case, while pure rationalists also study whether the law is evil. Evil premises often lead to the wrong conclusions. For example, Game Theory studies optimal rules and behaviors under given premises, however, under evil premises, such as a zero-sum benefit and prohibiting communication, a mathematically correct conclusion would be a logical impossibility. As a result, Game Theory never discovered truth. Such a study can only be logical for some inferences, and logically impossible inferences must exist.

Though logical necessity is much more preferred, logical possibility is also temporarily acceptable. It is foreseeable that some research directions are dead ends. Thus, the direction will change sooner or later, but it is possible to remain unchanged temporally. For example, scientists can pursue empirical descriptions before turning to pure logic; infinite divisibility is fallacious because there are the smallest inferences, however, matter is divisible before reaching the limit.

Human activities will change with beliefs. Humans participate in two kinds of inference. One is active inference in the mind and the other is passive inference in the Universe, such as diet and physical activity. The importance of the former will rise in PLB. Empirically necessary activities, such as metabolism, sleeping, and happiness are not logical necessities, and some of them may be eliminated by appropriate technologies. However, they are logically possible; thus, they can be retained as long as they do not violate any truth and humans choose to retain them. For example, humans are more likely to retain happiness than sleeping; however, there are many evil rules in the process of pursuing happiness.

There are various motives for adopting PLM. (a) It is the only PLB-based methodology, and PLB is logical first knowledge. (b) If one accepts PLM because of empirical reasons, such as self-interest and better consequences, it violates PLB, and PLM may be abandoned when the reason disappears. At the beginning of the study, the natural laws seemed unlikely to be purely logical. Only by believing in PLB, was it possible to develop PLR. (c) Avoiding logical impossibilities is a reasonable motivation. The traditional methodology leads to mass production and the distribution of evil rules. Moreover, they have been stated as truths, and hence, the motivation for logical necessities is largely weakened. (d) In the fight against evil, PLM has irreplaceable advantages. Evil would be challenged everywhere. For example, authors would challenge author guidelines, which are logical impossibilities.

Evils in the foundation of science have the following consequences. (a) They are difficult to correct; thus, revolution is necessary. It is difficult for revolution to succeed, therefore, prolonging the life of evils. There definitely needs to be a revolution to accept PLB and PLM. (b) They reduce the correctness of scientific research. If there is academic freedom in name, but it is unable to discover truths, there may be evils in the foundation that are supported by the vast majority. (c) Being logically necessary is the most important character of truth. However, PLB can be empirically verified because it predicts truth-related events. For example, workers, students, and researchers should have various combinations of jobs, lessons, and topics, and have the freedom to change their combination freely and continuously. However, if they focus on prediction and verification, belief goes astray, see (64). (d) There are contradictions among empirical evidence, and there is no unified mechanism for making judgments about evidence. For example, because everyone is an empiricist, different political positions can emphasize different empirical evidence to persuade, and some evil political systems filter even fake information with the aid of propaganda tools. Pure rationalists disqualify this evidence.

Logical necessities should be supported; logical impossibilities should be opposed. (25)

The reality is usually the opposite. For example, since empiricism is a logical impossibility, empirical theories and research are usually fallacy-based. In the best case, the conclusion is correct, whereas belief, methodology, and inferences are wrong.

In the field of truth, trying PLM is also in line with the traditional methodologies, although they are the consequences of fallacious beliefs. (a) Humans have barely discovered any truth, and empiricism has been the only common feature among all methodologies. Thus, it is worth trying PLM. (b) Scientific progress depends on replacing empirical evidence with logical inference. Gradually replacing evidence is error-prone because the process is long and unqualified evidence is included. Thus, starting directly from logic is worth trying. (c) The correct rate of traditional methodology is too low, and PLM is at least worth trying in order to increase it. One of the earliest goals of the author’s study was to find a methodology that could guarantee being correct. However, that is impossible because of the existence of induction. Correct belief and methodology greatly enhance the correct rate. (d) PLM is worth trying to increase the consistency of the knowledge system. PLM draws clear and consistent conclusions about most truths, whereas traditional methodology does not. (e) PLM is a worthy effort to the achieve the ultimate theory by reaching the limit of the most logical theory. (f) PLM can explain the success of traditional methods, but not vice versa.

Traditional methodology has various disadvantages. (a) To identify good and evil empirically, it is necessary to deduce truth from empirical evidence, which is a logical impossibility, as personal emotions and preferences dominate such judgments. (b) Social evidence is based on social beliefs, and judging the latter with the former is circular reasoning. For example, if everybody loves a bloodline, it is difficult to discover its wickedness empirically. However, not all social beliefs are evil, for example, freedom and rationality. (c) For the ultimate theory or the best scientific theory, traditional methodology is not feasible because it is necessary to develop concepts from some empirical evidence, establish theories with some concepts, and compare theories with various evidence. There are endless possibilities at every step. (d) Although the cause and the consequence are associated, traditional methodology often reverses the causality. For example, the correct belief brings benefits. However, evils produce benefits too. Both the beneficial beliefs and belief in the benefit can be evils. For example, aesthetics may be beneficial, but a unified aesthetic view is an evil because it is impossible to be logical. In the Universe, shape is always a phenomenon, not a rule. With belief in benefit, it is better to change aesthetic standards when necessary, such as meeting an ugly intelligent [extraterrestrial being](https://en.wikipedia.org/wiki/Search_for_extraterrestrial_intelligence). However, pure rationalists simply eliminate all evils. To make benefit a correct belief, it should work for the benefit of every being, or even every possible being, instead of mankind. (e) It is widely believed that the better the empirical basis of something, the more reliable it is. But this is a fallacy, especially for truth. For example, economic theories have solid empirical foundations, but they are mostly fallacies because there is little qualified evidence. Even the concept of a rational person is unqualified, because the sign of rationality is PLB. Another sign is rational action or rational choice. The correct understanding should be the ability to discover both truths and best behaviors; however, empiricists just require to behave the best.

