Establish Knowledge System in the Most Rigorous Order— from Purely Logical Belief to Methodology and Universal Truths

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Abstract:

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

Key words: purely logical belief; first knowledge; pure rationalist; undeniability; good and evil; imitating 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. Meanwhile, they retained the most important part of the traditional definitions,

The most basic and important knowledge of the world is belief, also called the first knowledge which produces other knowledges. For a person, reality is the nature of the external world, 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 the purely logical belief, or PLB. Purely logical reasoning, or PLR, represents causal inferences started from PLB. According to PLB, it is necessary to exist a world in which everything is logical, called purely logical world, noted as 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 knowledges are wrong, they are called errors, such as knowledges 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 facing is the fallacious beliefs. There is no proof that humans have discovered the right belief or methodology. Thus, any knowledge may be errors.

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

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

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

Although humans have discovered many propositions, even a few truths. However, without correct belief and methodology, there has never been correct judgment of truth. Thus, the greatest possibility is that society contains a large number of fallacies and evils. This paper offered the basic framework of the 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, considers that explanations are insufficient for some examples or previous opinions, the literature might help. The author’s emphasis is on the new progress and logical evidences, not reviews. Most of the previous discoveries were not involved in this paper. On the other hand, his belief has experienced a long evolution process. Now, he makes a strict distinction between logical evidence and empirical evidence, and many empirical evidences in the references are considered unqualified evidence of truth. However, he showed some empirical evidences, like those favor PLB and against empiricism. They are not logical evidence of PLB, but logical evidence for that empiricism are contradictory, and empiricism might be inferior to PLB in terms of empirical evidences.

He would rather discover truth than convince others. (a) He tried to make this paper the least fallacy, not least error, but only in the eyes of future readers. For empirical readers, there must be far more fallacies because of the belief differences. (b) He sought balance between reducing fallacies and discovering truth, and made some bold conjectures which 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 belief then, he had long been averse to belief, believed that belief should be eliminated in the ultimate theory of everything. Hence, he regarded methodology as the basis of science and constantly improved methodology. He focused on that truth must be unconditional and made some discoveries. However, the logical foundation cannot be established without correct belief. In this paper, the theory is reconstructed, simplified and strengthened by PLB. And reconstruction itself offered examples and exercises for PLB and PLM.

His motive for the study was to defeat all evils, and took the discovery of truth as the approach. He mainly experienced three kinds of evils, thus focused on three groups of topics. (a) He was forced to accept evil beliefs, such as state leaders, communism, materialism. Then, his distrust of the government and education extended to all knowledges, however, he did not accept nihilism and believed the existence of absolutely correct belief and truth. The main achievements were PLB and PLR, [1], which were 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 perfect society, [2], reconstructed in Sec. 5. (c) Because of lacking correct methodology 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], reconstructed in Sec. 7.

The formation 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 army cannot. (b) Einstein's thought experiment reminded the author that correct logic might be a more important variable than empirical evidence. (c) There are both positive and negative influences from modern sciences. From physics, he learned basic natural laws, together with the belief and methodology based on experiments. From philosophy, he learned metaphysics, logic and liberalism, together with materialism and empiricism. (d) From axiomatic theory, he hoped to establish an axiom-based ultimate theory at first. He turned to belief-based theory, because negation of an axiom must be another axiom, while correct belief can be undeniable. (e) Fortunately, truth, logic and freedom were always included in his belief combination; thus, his belief has mobility. When he discovered beliefs and knowledges contradicted with these beliefs, he changed belief.

He cannot ensure his inferences are always correct. First, he tried to reach the important conclusions through several independent inferences, like (a), (b).... Second, 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 ultimate theory of everything, to unify truths for all intelligent lives on the common ground of logic. They seemed empirically impossible, but logically inevitable. Humans have free will, and there are a lot of different evolution paths. As proved in the following, they chose the wrong beliefs; thus, they were on the wrong paths.

1. Establishing PLB

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

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

It will be explained in details throughout this paper. To establish the most logical knowledge structure,

It is necessary to discover knowledge in the order of first knowledge, the 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 knowledges and can be discovered by analyzing the mechanism microscopically. (4)

The candidates of first knowledge are also candidates for beliefs. For any knowledge, including the candidates, logic is necessary knowledge to discover the 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 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 the 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 the accordance with empirical evidences; for PLB, from the accordance with logic. However, empiricism itself need to be logical first. If first knowledge is wrong, all the evaluations could be wrong.

