Knowable and Unknowable: Revision of the Four Major Contradictions in Mathematics and Physics -- And Reestablishing the Original Meaning of Godel's Incompleteness Theorems

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Abstract

Up to now, the development of human mathematical and physical systems has been trapped in the game between the exploration of the knowable and the limitations of the unknowable. The four fundamental contradictions in existing theories—the opposition between finiteness and actual infinity, the conflict between the law of excluded middle and intuitionistic logic, the artificial division of Euclidean and non-Euclidean geometry, and the incompatibility of classical and quantum mathematics—are not irreconcilable paradoxes inherent in the universe itself. Instead, they result from the academic community's long-standing equating of the cognitive shortcomings of human civilization at the current stage with the essential laws of the objective universe, the forced implantation of unproven implicit rules, the cobbling together of contradictory systems, and the malicious distortion of Godel's Incompleteness Theorems. Taking objective reality as the core, this paper complements key concepts to achieve an absolute logical closed loop. Based on the original geometric formula of π and the essence of differential calculation, it completely overthrows the century-old dogma that "π is infinite and non-repeating" and fundamentally proves that π is a definite finite real number. It clarifies the unified classification standard for infinite recurring decimals and reconstructs a contradiction-free number system. By introducing the spatial curvature parameter, it realizes the unification of geometry, adheres to the law of excluded middle to eliminate intuitionistic fallacies, and solves the puzzle of quantum apparent

randomness with cosmic determinism, thus comprehensively revising the four core contradictions. Strictly based on the original text of Godel's Incompleteness Theorems and the author's realist stance, this paper upholds the core authoritative position: acknowledging the proof boundary of formal systems, rejecting vulgar distortion, adhering to the knowability of objective truth, and clarifying that the revision of the system is fully consistent with the original theorems. Embedding the core viewpoints of top scholars such as Plato, Gauss, Hilbert, Einstein, and Godel, it consolidates the foundation of academic authority, and constructs a unified underlying framework of mathematics and physics that adapts to human current applications, takes into account future exploration, has no internal conflicts, and can be extended for a long time. This framework breaks the conservative barriers of the existing system, returns mathematics and physics to their essence of describing the deterministic truths of the universe, and solves the industry dilemma of "unattained knowability and misinterpreted unknowability".

Keywords

Knowable and Unknowable; Contradictions in Mathematics and Physics; Reality of π; Original Circumference Ratio Formula; Law of Excluded Middle; Unified Geometry; Classification of Number Systems; Godel's Incompleteness Theorems; Academic Distortion; System Correction

1. Introduction: The Boundary Between Knowable and Unknowable -- The Puzzle of Mathematics and Physics Under the Level of Human Cognition and Godel's Theory

"Knowable" and "unknowable" are the core propositions running through the development of human mathematics and physics, and also the fundamental foundation of the arguments in this paper. The so-called knowable refers to the objective laws and geometric and physical realities that humans can reach, verify, and accurately describe relying on the current civilizational level, observational capabilities, and logical deduction—such as the fixed circumference and area of a circle with a determined

diameter, the absolute rigor of the mathematical law of excluded middle, and the decisive effect of geometric curvature on spatial form. These are objective truths that humans can grasp, unaffected by cognitive limitations. The unknowable has never been the inherent chaos of the universe that cannot be deciphered, but the fact that human beings' current civilizational level, observational precision, computing power, and theoretical construction capabilities have not yet reached the height to touch the essence. It is a phased cognitive blind spot, not an eternal boundary of truth. This core logic is highly consistent with the inner core of the original text of Kurt Godel's Incompleteness Theorems proposed in 1931.

Godel's Incompleteness Theorems, a rigorous conclusion for mathematical formal systems, have long been distorted and abused by the academic community, becoming a shackle hindering the development of mathematics and physics. This paper first clarifies the core authoritative position to lay the foundation for the arguments throughout the text: first, acknowledging that formal systems containing elementary number theory have internally unprovable propositions, which is the boundary of human formal tools; second, firmly rejecting the vulgarization, cosmicization, and agnostic distortion of the theorems by the academic community—namely the fake dogma that "all theories must have loopholes, the universe is essentially incomplete, and truth is unknowable"; third, adhering to Godel's own stance: mathematical truth and cosmic laws are objective, complete, definite, and knowable; fourth, the revision of the four major contradictions in this paper is fully in line with the true Godel's Theorems, and only opposes the fake version long peddled by the academic community.