Empirical research on truth is a hopeless gamble and very likely to be wrong. (a) Without a correct understanding of the meaning of first knowledge, humans often make discoveries superior to belief. When logic-illogic is the first knowledge, it is impossible to discover another belief, let alone replace logic-illogic. (b) The existence of a rule is not evidence of good. For example, a king was considered good and became evil; freedom was evil and now it is good; current rules are considered good but most of them will become evils. (c) Traditional methodology often promotes long-term or mainstream phenomena as being rules, like country. However, although the Sun has existed much longer than any tradition, the existence of the sun is not a rule in the Universe. (d) The best rules are not based on empirical will, no matter whether it is will of the majority or the minority. Thus, both democratic legislation and a king’s decree are not logical sources of correct rules. (e) Traditional methodology tends to consider the current rules the best rules, such as methodology and political systems. No matter what thoughts humans have, they are nothing close to truths. (f) Deducing logical necessities from logical possibilities is not a logical choice. (g) Including, but not limited to, the above reasons, empiricism is evil-prone, especially when there is unqualified evidence.

Thus, no matter how hardworking and intelligent a person is, it is too difficult for empiricists to discover truth in the social sciences. (a) According to empiricism, the difficulty is that the possible rules cannot be enumerated. Therefore, the best of some rules and theories does not prove that they are the best of all. (b) However, the true cause is the lack of correct belief. There is much empirical evidence proving that empiricists are error-prone even when choosing between two things. On the existence of endless life, humans believe the evidence that everybody dies; on the existence of paradox, they do not believe the evidence that paradox exists. (c) The logical goal for empiricists should be seeking improvements, like better technology. The advantage of seeking improvements is that it is easy to accomplish, though it is impossible to achieve the best. (d) Evils are prevented, not corrected. Inference and behavior should be microscopically correct; thus, there is no correction. For example, when the gap between the rich and the poor was observed, humans chose to redistribute wealth. But, that is another evil. The Universe follows truth microscopically, so, there is no evil inequality. Good inevitably leads to inequality, but it is logically necessary inequality. It is impossible to discover truth with empirical indices, like the Gini coefficient, which is actually much higher in the Universe.

It is hard for empiricists to discover or even believe in correct first knowledge, reality, and ultimate theory. (a) Reality and ultimate theory cannot be discovered by explaining some empirical evidence with some other evidence, like explaining molecules with atoms. (b) If reality was discovered, it would be impossible to become a belief without doubt. For example, if a quark is the most basic particle, it can never be empirically proven because there may be new empirical discoveries in the future. (c) Empiricists reject universal or unconditional knowledge, which is true in all disciplines. Empirical evidence is conditional, hence, empiricists come to a conclusion that knowledge is conditional, whereas the statement is unconditional. It is an empirical fallacy. Although induction helps to relax conditions, empiricists scarcely make unconditional inductions. Meanwhile, without PLB, the correct rate of unconditional inductions is very low.

The best belief and theory cannot be the result of comparison. (26)

The correctness of PLB does not come from comparing it with other theories, but because it is the only logical approach: from first knowledge to methodology and truth, the knowledge system reaches the limit of logic. If it is not truth, there is no truth; however, it is a logical inference. Thus, the knowledge system would be a mess.

PLB refuses to judge belief or truth by comparing consequences, especially by comparing empirical results. Otherwise, it corresponds to belief in consequences. (a) A better consequence is neither a correct consequence nor the best consequence; thus, it has little relation to the correct or best cause; see (64). (b) Even the best consequence is not certain to be correct, depending on how consequences are measured. Evil beliefs lead to wrong measurement, like wealth. Logic is the most logical belief and measure, and the best cause for everything. (c) From (58), PLB brings the best consequences to the whole system, which is the only logical index to measure consequences, but impossible to execute. (d) The comparison of consequences requires logic. If it is impossible for belief to be logical, there is contradiction between belief and methodology. (e) In a PLW, it is necessary for unpredictable events to exist. The prediction of future events and benefits cannot be comprehensive. For daily life, pure rationalists follow truth but do not predict it, just like particles in the Universe. For researchers, progress is faster and the conclusion is more reliable when focusing on local logic, such as improving ability and methodology and discovering and solving problems, rather than focusing on making research plans. For example, first, gamble on a topic without logical foundation, like the relativeness of truth, and then organize evidence around this topic. Even if it were a correct conclusion, luck cannot last and most conclusions would be fallacies.

Empiricists have succeeded in the natural sciences, but the reason is not that empiricism is truth. The Universe is similar to a great painter, and empiricists are imitators. They can predict the stroke of a brush descriptively, but descriptive rules are not the painter's rules and motives, let alone belief.

Observing life on the earth is not the methodology to discover biological truth. Thus, it is fallacious to conclude that the earth is the most favorable environment for life, that humans are the most intelligent life, that metabolism is necessary for life, and so on. These are not logical necessities. The purely logical classifications of life are whether they use logic, whether they believe in PLB, and whether they follow logical necessities. Classifying life by empirical evidence, like DNA, is fallacious and misleading because the most important relationships between lives are belief and rules, not shape, color, or even language or tradition. Facing truth, the empirical mankind will be divided into different species purely logically, much like good and evil.