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

This measures how logical the foundation of a knowledge system is. Without the 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 the authenticity, let alone whether they are truth. Thus, 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, why sensation and perception are reliable. Since sensation must relate to natural laws and possibly relate to social laws, why these laws 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 unique necessary first knowledge. (8)

Knowledge production is consequence of correct belief, while undeniability is 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 to exist the third party. For a single first knowledge, there is no third party; thus, it must be equal with its negation. For the same reason, a single first knowledge cannot be partially correct and partially wrong. Pure empiricists cannot select empirical evidences, unless there is a combination of first knowledge. If they select evidences 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, negation of logic is illogic. They correspond to ordered relation and disordered relation, 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 the rule for behaviors. 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 the correct belief. (a) Choose belief illogically, guided by (9). Then, 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 to the limit of most logic, and reality must be logic too. Because of (a) and (b), every intelligent life has to make logic the first knowledge, and can discover logical consequences of the belief, as shown in this paper. However, if belief were not the reality, these consequences would disaccord with the external world, and it would be impossible to establish knowledge system purely logically, to explain everything, to establish ultimate theory..., even impossible for intelligent life to originate because they would not be the fittest. Survival of the fittest partially and empirically proves that belief and reality are identical.

Belief of 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 the belief, it is impossible to logically prove that illogic does not exist. Law of non-contradictory is empirical, not logical truth. (c) It is supported by some logical evidences, such as existence of undeniable proposition, and non-existence of undeniable evil by now. To prove the existence of undeniability, it is easy to construct some undeniable propositions, such as "truth exists" and "unconditional proposition exists". If they are incorrect, "truth does not exist" and "unconditional proposition does not exist" will become truth and unconditional proposition respectively. Sum of such propositions would be that undeniability 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 the undeniable propositions; therefore, impossible to construct or understand the basic concepts, including logic, reality, undeniability and ultimate cause, by decomposing the concept of undeniability.

If empirical evidences are preferred, there are some for PLB. (a) Any evidence, such as experiencing and recording, need logic. (b) Perception and record are possible to be wrong, thus 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 are knowledge, or even a purely logical world, without the help of empirical evidences. Meanwhile, without logic, there will be no reliable empirical knowledge, including empiricism itself. Therefore, it is impossibly logical to question the truthfulness of logic by empiricism. For example, religion need logic, and logic does not need religion. Therefore, gods may exist but they are impossible to be beliefs. For their doctrines, if they disaccord with logical truths, they are evil; if they accord with truths, the correct belief is still logic-illogic.

Fallacious knowledge originated from fallacious first knowledge, and from discover knowledge in the wrong order. For examples, beliefs in learning, books and teachers are empirical and cannot satisfy (1); thus, they are fallacious and might lead to learn more fallacies. Learning may be a method for non-intelligent lives, like 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 the belief, it is necessary to discover knowledge in the correct order. It is the most beneficial, though unfeasible for non-intelligent lives.

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

First knowledge produces itself; thus,

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 is incomplete cycles. ‘Using method to judge method’ is incorrect unless method is purely logical. (b) It is an expanding cycle; thus, it is open and creative, similar to the expanding Universe.

Belief has some properties opposite to all the other knowledges. (11)

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

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

PLB believes that the Universe is PLW, in which,

Every existence is purely logical. (12)

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

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

Some explanations are necessary. (a) Existences include both tangible existences, like matter, and intangible existences, such as natural laws and reality. The division of tangible existence and intangible existence is empirical, not purely logical. (b) For an existence, being purely logical requires all properties to be logical, instead of some properties. For example, in modern physics, some eternal properties, such as charge and quark, cannot be purely logically explained. (c) From (12), existences independent of logic should not exist; thus, they must be logic, its causes, or its consequences. (d) Not only following a rule leads to some logical inferences, but also following its negation. For example, following no law is a logical necessity, corresponding to illogic. However, an inference would be 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 existences, at first, different existences have different reasons, such as electron and gravitation. 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)

(13) is supported by that humans' behaviors, particles’ 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 evidences that reason for natural laws has 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) It is logically necessary, because logical impossibilities must be excluded. (b) It is more practical than (12). (12) is the precise standard but sometimes unfeasible. (c) Problems are allowed to be solved later, even unsolvable. For example, as long the Universe is logical necessity, the history of the Universe is unnecessary to be known.

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

To establish science in a logical order, it is usually the 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. Then, it is usually wrong to discover truth empirically, which is equivalent to make causal inference from possible consequences of PLB to necessary consequences. Conclusion would be more reliable by deducing from PLB, the most reliable knowledge, to truth than from 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 are empirical evidences, the logical conclusion must be:

Empirical evidences are products of logic. (16)

It seems empirically impossible but logically inevitable.

Any knowledge must conform with first knowledge. (17)

Empiricists treat logic as an empirical knowledge; thus, empirical verification is necessary. For pure rationalists, logic is first knowledge, and empiricism is a possible knowledge, which need logical verification. Empirical verifications are unnecessary, even when they are feasible.

Since knowledges discovered on fallacious foundation are possibly wrong, science needs reconstruction.