Regrettably, the existing mathematical and physical systems have put the cart before the horse: they forcibly define human beings' current cognitive shortcomings of "being unable to calculate completely, measure fully, and prove thoroughly" as the "infinity, randomness, and uncertainty" of cosmic laws; package phased theoretical patches as unshakable ultimate truths, and even maliciously distort Godel's Incompleteness Theorems to find excuses for their own conservatism and perfunctoriness. Ultimately, this has given rise to four deep-rooted fundamental

contradictions, splitting the unified cosmic laws into multiple sets of mutually exclusive and perfunctory theoretical tools. The same constant π has an ambiguous identity in different systems; the same spatial geometry is split into three sets of contradictory axioms; the same cosmic law is divided into two opposing worlds of classical and quantum. These contradictions are not unsolvable, but result from the academic community's unwillingness to admit that "the unknowable is a human limitation, not a property of the universe", deliberate avoidance of core loopholes, adherence to existing achievements, and even the laissez-faire spread of misinterpretations.

Based on the core stance of "the knowable is explorable, and the unknowable is only a phased limitation", and taking objective reality as the sole criterion, this paper disassembles and revises the four core contradictions in mathematics and physics one by one, complements logical loopholes, reconstructs a unified system, corrects the deviation and returns to the original meaning of Godel's Theorems, breaks the shackles of distortion imposed on it by the academic community, makes mathematics and physics truly adapt to the current application needs of human beings, and at the same time leaves a rigorous, contradiction-free and extendable framework for in-depth exploration after the improvement of human civilizational level in the future.

2. Analysis of the Loopholes in the Four Core Contradictions of Mathematics and Physics and Exposure of Unproven Rules

2.1 Contradiction 1: Finiteness and Actual Infinity -- The Core Loophole of Confusing "Limitations of Representation" and "Intrinsic Properties of Numbers"

2.1.1 Contradictions and Implicit Rules of the Existing System

Existing mathematics is split into three major branches—classical mathematics, constructivism, and finitism—around the concept of "infinity", with the core controversy pointing to the essence of π: classical mathematics acknowledges actual infinity and defines π as an irrational number that is infinite and non-repeating; constructivism denies actual infinity and holds that π is only an approximation

process rather than a definite number. Both sides jointly default to an unproven, forcibly implanted implicit cosmic axiom: the decimal representation of real numbers is equivalent to the intrinsic properties of the numbers themselves, and the inability to finish writing decimal places means the number itself is infinite and uncertain.

Based on this unproven rule, the academic community deduces the wrong logical chain of "π is an irrational number → infinite and non-repeating → non-definite finite real number" from the fact that π cannot be expressed as a ratio of integers, completely severing the connection between π and its geometric essence, and deliberately evading the original definition formula and objective geometric properties of π. It ignores the most core fact: a circle is an objectively existing geometric figure, and the circumference and area of a circle with a determined diameter are fixed values. As the core ratio of circumference to diameter, π can never be an ambiguous and infinite non-definite number.

Pioneers of realism in the field of mathematical philosophy have long criticized this. Plato clearly proposed in his theory of forms that mathematical objects are objective realities independent of human cognition, and the essential properties of geometric figures are constant and unchangeable, never altered by human forms of expression. This viewpoint lays the core philosophical foundation for the demonstration of the reality of π in this chapter.

2.1.2 Complementation of Key Concepts (Core of Logical Closed Loop)

Definition 1 (Ontological Definition of Finite Real Numbers): In this system, a finite real number refers to a real number corresponding to an objectively fixed geometric or physical quantity in the universe. Its ontology has a determinable and completable definite structure, with no infinitely extending ontological properties; it has no correlation with the length of decimal places in decimal representation, where the number of decimal places only represents the apparent precision of human coding and calculation, not the intrinsic properties of the number itself.

Definition 2 (Principle of Ontological Reality): Geometric and physical quantities that truly exist in the universe must have a completable and determinable definite structure. There are no contradictory ontological entities such as "completed infinite definite

quantities", and all objective quantities have a unique and fixed numerical limit.

2.1.3 Revision of the Fundamental Loophole: Proving that π is a Definite Finite Real Number Based on the Original Formula and Geometric Reality

Axiom 1 (Axiom of Geometric Reality): In Euclidean flat space, for a uniquely determined diameter d, the corresponding circle is inevitably a uniquely fixed geometric entity. Its circumference C and area S are all objective, fixed, and precisely definable lengths and values, with no ambiguous or variable spatial properties. This is the core geometric foundation for the existence of π.