Humans do not fully believe logic, and the potential of logic is far from fully exploited. Conflicts between different races are empirical induction, so humans are mostly afraid of aliens. Yet, this is a logical fallacy. Humans should trust the logic and wisdom of intelligent life in the Universe, and distrust the wisdom of the ancestors and empirical evidence. For pure rationalists, the evils of our ancestors could not prevent their offspring from following truth; however, humans are empiricists, and belief in biological classification and tradition make evils lasting.

PLM is feasible because it makes clear judgments about most truths with relatively simple and direct inferences. However, since the belief of self-interest is popular, it is difficult to eliminate evil. (a) It is painful to admit that those long held beliefs and rules are evils. Humans love involves some evils and fallacies. However, pain and love are empirical, and truth should be judged logically. (b) If one is waiting for a beneficial time to eliminate evil, benefit is the belief. (c) It is especially hard for humans to abandon empirical egoism; hence, some other evil beliefs, such as altruism and philanthropy, are proposed. Although they help to offset egoism, relying on evils to curb evils is an evil, and it leads to more evils in society, like taking advantage of the kindness of others. (d) Both punishment and tolerance are rules based on self-interest. In fact, it is impossibly logical to punish the evils of the few, while the evils of the vast majority are praised; i.e., to punish the evils identified empirically, instead of punishing those identified by logic, and punishing those committing evil crimes, instead of punishing those establishing evil theories and beliefs.

PLB treats natural laws and social rules differently.

In the natural sciences, the main task is to discover logical necessities; in the social sciences, it is to adopt logical necessities. (27)

Purely logical research can be assessed. (a) Unqualified evidence should be minimized. Premises are logical possibilities, at least, and logical necessities are the best. (b) Inferences should be correct. (c) It is necessary to assess conclusions.

It is necessary to assess all the premises, inferences, and conclusions. (28)

There are various ways to assess results, including logical necessity, logical possibility, least empirical evidence, and logical impossibility.

4. PLR

The previous sections pointed out the fallacies in society. In this section, some truths are proved from PLB by PLR. PLR is important because it produces logical necessities. At first, PLR aimed to prove the truthfulness of PLB by proving that its consequences are in accordance with natural laws. However, after realizing that consequences cannot ensure a cause is right, the author stopped studying this and turned to the establishment of PLB and PLM.

PLR cannot explain all known knowledge, let alone everything; however, nothing is impossible to explain. It is neither sufficient nor necessary to discover the consequences of belief before believing a belief; however, it helps to persuade empiricists.

First knowledge should be able to explain all the properties of fundamental particles.

The fundamental particles are the simplest inferences. (29)

It is a logical necessity to explain both the existence of a basic concept and that of its negation. (30)

(a) If R0 is the reality behind phenomena, it is necessary for its negation  to exist, as well as its paradox , noted as . (b) If R0 is logic in first knowledge, it is impossible to discriminate its negation and paradox. (c) If R0 is illogic in first knowledge, it follows the maximum freedom law. Anything that can be logically constructed from R0 will exist; thus, negation and paradox exist. (d) Due to the existence of undeniable existence, reality is not nothingness, and it coexists with its negation and paradox.

 (31)

The consequences of R0 are deniable, noted as R1.,
. (32)

First knowledge produces, at least, the following beings and inferences. (a) Spatial points. R0 is R0, R0 is  and R0 is ,which represent “logic is logic,” ;logic is illogic,” and “logic is paradox,” respectively. They are noted as LL, LI, and LP. Each proposition is a point or element in space. From any point of view, there are three independent directions that correspond to the three dimensions of space. There are also reverse directions. For any element K, there is element X, satisfying K=XL, and X which can be noted as KL-1. Then,  and , are inverse vectors to each other. (b) Electromagnetic field. There is judgement about point X, such as “X is logical” and “X is illogical.” They are different from “X is logic.” (c) Time. There are both logical inferences and illogical inferences, such as  and . Thus, there are two operations, i.e., induction and deduction. If there is only one inference between two points,  and cannot coexist, and it is necessary to split every element, from X and Y to X(t) and Y(t). Thus, there is  and . Induction occurs simultaneously, whereas causal inference does not. Hence, time becomes a logical necessity. The law of identity is adjusted: a relationship between two basic concepts is unique. (d) Charge. An inference is not invariant. It can follow maximum logic law or maximum illogic law, representing the pursuit of logic and illogic, respectively. Thus, there are different directions of inference, e.g., from logical inference to more logical inference, corresponding to a charge, to pursue better potential energy. (e) Fundamental particles, see (48) to (50). From two opposite directions, four kinds of existence can be constructed (maximum logic (l), maximum illogic (i), paradoxical (p) and problematic), instead of the two in traditional kinds of logic, i.e., true and false. Problems are not unique and correspond to , , , and . For particles, a paradox and problem are intermediate states between a positive and negative charge, or maximum logic and maximum illogic. For points, paradox corresponds to spin.

The above kinds of existence are constructed by correct first knowledge. They are also consequences of undeniability, by just replacing logic with deniability. It is noteworthy that particles are inferences, while points and fields are not.

The following form might be better than (12):
The maximum logic law is the criterion for truth. (33)

Then, for symmetry, the maximum illogic law, minimum logic law, and minimum illogic law should also be true. The two opposite laws can also be the maximum freedom law and minimum freedom law. It seems that all these laws are identical in a PLW; see (46). Since logic and illogic are symmetrical, a PLW is also called the logical-illogical world, and its reality is logic-illogic.