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

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

2. Logical relation between beliefs

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

When there are contradictions between different evidences, the importance of beliefs can be compared, and logic is often regarded as an unimportant belief. For example, in the face of life-threatening, many people preferred 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 empirical sciences, unless it is not the first knowledge. However, no belief can be satisfied by all knowledges other than logic-illogic. Choosing the belief serving inference the best represents discrimination against negative result, like discussing religious topic 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 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 evidences, like history of science, are not logical evidences for choosing belief, because there are many contradictory empirical evidences and empiricism itself cannot make the correct choice. Some considered that there had been many discoveries with traditional methodology, some considered that the correct rate had always been low. There are also various standards. Some think the number of discoveries is more, some others think less. For pure rationalist, PLB is a complete axiom system, because there is purely logical inference from first knowledge to methodology and truth, thus empiricism is unnecessary for truths. (e) Every independent basic knowledge should be included. Axioms about numbers should be beliefs if they are not consequences of other beliefs. If PLB-system is complete, mathematical and physical axioms should be theorems. Inferences in sec. 4 are logical evidences for that it 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 evidences are always inferior to logical evidences, PLB is followed. Then, empiricism is not an independent belief or method, and can be used to select behavior or phenomenon, but never truth.

PLB is the logical axiom system of all knowledges. (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, is wrong. Sometimes, it helps to persuade. However, after discovering that the persuasion process is not in line with PLB, the persuasion should be abandoned. With evil process, even if consequence is good, total evils do not necessarily decrease; if not, evils even increase. (b) If compared purely by logic, PLB is correct. (c) Since there are much more empirical evidences than logical evidences, empiricists are much easier to make more discoveries. However, with fallacious belief, the chances of discovering evils are also much higher. (d) Purely logical approaches are sufficient evidences to discover the correct belief, although they are simple relative to modern sciences. Humans have a habit or belief in more evidences, sometimes even willing to sacrifice other beliefs for more evidences. Verifications from multiple independent sources do not increase reliability unless the sources are logical. It is error-prone to judge 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 researches. However, they would 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 evils. Thus, persuasion and war are logical impossibilities, and it is unreliable to judge good and evil from them, such as the victory and defeat.

If empiricism is the belief, it is impossible to classify empirical evidences into good and bad; thus, empiricists tried to explain every evidence logically. To prove or ensure that 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 logical necessity to explain why these theories are not universal. If empirical existences are always good, it is unnecessary to object 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 set 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 expected to help the truth; empirically, they have ignored some logical truths. Evils in different fields seemed 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 object truths.

Humans prefer empirical to logical, even logicians established basic logical principles empirically. It is even worse for illogic. Physicists had much stronger belief in logic than in illogic; thus, reluctant to accept probability-based quantum theory. Probability and determinism coexist, similar to logic-illogic. Believing in PLB will eliminate the 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, impossible to compare with truth. They are overrated because of the belief of self-interest.

The greatest function and value of PLB is to discover and identify truth, including belief, rule, methodology and even systematical trend. All knowledges are connected by logic. With a single first knowledge, there is no longer isolated concept, no matter how far away it is from other knowledges. A partially plausible reasoning may be fallacy due to violation of first knowledge. For example, the relativity of social truth contradicts with the universality and absoluteness of physical laws; above all, with 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 empirical evidences. (21)

(a) According to the traditional methodology, one empirical counterexample may prove that numerous logical inferences are wrong. However, it just denies the wrong inferences. (b) A correct inference can invalidate numerous empirical evidences, and the numerous theories and practices based on them. For example, tax system will lose its foundation if it is proved to be 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 are ultimately children 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, stripping empirical evidences. (22)

The first two are the most reliable, but 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 still better than traditional methodology.

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

It is hopeless to discover truth with wrong belief and methodology on the basis of wrong empirical evidences, but it is the fact now. Overall, PLM minimizes empirical evidences. Stripping empirical evidences helps to turn more research and inferences to the first three approaches. For example, equalitarianism is in line with lots of empirical evidences. However, the Universe does not abide by equalitarianism on energy distribution. Moreover, the inequality is much more serious than that of human society. For PLR, equalitarianism could be truth only when all inferences had identical logic or illogic, but it is impossibly logical. Therefore, equalitarianism must be an evil. (a) It is often difficult to judge whether an evidence is evil-based; thus, it is more reliable and much easier to eliminate the 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 evidences are seemingly reasonable support. Thus, stripping empirical evidences weakens fallacies and evils. (c) However, if stripping is incomplete, fallacy will remain. For example, when studying variables of 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 evidence.

Empirical evidences based on logical necessities are qualified to participate reasoning, while those on logical impossibility are unqualified. (23)

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

PLM requires to abandon empirical evidences in truth-related inferences, not to abandon empirical evidences completely. (a) Most experiences are valuable to make judgment in daily life and technological development. (b) Qualified empirical evidences help 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 origin from turning logical possibility into truth, or phenomena into rules. For examples, if the law required couples to love for life, or lovers promised to love forever, evils were created. The examples also demonstrate that evil can also be personal. Traditional methodology accepts all kind of premises, such as wrong axioms, 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 cases, traditional lawyers only study the case, while pure rationalists also study whether the law is evil. The evil premises often lead to the wrong conclusions. For example, game theory studies the optimal rules and behaviors under given premises, however, under evil premises, such as zero-sum benefit and prohibiting communication, a mathematically correct conclusion would be logical impossibilities. As a result, game theory never discovered truth. Such a study can only be logical in some inferences, and logically impossible inference must exist.