A PLW is the most logical world. (34)

Then,
It is necessary to resolve contradictions in reality by splitting reality into more types of existence. (35)

For the most basic concepts, such as reality and logic, it is acceptable to violate the law of non-contradiction first, because contradictions can be resolved later. The contradictions are necessary for first knowledge, proving that it cannot be a stable single existence, and internal structure is necessary. Without contradiction, even though there is correct first knowledge, the origin of the matter in the Universe is still an unsolvable problem. The procedure of resolving the contradicted reality into detailed concepts is the process of constructing matter from reality.

It is a logical necessity that the detailed concepts are non-contradictory, whereas first knowledge is contradictory. (36)

First knowledge resolves the contradictions logically by itself; (36) is the revised law of non-contradiction, but it may still be fallacious.

The laws of the excluded middle and non-contradiction are partially correct because they exclude logical necessities, such as undeniability, contradiction, and the existence of intermediate states. Moreover, traditional logic does not rule out logical impossibilities, which are contradictions that are impossible to resolve. Traditional logic excessively emphasizes logical principles, rather than logic itself.

Without empirical laws, logical inferences are more logical. (37)

To study logical necessities, it is necessary to be the most logical; however, from (37), it cannot be judged by traditional logical rules. Logically they are incorrect; empirically they cannot produce truth. Thus, the most logical inferences allow the existence of contradictions, problems, logical cycles, inaccurate concepts, and inferences.

When facing contradictions, resolution should be the first reaction. (38)

However, rejection is basically the first reaction. It is much more difficult to discover a non-contradictory truth than to discover a contradictory version of the truth. Even if the ultimate truth were a non-contradiction, transitional theories would not be. Contradiction is a necessary step to reach the ultimate truth of everything from first knowledge.

Furthermore, the author assumes that a purely logical inference can never be wrong. Thus, when they contradict each other, resolve the contradiction, for example, by superposing them and splitting them; when they are inconsistent with other evidence and principles, disqualify or revise them. Empirically, this method is fallacy-prone; logically, it is correct only when PLB is correct.

The correspondence between logical truths and basic natural laws is described below. Some properties of logic are presented from (39) to (44).

Infinity is impossible. (39)

Logically, an inference is always possible to change direction, and impossible to keep in one direction forever.

Similar to the particle-wave duality, inference can lead from a single path to all possible paths. (40)

Approximately, a particle corresponds to the logical relation between points; a wave corresponds to illogical relations.

Changing an inference requires a cause. (41)

This corresponds to the principle of inertia. Inference in a PLW is different from that in the mind. The human habits and preferences of reasoning have nothing to do with logical necessities. Without external influence, an inference will neither change nor end. No matter whether it changes or not,

An inference with conclusion X1 must continue from premise X1. (42)

Thus, inferences never stop, and a PLW is a perpetual motion world. For causal inferences, conclusions turns into premises automatically.

For a causal inference, the first element is called a premise, and the latter is called a conclusion. However, a premise can be both a cause and a consequence. The maximum logic law and the maximum illogic law are logical operations. For the former, the conclusion is usually more logical than the premise; for the latter, the premise is usually more logical than the conclusion. If the more logical state is defined as the cause, the less logical state will be the consequence.
There are causal inferences from consequences to causes, as well as from causes to consequences. Hence,
There are opposite directions of inferences. (43)

Symmetry between cause and consequence corresponds to charge symmetry. It is a logical necessity, no matter how much empirical evidence and intuition object.

Between cause and consequence, there is also a logical relation and an illogical relation, or paradox and induction. (44)

The paradox follows opposite laws alternatively. The induction corresponds to a problem, representing the uncertainty of a law.

On the other hand, an inference following the maximum logic law can be viewed as a consumer of a logical field and a producer of an illogical field; the inference that follows the maximum illogic law can be viewed as a consumer of the illogical field and the producer of the logical field.

Opposite directions of inference attract each other; like directions repel each other. Thus, interaction is a logical necessity. (45)

This is similar to electrical interactions. If freedom is reality, the particle following the largest freedom law coexists with that following the least freedom law, and they attract each other.

With the help of empirical knowledge, PLR may discover some more truths, but not as reliably as PLR alone. For example, the author proposed a hypothesis from the order and disorder of the Universe:

A purely ordered world and purely disordered world are identical to a PLW. (46)

Order or disorder is not measured in a sequence. It should be measured in all sequences, and order in one sequence may be disorder in other sequences. From the perspective of logic, a PLW cannot be more deterministic or less deterministic. It is both the most uncertain world and the most deterministic world.

The smallest logical inference includes three elements. (47)

Operation O connecting cause and consequence, noted as AOB or . When a problem is not considered, there are three types, noted as O,  and , representing inference from cause to consequence, from consequence to cause, and paradox. They correspond to three types of leptons, the electron, positron, and neutrino. To logically change the direction of inference, it is necessary to interact with other inferences. Thus, a boson is in the form of , and there is interaction  and , corresponding to absorbing or releasing intermediate bosons. It is a purely logical approach to explain particle interaction.

To establish correspondences between interactions and logical inferences, it is necessary to analyze the inferences between operations.

The intermediate boson corresponding to a photon is : (48)
It replaces an operation with a similar operation.

The three intermediate bosons in the weak interaction correspond to ，，. (49)

The difference between  (particle Z0) and a photon is that  interacts with a neutrino, whereas  does not.

An inference including a problem is a quark or gluon. (50)

A lepton and quark are distinguished by whether there is a problem. Leptons are distinguished by the direction of inference. Quarks are distinguished by the position of the problem.

There are three possible places for the problem, the premise, operation, and conclusion, which are noted as C, corresponding to three color charges in the strong interaction (red, green, and blue). A gluon corresponds to . The position of the problem is a necessary variable for a problem, but it is overlooked in traditional logic.

An inference can be either independent or interactive, such as AOB and . The interaction between quarks is strong because a quark, or problematic inference, cannot be independent; moreover, from (20), an inference never stops. Thus, quarks always interact with each other by exchanging gluons. The interaction between leptons is weak because leptons can be an independent inference.

Wave function and action can be constructed and calculated. (a) A premise corresponds to , and a conclusion corresponds to . (b) AOB corresponds to .(c) A conclusion is automatically converted to a new premise, corresponding to . (d) A full inference cycle, premise-conclusion-premise, corresponds to  phase-shift. (e) An illogical relation between two independent premises corresponds to the superposition of wave functions, ; a logical relation between two premises corresponds to . (f)  represents two inferences with exchange symmetry, and the amount of logic is ;  represents anti-symmetry.

Inferences with exchange symmetry correspond to a boson that, with anti-symmetry, corresponds to fermion. (51)

A fermion corresponds to exclusive inferences, such as “belief is and only is logic,” whereas a boson corresponds to non-exclusive inferences, such as “belief is possible to be and not to be logic.”

There are some other issues. (a) If the change of an inference must be logical, the conservation law is necessary. For the position of a problem, there is a conservation of color charge, for the direction of an inference, there is a conservation of charge. (b) As shown above, the advantage of PLB is in explaining natural laws rather than discovering descriptive laws. The success of empiricism in the natural sciences came from the fact that natural laws are logical necessities. (c) The author disagrees with some natural laws. However, it is possible that he has been affected by some fallacies of traditional logic. For example, he considered that there must be a mechanism to produce matter continuously and unevenly in the Universe. It is logical to produce more and more inferences gradually, instead of producing all inferences at the first moment. The latter is similar to the Big Bang, producing most matter in a very short time. (d) A PLW should expand forever. Although an inference can be reversed locally, it seems impossible to reverse a systematic trend. If the Universe shrank to a singularity, all reasoning would be gone. This seemed impossible. (e) It is empirical and a fallacy that logic is not a measurable quantity. In the Universe, logic splits into many quantities, but follows one unified principle -- the least action principle. The principle is explained qualitatively but should be explained quantitatively.

The above inferences give a constructive proof for several important propositions, including the feasibility of PLR, the existence of matter and interaction in a PLW, and the fallacy of traditional logic.

5. Unprovable truth

From PLB, the deductive variable consequences and inductive variable consequences are phenomena; the deductive invariant consequences and inductive invariant consequences are truths. An inductive hypothesis is:
Deductive truth is discovered by induction or deduction, and proven by deduction; inductive truth is discovered by induction, and unprovable. (52)

Since induction is allowed, not all inferences are causal. Some inductive results are impossible to be proven deductively, like propositions (56) to (59).

There are propositions that are eternal, important, and unprovable, and they are unprovable truths, which cannot be discovered by deduction.

It is empirical that reasoning cannot operate automatically, while it is purely logical that logic-illogic must operate inference automatically. Pure rationalists believe that a PLW is the only existence, therefore,
a PLW corresponds to the Universe. (53)

Hence, humans do not need to deduce everything through PLR because most answers can be acquired by observing the Universe. This is especially important for unprovable truth.

The author empirically proposed that the Universe must be the most important existence; thus, it must be correct belief, and imitating the Universe is the method to acquire truths. Later, he gradually realized that logic is not only more important, but also necessary for discovering belief and making judgments.

There are universal properties covering all possible evolutionary paths. For example, it is correct but unprovable that there will be more and more inferences in a PLW, and that the consequences of correct belief are the best.

Provable truth is about the most microscopic phenomena, whereas unprovable truth is about the most macroscopic phenomena. (54)

By far, there is no truth in the middle range.

Summing up the facts about PLR as a possible method, (55)
As there are undiscovered logical rules, empirical evidence of PLR is not qualified evidence. However, it helps for discovering some unprovable truth. For example, there are more and more inferences in PLR; thus, it can be concluded that logic grows with time. The expansion of the Universe is more reliable evidence, but it still cannot be proven that the Universe will expand forever.

The amount of logic per unit of time is increasing. (56)

This corresponds to the Hubble red-shift. (a) Photons from faraway correspond to knowledge coming directly from a long time ago, with constant logic. (b) Charges correspond to causal inferences increasing logic in the long-term, despite short-term fluctuations. Logic in such inferences is changing all the time. Compared with the amplitude of fluctuation, the amplitude of accumulation is much smaller, and only the effect of long-term accumulation can be observed. (c) The earlier that knowledge was acquired, the less influence it has on today's inferences. To account for the expansion of the Universe, physicists adopted the explanation that the stars are moving away from each other, instead of a long-term increase in energy. Different beliefs lead to different explanations for the Universe.

The author empirically proposed the concept of a pursuit system, in which a quantity is pursued. In a perfect pursuit system, the pursued quantity is the best or the largest. The Universe is a perfect pursuit system, and negative action is the largest quantity. Properties of pursuit are discussed, but none of them are provable. For example, in a pursuit system, at most, one independent variable is the largest; the best methodology or rules are identical for all systems. With PLB, the largest quantity is the consequence of logic-illogic; thus, negative action measures the consequences of PLB.

The basic physical laws are the best rules for the growth of consequences. (57)

The unprovability of (57) does not undermine PLB because PLB is not based on good consequences.

Good can be defined as a logical necessity, or the best rule for the growth of logic. The former focuses on cause, so it is provable truth. The latter focuses on consequence, so it is unprovable.