Though logical necessity is much more preferred, logically possibility is also temporarily acceptable. It is foreseeable that some research directions are dead ends. Thus, direction will change sooner or later, but it is possible to remain unchanged temporally. For examples, 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 the belief. Humans participate two kinds of inference. One is active inference in mind, the other is passive inference in the Universe, such as diet and physical activity. Importance of the former will rise of PLB. Empirically necessary activities, such as metabolism, sleeping and happiness, are not logical necessities, and some of them may be eliminated by proper technologies. However, they are logically possible; thus, 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, in the process of happiness pursuit, there are many evil rules.

There are various motives for adopting PLM. (a) It is the only PLB-based methodology, and PLB is logical first knowledge. (b) If accepting 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, it was possible to develop PLR. (c) Avoiding logical impossibilities is a reasonable motivation. The traditional methodology leads to mass production and distribution of evil rules. Moreover, they have been stated as truths, then motivations for logical necessities are largely weakened. (d) In the fight against evil, PLM has irreplaceable advantages. Evils would be challenged everywhere. For example, authors would challenge the 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. Revolution is hard to succeed, thus prolong the life of evils. It definitely needs a revolution to accept PLB and PLM. (b) They reduce the correctness of scientific research. If there is academic freedom in name but unable to discover truths, there may be evils in the foundation and supported by 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 focusing on prediction and verification, belief goes astray, see (64). (d) There are contradictions among empirical evidences, and there is no unified judgment mechanism among evidences. For example, because everybody are empiricists, different political positions can emphasize different empirical evidences to persuade, and some evil political systems filter even fake information with the aid of propaganda tools. Pure rationalists disqualify these evidences.

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

The reality is usually to the opposite. For example, since empiricism is logical impossibility, empirical theories and researches 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 consequences of fallacious beliefs. However, it is better to eliminate the following empirical evidences. (a) Humans hardly discovered any truth, and empiricism had been the only common feature among all methodologies. Thus, it is worth trying PLM. (b) Scientific progress is to replace empirical evidences with logical inference. Gradually replacing evidences is error-prone, because the process is long and unqualified evidences are included. Thus, starting directly from logic is worth trying. (c) The correct rate of traditional methodology is too low, and PLM is at least a worthy try for improving. One of the earliest goals of this study was to find a methodology that conclusion could be guaranteed to be correct. However, it is impossible because of the existence of induction. Correct belief and methodology just greatly enhance correct rate. (d) PLM is a worthy try to increase consistency of knowledge system. PLM draws clear and consistent conclusions on most truths, whereas traditional methodology does not. (e) PLM is a worthy try to the ultimate theory by reaching the limit of the most logical theory. (f) PLM can explain the success of traditional methods, and not vice versa.

There are various disadvantages for traditional methodology. (a) To identify good and evil empirically, it is necessary to deduce from empirical evidences to truth, which is logical impossibility. Finally, personal emotions and preferences dominate such judgments. (b) Social evidences are based on social beliefs. Judge the latter with the former is a circular reasoning. For example, everybody love bloodline, then it is difficult to discover its wickedness empirically. However, not all social beliefs are evil, such as freedom and rationality. (c) For the ultimate theory or the best scientific theory, traditional methodology is unfeasible, because it is necessary to develop concepts from some empirical evidences, establish theories with some concepts, and compare theories with various evidences. There are endless possibilities at every step. (d) Although the cause and the consequence are accompanied, the traditional methodology often reverses the causality. For example, the correct belief brings benefits. However, evils produce benefit too. Both the beneficial beliefs and belief in benefit can be evils. For example, the 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, like meeting an ugly [extraterrestrial intelligent life](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 life, or even every possible life, instead of mankind. (e) It is widely believed that the better empirical basis, the more reliable. But it is fallacy, especially for truth. For examples, economic theories have solid empirical foundations, but they are mostly fallacies because there is little qualified evidence. Even the concept of rational person is unqualified, because the sign of ration 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, for empiricists, (23) is accepted, and rational action just requires to behave the best.

Empirical research on truth is a hopeless gamble and highly possible to be wrong. (a) Without correct understanding the meanings 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 replacing logic-illogic. (b) Existence of a rule is not evidence of good. For examples, king was considered good and became evil; freedom was evil and now good; current rules are considered good but most of them will become evils. (c) Traditional methodology often promotes long-term or mainstream phenomena to a rule, like country. However, although the Sun has existed much longer than any tradition, existence of the sun is never a rule in the Universe. (d) The best rules are not based on empirical wills, no matter will of majority or minority. Thus, both democratic legislation and king’s decree are not logical sources of correct rules. (e) Traditional methodology tends to make current rules the best rule, such as methodology and political systems. No matter what humans think, they are nothing close to truths. (f) Deducing the logical necessities from the logical possibilities is not a logical choice. (g) Including but not limited to the above reasons, empiricists are evil-prone, especially when there are unqualified evidences.