The total consequences of believing PLB are the largest. (58)

PLB does not ensure that other quantities will be the largest, such as benefit to a person, or a country, or a total benefit during a period.

It might help to understand (57) by imagining other possible laws. For example, if the consequences of a cause are defined as offspring, it is possible to imitate humans and establish inequality between cause and consequence. However, it is neither a natural law nor a deductive truth. Thus, concepts based on bloodlines or DNA, such as family and race, are impossible to be logical; and rules based on these concepts, such as inheritance laws, must be evils.

Humans are bound by various traditions. Imitating the Universe is a methodology of clearing historical evils. There were two basic assumptions for imitating the Universe, and PLB proves them. (a) Truth exists not only in theory, but also in the world. (b) Truth is universally valid. This idea initially came from a thought experiment: if every person corresponds to a particle, his/her possible states correspond with space-time and changes in states, like a particle; then, society will be isomorphic with the Universe. Since the author was an empiricist, he observed common properties among various systems, including the Universe, society, the thinking of researchers, and the economy. They have similar principles, such as least action, greatest happiness, greatest knowledge, and greatest profit.

PLR simplified the theory. The logical foundation for imitating the Universe is that logic is a common property of all systems, and the Universe is purely logical. The other systems are not purely logical, but should be. However, it is fallacious to imitate before some basic correspondences are established. For example, humans imitate animals and regard the survival of the fittest as truth. It is an evil. Otherwise, why should wrong inferences fight the correct ones to survive?

Imitating the Universe led to scientific unification, including, but not limited to the following [2]: (a) Establishing more detailed correspondences, like imitating the Universe to establish perfect education; (b) Discovering the characteristics of good and evil; (c) Eliminating evils; (d) Discovering more truths (e.g., if the four known interactions cannot guarantee the Universe will expand forever, are there other interactions? Or, is everlasting expansion a fallacy, or an evil wish?); and (e) Discovering correct behaviors. For example, strong and weak interactions provide the model for love. Love can be short-lived, weak, changeable, and non-exclusive. Therefore, exclusive love is an evil wish. People in love have the right and even the obligation to explore new love, just like particles. The stability of bound states is realized by values rather than restrictive rules.

6. The discipline of truth

The discipline of truth is the most logical discipline. It includes correct belief, methodology, and truth about the Universe, society, and thinking. It is necessary to establish the discipline of truth for the following reasons: (a) No matter if it is defined as a logical necessity, eternal existence, or unconditional knowledge, truth is necessary existence; (b) There are logical relationships between any two all truths; thus, it is wrong to decompose the unified truths into many disciplines. (c) Empirical truth is valuable, and purely logical truth is the most valuable; thus, it deserves to be an independent discipline; and (d) The discipline will improve the study of truth and all the other disciplines, because it covers first knowledge and methodology.

However, it has not been established. Some empirical fallacies are to blame, although they seemed good and helpful. (a) Empiricists usually require knowledge to be partially logical and partially empirical; thus, logical impossibilities are acceptable, and logical necessities are discriminated against and even unacceptable. (b) A discipline is possible only when there is enough knowledge accumulation, enough interest, or enough researchers. However, for the most logical or valuable knowledge, these conditions are unnecessary. (c) A discipline should not overlap with other disciplines. Thus, if there is an empirical classification, truth cannot be a discipline. The law of the excluded middle is one of the reasons.

Interdisciplinary research is a logical necessity. However, the absence of an exclusive discipline is an important disadvantage for the study of truth. (a) There are many paths for the study of truth, and the best path is almost certain to be a combination of many disciplines. (b) The discipline will facilitate access to resources, including recruitment, research funds, and publications. (c) It will also reduce researchers’ costs. The knowledge needed to learn to get a degree would be less because knowledge that is related to truth is not necessary. (d) Collaboration between researchers would be easier to establish within a discipline. (e) There are some special properties for truths; thus, getting used to study phenomena and evils is error-prone.

There is no egalitarianism among knowledge or disciplines. Logically, there are three kinds of disciplines. (a) Some disciplines should have a positive relationship with truths, such as physics and logic. (b) Some have no direct relationship with truth, such as medical science. (c) Some have negative relationship, such as communism and management science. Such knowledge could be of empirical importance. For example, the penalty system studies how to punish evil; however, many evils are considered good. If some empirical evidence proves that evil behaviors have been punished more than good behaviors, the main cause is the reversal of good and evil, and the secondary cause is that there are much more evil behaviors than good ones. In current society, there are not many logical necessities, or correspondences to basic natural laws; thus, the vast majority of social rules must be evils. If laws are logical impossibilities, punishing law-breakers cannot be logical; maybe, punishing legislators for evil laws is more logical. The focus of law should not be the enforcement of laws, but the prevention of evil laws. If evil laws exist, it is neither feasible nor necessary to eliminate crimes. If crime persists, the correct reaction is not more severe punishment, but reviewing and eliminating evil laws. Humans have enacted millions of legal provisions, and few of them are logical necessities. They should have been cleaned up long ago.

The goal of science should be to discover truth as good and defeat evil. However, a series of unexpected consequences has occurred: there is no discipline of truth or good; therefore, there are no relevant experts, students, research funds, or journals. On the contrary, there are many disciplines and experts on evil; scientists have discovered and believe in many evils, and virtually no truths. These consequences embody the disadvantages of traditional methodology.

7. Thinking science

The most logical topics are truths or logical necessities. They are the best rules, instead of better rules. The author recommends the following steps. (a) For a topic, judge whether it addresses truth. If yes, it is one of the best topics. (b) For the premises of a topic, those with an invariant best option are methods; other premises are conditions, such as a teacher. It is necessary to judge whether the current conditions are sufficient and whether the current methods are the best. If yes, do the research. (c) If conditions are insufficient, there are several possible actions: turn to other topics and go back to (a); change the conditions and go back to (b); improve conditions while studying. (d) If a best method is not known for the best topic, go back to (a) and study the method. (e) The best research is to engage in multiple best topics simultaneously. For example, the author judged that traditional methodology was not the best for studying truth, but he also judged that both truth and a best methodology exist; thus, he studied both truths and methodology. The focus shifted from methodology to truth gradually as methodology improved.

The conditions can be empirical and logical. The best methods are about improving logically necessary conditions, such as methods for investigating imagination ability. The relationships between various conditions and methods form thinking science. There were both empirical and purely logical discoveries [3]. However, the latter is the focus of this section.

Empirical variables have limited research and are logically unnecessary; logically necessary variables have unlimited growth potential. (59)

Therefore, if best methods for enhancing the latter are followed, the former can be ignored.

The logically necessary variables are thinking ability and research direction. (60)

Logically necessary variables are the only necessary variables for studying truth. Thinking ability is similar to kinetic energy, in that its deficiency will inevitably slow down growth. The empirical variables include talent, luck, diligence and working conditions.

Logically necessary thinking abilities are reasoning ability, imagination, and judgment. (61)

Logically necessary variables can be discovered logically. Logic requires the ability to apply reasoning according to a certain rule, namely the ability of logical reasoning; the ability to discover various possible causes, operations and consequences, namely imagination, and the ability to select the best state from possible ones, namely judgment. For example, beginning from any theory, one needs to make inferences from it, judge its truthfulness and correctness, and imagine possible research directions, including the negation of the theory.

It is important to have learning abilities and conditions, such as reading and being a good teacher, and the capacity to stand on the shoulders of giants. But, where are the giants? Over-emphasizing learning is shirking the responsibility of discovering truth, and the result is often learning evils.

Whether best methods exist was the origin of the question whether truths exist. At first, biographies provided the author some empirical evidence. (a) Several of the greatest scientists, including Einstein and Newton, adopted some common methods that were despised and rarely adopted by other scientists. (b) The number and value of their discoveries are much greater than those of others; thus, their achievements were more inevitable than accidental. Then, the author had the following line of reasoning: because of ignorance about truth, scientists deviate greatly from the best methods, which leads to a lack of the necessary abilities. He discovered the best methods from reading Einstein's biography, including the importance of imagination and judgment, obtaining knowledge related to future research, and studying multiple topics simultaneously.

Finally, this helped him to transform his beliefs, gradually reducing the portion of empiricism that influenced his ideas and increasing the portion of logic that influenced his ideas. (a) Several researchers have adopted logically necessary variables. Compared with the others, they have had much higher efficiency. Therefore, logical necessities are empirically better than empirical necessities. (b) It is possible to reduce dependence on empirical evidence by proving that these methods and variables are logical necessities. Then, even if Einstein’s biography was incorrect or his methods were opposed by all mankind, his methods would still be the best. Thus, logical evidence is much more important than empirical evidence.

Success is both a consequence and a form of empirical evidence, thus, it is impossible to be a logical judgment. If success is qualified evidence, so is failure. Even if an author fails, it is not adverse evidence because success is still possible if s/he could avoid some fallacies or have more time. Empiricism cannot produce correct judgment. Over a long time, the author tried to judge methods empirically and it was impossible to make clear judgements. He felt anxious and studied why empiricism failed and how to judge correctly. Finally, he concluded that it is impossible to deny the truthfulness of best beliefs and methods by any empirical means.

There is no decisive experiment for truth. (62)

There are only decisive inferences, like PLR.

Situations will be similar when society imitates the Universe. It is possible to discover some empirical evidence proving that an economy is not better, or people are not happier. People will consider whether they are inevitable consequences or temporary phenomena of PLB, or consequence of clashes between truths and evils. However, the most logical inference about the future is:

Consequences are the best when the correct belief is believed to be the best. (63)

To believe PLB is the best, it is necessary to exclude behaviors discordant with this belief.

PLB points to the best consequences, though it never focuses on them. (64)

It is logical to emphasize the correct cause, instead of other causes or consequences. PLB focuses on logic and produces the best consequences, including best methods, best inferences, best experiences, and best knowledges. Empiricists usually judge truth by consequences, because it cannot be an independent cause. A teleological theory, like consequentialism, is difficult to be correct. It tends to accept all the causes that may improve the consequences; then, cause is almost inevitably evil.

Pure rationalists never believe in empirical premises. The author discovered the following premises at an early stage, though he was not talented in thinking. Logically necessary thinking ability is an ability that has the smallest innate component; the empirical conditions and abilities have been greatly overestimated; and humans know few truths. Therefore, studying truth is the job with the most equal opportunities, and it is unrelated to empirical variables, such as wealth, social status, education, race, talent, luck, and diligence. Their influences are negligible when compared with the right belief and methods.

Enhancement of thinking abilities is guaranteed by purely logical training, though it is uncertain whether it is the best method.

The use of logic creates and improves every logically necessary variable. (65)

This includes: strengthening reasoning ability through logical reasoning; strengthening imagination through imagining; strengthening judgment through judging; and strengthening the ability to obtain inspiration through inspiring. They are logical cycles that are necessary conditions for first knowledge. These abilities interact with each other. More imagination and inspiration help to strengthen judgment, which helps to improve the quality of inspiration. Given (65), it is not necessary to worry about unconsidered variables, and lack of ability is due to improper training.