Thus, no matter how hardworking and intelligent, it is too difficult for empiricists to discover truth in 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 it is the best of all. (b) However, the true cause is the lack of correct belief. There are many empirical evidences proving that empiricists are error-prone even when choosing between two. On the existence of endless life, humans believe the evidences that everybody dies; on the existence of paradox, they do not believe the evidences that paradox exists. (c) The logical goal for empiricists should be seeking improvement, like better technology. The advantage of seeking improvement is easy to accomplish, though 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 gap between the rich and the poor was observed, humans chose to redistribute wealth. But it is another evil. The Universe follows truth microscopically, then 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 Gini coefficient, which is actually much higher in the Universe.

It is hard for empiricists to discover or even believe the correct first knowledge, reality and ultimate theory. (a) Reality and ultimate theory cannot be discovered by explaining some empirical evidences with some others, like explaining molecules with atoms. (b) If the reality were discovered, it would be impossible to become a belief without doubt. For example, if quark is the most basic particle, it can never be empirically proved, because there may be new empirical discoveries in the future. (c) Empiricists rejects universal or unconditional knowledge, which is truth in all disciplines. Empirical evidences are 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 made unconditional induction. Meanwhile, without PLB, correct rate of unconditional induction is very low.

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

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

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

Observing lives 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 lives, that humans are the most intelligent life, that metabolism is necessary for life, and so on. They are not logical necessities. The purely logical classifications of life are whether they use logic, whether they believe in PLB, whether they follow logical necessities. Classifying life by empirical evidences, like DNA, is fallacious and misleading, because the most important relationships between lives are belief and rules, not shape, color, even language and tradition. Facing truth, the empirical mankind will be divided into different species purely logically, like good and evil.

Humans do not fully believe logic, and potential of logic is far from fully exploited. Conflicts between different races are empirical induction, so humans are mostly afraid of aliens. But this is a logical fallacy. Humans should trust logic and the wisdom of intelligent lives in the Universe, distrust wisdom of the ancestors, distrust empirical evidences on the earth. For pure rationalists, evils of ancestors could not prevent offspring to follow truth; however, humans are empiricists, the beliefs of biological classification and tradition make evils lasting.

PLM is feasible because it makes clear judgment on most truths with relatively simple and direct inference. However, since the belief of self-interest is popular, it is difficult to eliminate evils. (a) It's painful to admit that those long held beliefs and rules are evils. Humans love some evils and fallacies. However, pains and love are empirical, and truths should be judged logically. (b) If waiting for a beneficial timing 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 leads to more evils in society, like taking advantage of others’ kindness. (d) Both punishment and tolerance are rules based on self-interest. In fact, it is impossibly logical to punish the evils of few, while evils of the vast majority are praised; punish the evils identified empirically, instead of those identified by logic; punish those committing evil crimes, instead of those establishing evil theories and beliefs.

PLB treats natural laws and social rules differently.

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

Purely logical research can be reviewed. (a) Unqualified evidences should be minimized. Premises are logical possibilities at least, and logical necessities the best. (b) Inferences should be correct. (c) It is necessary to review the conclusion.

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

There are various review results, including logical necessity, logical possibility, least empirical evidence, logical impossibility.

4. PLR

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

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

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

The fundamental particles are the simplest inferences. (29)

It is 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, to explain change of phenomena logically, it is necessary to exist its negation , and its paradox , noted as . (b) If R0 is the logic in the first knowledge, it is impossible to discriminate its negation and paradox. (c) If R0 is illogic in the first knowledge, it follows 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 coexists with its negation and paradox.

 (31)

The consequences of R0 are deniable, noted as R1.,

 (32)

First knowledge produces the following beings and inferences at least. They are logically necessary existences in PLW. (a) Spatial points. R0 is R0, R0 is  and R0 is , represent ‘logic is logic’, ‘logic is illogic’, ‘logic is paradox’ respectively. They are noted as LL, LI and LP. Each proposition is a point or element in space. From any point, there are three independent directions, corresponding to three dimensions of space. There are reverse directions too. For any element K, there is element X, satisfying, K=XL, and X can be noted as KL-1. Then,  and  are inverse vectors to each other. (b) Electromagnetic field. There is judgement for point X, such as ‘X is logical’ and ‘X is illogical’. They are different from ‘X is logic’. (c) Time. There are both logical inference and illogical inference, such as  and . Thus, there are two operations, 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, while the causal inference does not. Hence, time becomes logical necessity. And law of identity is adjusted: 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, like from logical inference to more logical inference, corresponding to charge pursue better potential energy. (e) Fundamental particles, see (48) to (50). From opposite directions, four kinds of existences can be constructed, maximum logic (l), maximum illogic (i), paradoxical (p) and problematic, instead of the two in traditional logic, true and false. Problems are not unique, correspond to , , , and . For particles, paradox and problem are intermediate states between positive and negative charge, or maximum logic and maximum illogic. For points, paradox corresponds to spin.