Another kind of logically necessary variables are topics and research directions, which mainly include how to choose a topic and direction of research, and how to allocate resources to them.

The most important topics involve studying logical necessities. (66)

Although it is easier to discover logical possibilities and impossibilities, such as technologies and better rules, there should be enough motivation to study truths because they are purely logical, necessary, universal, and everlasting.

These are some logically necessary rules. (a) It is logically necessary to cover several disciplines, important topics, and directions simultaneously. Choosing one topic at a time is an empirical fallacy. (b) Focus on future research and forget past discoveries. (c) It is necessary to propose problems that are in shortage. The lack of problems in thinking is similar to lack of quarks in the Universe, and there must be evil rules discriminating against problems. Thus, conjecture should be encouraged. (d) The study of truth should try to cover all necessary directions, instead of the one with the best chance of success. The author studied several beliefs simultaneously, such as logic, happiness and freedom, and finally, they evolved into one belief. (e) Similar to the motion of particles, it is necessary to change smoothly. For example, it is a logical impossibility to stop learning and start research at a certain time, or to jump from one topic to another.

There should be a combination of topics as the effort on each topic increases or decreases as recent efforts change with success and failure. A combination of topics improves the input-output ratio, as: (a) The average resources per topic is less; (b) It improves the stability and continuity of research; (c) Pursuit of topics can be more aggressive (Choosing one difficult topic is risky gambling, choosing a combination of topics with various difficulty greatly reduces the risk.) (d) It helps to establish collaboration between topics and inferences, similar to nuclear fusion; and (e) It enhances the average value per inspiration. It is much more difficult to find an inspiration for a topic than for many topics.

The author empirically adopted amateur research. (a) He had studied thinking abilities for a long time when he was student. (b) Logically, it is impossible to prove that professional research is better or more logical than amateur research, especially for truth. (c) Empirically, many great scientists engaged in successful amateur research. As long as the research before the beginning of a professional career is regarded as amateur research, Newton and Darwin were once amateur scientists, and started studying important topics when they were young. (d) On studying truth, since there is hardly any favorable condition for professionals, it is basically equal for professionals and amateurs. (e) It is widely believed that there is a trend for modern science to become more and more complex and specialized; hence, it is difficult not only for an amateur, but also for multidisciplinary scientists, like Aristotle. However, these are empirical opinions, based on fallacious beliefs and methodology. There is an undiscovered but logically necessary trend to improve the foundation of science and to make knowledge unified and universal.

The current education and research system, including the graduate and doctoral systems, violate the above methods. (a) First, the time it takes to obtain a degree is hardly enough for discovering any truth; thus, unimportant topics are widely studied by young researchers. The logical standard to measure abilities is the discovery of logical necessities, and without a time limit, for not discovering some knowledge in a given time. How well is PLB believed and executed is the best standard for researchers. There is no other logically necessary standard, and empirical standards, such as tests and research papers, are error-prone. For example, discovering evil or wrong judgment about truth should be an error, though it is not viewed as an error by modern society. (b) For beginners in research, it is more logical to build a combination of topics and collect related information than to fulfill a research goal. This is the part of research that is suitable for students. (c) It is not possible to predict which topic, among a combination of topics, or even disciplines has the best chance in the future. Thus, it is a gamble to limit freedom and choose a major and mentor. (d) In terms of belief and methodology, teachers and supervisors are reluctant to admit that they know no truth; thus, fallacies are learned as truths. It is better for beginners to study from scratch; then there will be much more studies of truths, instead of evils and technologies. (e) From (65), supervisors are not logical necessities for beginners, especially when they just know what is better instead of what is best. If someone needs a supervisor, it is more logical to be advised by global supervisors, instead of one. (f) Planned research seems logical, but it is not. Evil undervalues illogic, similar to a planned economy. Research plans are required to rely on degrees and funds. Even the choice of a subject indirectly requires a rough plan.

Conclusion

The main conclusion of these studies is:
First knowledge, correct belief, ultimate cause, undeniability, reality, logic, illogic, freedom, and the Universe are different aspects of the same thing. (67)

From any of them, others can be constructed.

Undeniability is introduced to make logic a necessary consequence of illogic. However, undeniable existence is renamed to be, not proved to be, logic. Hence, it would be safer to believe PLB than undeniability. First knowledge must be a logical cycle and requires contradictory concepts to coexist; thus, traditional logic is not suitable for studying belief, or even truth. As it is impossible for logic to coexist with another independent logic, particles and interactions must be logical propositions and can be deduced by PLR.

A key question for humans who are born in an evil society is whether it is necessary for them to live an evil life? Empirically, the answer is yes, because they inherit traditions. Therefore, no one is guilty of evil because most of the blame is on others. They are responsible for defending tradition, country, family, self-interest, and so on. Thus, they cannot discover, judge, or defend truth very well. Logically, the answer is no, because they act logically. Hence, everybody is guilty because discovering, judging, and defending truths are the most logical responsibilities.

Logic-illogic has been seriously under-estimated. Logic seemed to be simple, but this is an empirical illusion based on traditional logic. It must be the most mysterious existence because it creates not only truth, but also the world, including matter and life. However, humans rarely study logic logically. The improvement of their thinking ability made humans different from other animals, but their evolution is incomplete because humans are still empirical.

There will be a new evolutionary path for humans. Truth will become the most important discipline, and some evil disciplines will disappear. Courses on thinking science will become required, and amateur research while a student will be superior, and even an imperative. Every social rule will accord with logical necessities. Traditional beliefs, such as individualism, will be replaced by PLB. Although empiricism is now at its peak, it is also at a turning point.