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

The following form might be better than (12):

The maximum logic law is the criterion for truth. (33)

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

PLW is the most logical world. (34)

Then,

It is necessary to resolve contradictions in reality by splitting reality into more existences. (35)

For the most basic concepts such as reality and logic, it is acceptable to violate 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 the correct first knowledge, the origin of the matters 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 logical necessity that the detailed concepts are non-contradictory, while first knowledge is contradictory. (36)

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

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

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

To study the logical necessities, it is necessary to be the most logical; however, from (37), it cannot be judged by the 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.

Facing contradictions, resolving should be the first reaction. (38)

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

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

Correspondences between logical truths and basic natural laws are listed below. Especially, some properties of logic are listed from (39) to (44).

Infinity is impossible. (39)

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

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

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

Changing an inference requires cause. (41)

It corresponds to the principle of inertia. Inference in PLW is different from that in mind. Humans’ habits and preferences of reasoning have nothing to do with logical necessities. Without external influence, an inference will neither change nor end. No matter changing or not,

Inference with conclusion X1 must continue from premise X1. (42)

Thus, inference never stops, and PLW is a perpetual motion world. For causal inference, conclusion turns into premise automatically.

For causal inference, the first element is called a premise, and the latter is called a conclusion. However, premise can be both cause and consequence. The maximum logic law and the maximum illogic law are logical operations. For the former, conclusion is usually more logical than premise; for the latter, premise is usually more logical than conclusion. If the more logical state is defined as cause; the less logical state will be 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 many empirical evidences and intuitions object.

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

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

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

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

It is similar to electric interaction. If freedom is reality, the particle following largest freedom law coexist with that following least freedom law, and they attract each other.

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

Purely ordered world and purely disordered world are identical with 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, 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 element. (47)

Operation O connecting cause and consequence, noted as AOB or . When problem is not considered, there are three types, noted as O, 和, representing inference from cause to consequence, from consequence to cause, and paradox. They correspond to three types of leptons, electron, positron and neutrino. To logically change direction of inference, it is necessary to exchange with other inferences. Thus, boson is in the form of , and there is interaction  and , corresponding to absorbing or releasing intermediate bosons. It is the 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 photon is . (48)

It replaces operation with similar operation.

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

The difference between  ( particle Z0) and photon is determined by that  interacts with neutrino; while  does not.

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

Lepton and quark are distinguished by whether there is problem(s). Leptons are distinguished by direction of inference. Quarks are distinguished by position of problem.

There are three possible places for the problem, premise, operation and conclusion, noted as C, corresponding to three color charges in strong interaction, red, green and blue. Gluon corresponds to . Position of problem is necessary variable for a problem, but is overlooked in traditional logic.

An inference can be either independent or interactive, such as AOB and . Interaction between quarks is strong because quark, or problematic inference, cannot be independent; meanwhile, from (20), inference never stops. Thus, quarks always interact with each other by exchanging gluon. Interaction between lepton is weak because they can be independent inference.

Wave function and action can be constructed and calculated. (a) Premise corresponds to , conclusion 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) Illogical relation between two independent premises corresponds to superposition of wave functions, ; logical relation between two premises corresponds to . (f)  represents two inferences with exchange symmetry, and the amount of logic is ;  represents that with anti-symmetry.

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

Fermion corresponds to exclusive inferences, like ‘belief is and only is logic’; boson to non-exclusive inferences, like ‘belief is possible to be and not to be logic’.

There are some other issues. (a) If change of inference must be logical, conservation law is necessary. For position of problem, there is conservation of color charge; for direction of inference, there is conservation of charge. (b) As shown above, PLB has advantage in explaining natural laws than discovering descriptive laws. Success of empiricism in natural sciences came from that natural laws are logical necessities. (c) The author disagreed 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) PLW should expand forever. Although inference can be reversed locally, it seems impossible to reverse the systematical trend. If the Universe shrank to a singularity, all reasonings would be gone. It seemed impossible. (e) It is empirical and fallacy that logic is not a measurable quantity. In the Universe, logic split into many quantities, but follows one unified principle--least action principle. The principle is explained qualitatively but should be explained quantitatively.

The above inferences gave a constructive proof for several important propositions, including the feasibility of PLR, the existence of matter and interaction in PLW, 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 of deduction, and proved 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 proved deductively, like propositions from (56) to (59).

There are propositions which are eternal, important and unprovable; and they are unprovable truth. They cannot be discovered by deduction.

It is empirical that reasoning cannot automatically run, while it is purely logical that logic-illogic must operate inference automatically. Pure rationalists believe that PLW is the only existence, then,

PLW corresponds to the Universe. (53)

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

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

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

Provable truth is about the most microscopical phenomena; while unprovable truth is about the most macroscopical phenomena. (54)

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

Summing up the facts of PLR is a possible method. (55)

Since there are undiscovered logical rules, empirical evidence of PLR is not qualified evidence. However, it helped to discover 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 Universe is a more reliable evidence, but it still cannot prove that the Universe will expand forever.

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

This corresponds to Hubble red-shift. (a) Photon from faraway corresponds to knowledge coming directly from 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 the knowledge came, the less influence it has on today's inference. For the expansion of the Universe, physicists adopted the explanation that stars are moving away from each other, instead of long-term increase of energy. Different beliefs lead to different explanations for the Universe.

The author empirically proposed the concept of pursuit system, in which a quantity is pursued. In a perfect pursuit system, a quantity is pursued 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 examples, 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 consequence of logic-illogic; thus, negative action measures the consequence of PLB.

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

Unprovability of (57) does not shake PLB because PLB is not based on good consequences.

Good can be defined as 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.

Total consequences of believing PLB are the largest. (58)

PLB does not ensure other quantities to be the largest, such as benefit of a person, of a country, total benefit in a period.

It might help to understand (57) by imagining other possibilities of laws. For example, if 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 the natural law nor deductive truth. Thus, concepts based on bloodline or DNA, such as family and race, are impossible to be logical; and rules based on these concepts, like inheritance laws, must be evils.

Humans are bound by various traditions. Imitating the Universe is a methodology clearing the 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. It initially came from a thought experiment: correspond every person to a particle, correspond his possible states with space-time, change states like a particle; then, society will be isomorphic with the Universe. Since the author was an empiricist, he collected common properties among various systems, including the Universe, society, thinking of researchers, and economy. They have similar principles, such as least action, largest happiness, largest knowledge, and largest profit.

PLR simplified the theory. The logical foundation for imitating the Universe is that logic is common property of all system, 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 imitated animals and regarded the survival of the fittest as truth. It is an evil. Otherwise, should the wrong inferences fight the correct ones to survive?

Imitating the Universe led to science unification, including but not limiting to the following directions, [2]. (a) Establish more detailed correspondences, like imitating the Universe to establish perfect education. (b) Discover the characteristics of good and evil. (c) Eliminate evils. (d) Discover more truths. For example, if the four known interactions cannot guarantee the Universe to expand forever, are there other interactions? Or, is everlasting expansion a fallacy, or an evil wish? (e) Discover the 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 obligation to explore new love, just like particles. The stability of bound states is realized by value 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 because of the following reasons. (a) No matter defined as 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) Empirically, truth is valuable. Purely logically, it is the most valuable. Thus, it deserves to be an independent discipline. (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 requires knowledge to be partially logical and partially empirical; thus, logical impossibilities are acceptable, and logical necessities are discriminated and even unacceptable. (b) A discipline is possible only when there is enough knowledge accumulation, enough interests, 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 excluded middle is one of the reasons.

Interdisciplinary research is 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 the researchers’ cost. The knowledge needed to learn to get a degree would be less, because knowledge unrelated to truth are unnecessary. (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 equalitarianism among knowledge or disciplines. Logically, there are three kinds of disciplines. (a) Some disciplines should have positive relationship with truths, like physics and logic. (b) Some have no direct relationship with truth, like 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 evidences prove that evil behaviors have been punished more than good behaviors, the main cause is the reversal of good and evil, the secondary cause is that there have been much more evil behaviors than good ones. In current society, there are not many logical necessities, or correspondences of basic natural laws; thus, the vast majority of social rules must be evils. If laws are logical impossibilities, punishing the lawbreakers cannot be logical, maybe punishing the legislators of evil laws is more logical. The focus of law is not enforcement of laws, but prevention of evil laws. If evil laws exist, it is neither feasible nor necessary to eliminate crimes. If the crime persists, the correct reaction is not more severe punishment, but to review and eliminate the 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 was to discover the truth, the good and defeat the evils. However, a series of unexpected consequences have been achieved: there is no discipline of truth or good, therefore, no relevant experts, students, research funds and journals; on the contrary, there are many disciplines and experts on evils; scientists have discovered and believed many evils, and virtually no truth. 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. There are the following steps. (a) For a topic, judge whether there is 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, like teacher. It is necessary to judge whether current conditions are sufficient and whether 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); improving conditions while studying. (d) If a best method is unknown, itself is a best topic, go back to (a). (e) The best research is to engage in multiple best topics simultaneously. For example, the author judged that the traditional methodology was not the best for studying truth, but he also judged that both truth and 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 the logically necessary conditions or variables the best, like methods about imagination ability. The relationships between various conditions and methods form thinking science. There were both empirical and purely logical discoveries in [3]. However, the latter is the focus of this section.

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

Therefore, if best methods to enhance the latter is 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. Its deficiency will inevitably lead to the slowdown of growth. The empirical variables include talent, luck, diligence, working conditions, teachers' level.

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

Logically necessary variables can be discovered logically. Logic requires the ability to continue 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, begin from any theory, one need to infer from it, judges its truthfulness and correctness, and imagines possible research directions, including negation of the theory.

Learning abilities and conditions, such as reading and good teacher, help to stand on the shoulders of giants, but where are the giants? Overemphasizing learning is shirking the responsibility of discovering truth, and the result is often learning evils.

Whether best methods exist was the origin of whether truths exist. At first, biographies provided the author some empirical evidences. (a) Several greatest scientists, including Einstein and Newton, adopted some common methods despised and scarcely adopted by other scientists. (b) The number and value of their discoveries is much higher than others; thus, their achievements were more inevitable than accidental. Then, he made the following reasoning: because of ignorance of truth, scientists deviated greatly from the best methods, which lead to the lack of necessary abilities. To discover the best methods, he learned from Einstein's biography, such as focusing on imagination and judgment, on learning knowledge related to future research, on studying multiple topics simultaneously.

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

Success is both a consequence and an empirical evidence, thus impossible to be logical judgment. If success is qualified evidence, so is failure. Even if the author failed, it is not adverse evidence because success is still possible if he could avoid some fallacies or have more time. Empiricism cannot make correct judgment. Over a long time, he tried to judge methods empirically and it was impossible to make clear judgement. 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 belief 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 evidences proving that 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 the best. (63)

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

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

It is logical to emphasize the correct cause, instead of other causes or consequence. PLB focuses on logic, and produces the best consequences, including best methods, best inferences, best experiences and best knowledges. Empiricists usually judge truth with consequences, because itself 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 inevitable to be evil.

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

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

Usage 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, necessary condition of first knowledge. These abilities interact with each other. More imagination and inspiration help to strengthen judgment, which helps to improve the quality of inspiration. With (65), it is unnecessary to worry about unconsidered variables, and lack of ability is due to improper training.

Another kind of logically necessary variables is topics and research directions, mainly including how to choose topic and direction of research, and how to allocate resources among them.

The most important topics study logical necessities. (66)

It is easier to discover logical possibilities and impossibilities, such as technologies and better rules. However, there should be enough motivations for studying truth because they are purely logical, necessary, universal and everlasting.

Some logically necessary rules are listed below. (a) It is logically necessary to cover several disciplines, important topics and directions simultaneously. Choose one topic at one time is an empirical fallacy. (b) Focus on future research and forget past discoveries. (c) It is necessary to propose problems, which 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, conjectures should be encouraged. (d) The study of truth should manage to cover all necessary directions, instead of the one with the best chance. The author studied several beliefs simultaneously, such as logic, happiness and freedom; finally, they evolved into one belief. (e) Similar to motion of particles, it is necessary to change smoothly. For examples, it is logical impossibility to stop learning and start research at a certain time, to jump from one topic to another.

There should be a topic combination, and effort on each topic increases/decreases with recent effort succeeds/fails. Topic combination improves the input-output ratio. (a) The average resources per topic is less. (b) It improves the stability and continuity of research. (c) Topics could 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. (e) Enhance 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 professional career is regarded as amateur research, Newton and Darwin were once amateur scientists, and started 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 the trend of modern science is becoming more and more complex and specialized, hence, it is difficult not only for amateur, but also for multidisciplinary scientists, like Aristotle. However, they are empirical opinions, based on fallacious belief and methodology. There is an undiscovered but logically necessary trend-- to improve the science foundation and to make knowledge unified and universal.

The current education and research system, including the graduate and doctoral system, violate the above methods. (a) First, the time for a degree is hardly enough for any discovery on truth; thus, unimportant topics are widely studied by young researchers. Logical standard to measure abilities is discovery of logical necessities, and without time limit; not discovering some knowledge in a given time. How well PLB is believed in is the best standard for researchers of truth. There is no other logically necessary standard, and empirical standards, like test and research paper, are error-prone. For example, discovering evil or wrong judgment of truth should be an error, though not viewed as an error by modern society. (b) For beginners of research, it is more logical to build a combination of topics and collect related information than to fulfil a research. This is the part of research suitable for students. (c) In a topic combination, it is unpredictable which topic or even discipline 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's 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 better instead of the best. If someone needs supervisor, it is more logical to be advised by global supervisors, instead of one. (f) Planned research seemed logical, but not. The evil undervalues illogic, similar to planned economy. Research plans are required to apply degrees and funds. Even the choice of subject indirectly requires a rough plan.

Conclusion

The main conclusion of these studies is:

The first knowledge, the correct belief, the ultimate cause, undeniability, reality, logic, illogic, freedom and the Universe, they 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, the 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, even truths. It is impossible for logic to coexist with other existence independent of logic; then, particles and interactions must be logical propositions and can be deduced by PLR.

A key question for humans is, if born in an evil society, are they necessary to live evilly? Empirically, yes, because they inherit traditions. Then, nobody is guilty for the evils because most of the blame is on the others. They are responsible to defend tradition, country, family, self-interest, and so on; thus, cannot discover, judge and defend truth very well. Logically, no, because they act logically. Then, everybody is guilty because discovering, judging and defending truths are the most logical responsibilities.

Logic-illogic has been seriously underestimated. Logic seemed to be simple, but this is an empirical illusion from 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 thinking ability made humans different from other animals, but this evolution is incomplete, because humans are still empirical.

There will be a new evolution path for humans. Truth will become the most important discipline, and some evil disciplines will disappear. Thinking science will become required courses, and amateur research in student period will be superior or even imperative. Every social rule will accord with logical necessities. Traditional beliefs, like individualism, will be replaced by PLB. Although empiricism is now at its peak, it is also the turning point.

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