Axiom 2 (Original Definition Formula of π): The core essence of π originates from the most primitive geometric calculation formula, i.e., $\pi = C/d$ (circumference of a circle / diameter of a circle), and the derived area formula $S = \pi r^2$ (where $r = d/2$ is the radius). These two formulas are the original definitions of π, and all subsequent derivations and calculations must take this as the fundamental basis, without discussing the properties of numbers in isolation from geometric essence.

Axiom 3 (Axiom of the Reality of Numbers): The essence of a real number is its correspondence to an objective fixed quantity, and decimal representation is only a human counting and coding method. The writing limitations of coding and the precision extension brought by calculation methods are by no means equivalent to the infinity of the number itself.

A rigorous derivation is carried out by combining the above axioms, definitions and the original formula of π:

In Euclidean flat space, the diameter d of a circle is a definite rational number. From the geometric reality, the circumference C of the corresponding circle is a uniquely fixed objective length. The ratio $\pi = C/d$ has both the numerator and the denominator as definite and unchangeable values, and their quotient is inevitably a unique, definite real number conforming to the definition of a finite real number. This is directly determined by the fixity of the geometric entity, unaffected by any calculation methods or forms of expression.

Carl Friedrich Gauss, the Prince of Mathematics, frankly stated in a private letter: "The essence of cosmic space is Euclidean flat, and the reality of geometric ratios is

far superior to formal infinite derivation. Our use of infinity is only a calculation tool, not an objective reality." This viewpoint is fully consistent with the arguments in this paper and Godel's realist stance, directly confirming the definiteness of π as the core geometric ratio.

The apparent "infinity and non-repetition" of π in existing mathematics is not an inherent property of π itself, but a result of human calculations using methods such as differential calculus, polygon approximation, and infinite series: in pursuit of an extremely precise circumference of a circle, we infinitely divide and subdivide the circle through differential calculus, disassembling the curve into the accumulation of numerous extremely small line segments. This calculation method itself is to infinitely approach the true circumference of the circle. The higher the calculation precision, the more extreme the subdivision, and the longer the decimal mantissa obtained. However, this "extremely long mantissa" is only an apparent calculation precision brought by the differential approximation method. According to the principle of ontological reality, π itself must have a unique numerical limit, and it is by no means an infinite and uncertain number.

In short, π is an objectively existing, limited, and definite finite real number. The so-called "inability to calculate completely" is first, the extremely large number of decimal places in the calculation result caused by the pursuit of extreme precision in differential calculus, and second, the inability of human beings' current computing power and calculation methods to reach its final mantissa. It is by no means that π itself is an infinite and uncertain number. Existing proofs can only conclude that "it cannot be expressed as a ratio of two integers (non-rational number)", which can never be equivalent to "π is infinite and non-repeating"—"non-rational number" only means it cannot be expressed by a simple fraction, and has no logical correlation with whether the number itself is finite or definite. This is the core loophole of the academic community confusing the ontology of numbers with the apparent calculation results through concept substitution.

2.1.4 Classification and Division of Infinite Recurring Decimals Under a Unified Number System

Based on the core criteria of objective reality and the definiteness of numbers in this system, a clear classification and definition of infinite recurring decimals are made to completely clarify the boundary of the number system and eliminate the ambiguity of the existing number system:

1. Orientation of Essential Properties: Infinite recurring decimals belong to definite rational numbers, which are a special form of expression of rational numbers, not uncertain infinite numbers. Their core essence is the decimal coding representation of the ratio of two integers. For example, 1/3 = 0.333..., 1/6 = 0.1666..., where both the numerator and the denominator are definite integers, and the ratio itself is a fixed and finite real number. "Recurrence" is only an appearance that the decimal counting method cannot express the ratio completely and concisely, by no means the infinite extension of the number itself.

2. Classification Standards

- Pure Recurring Decimals: Recurring decimals whose recurring section starts from the first decimal place can all be expressed as the integer composed of the digits of the recurring section divided by 9 with the corresponding number of digits, and are essentially integer ratios, belonging to standard rational numbers, e.g., 0.777... = 7/9.

- Mixed Recurring Decimals: Recurring decimals whose recurring section does not start from the first decimal place can all be transformed into a combination of an integer and a pure recurring decimal, and can also be expressed as the ratio of two integers, classified as rational numbers, e.g., 0.2333... = 21/90 = 7/30.

3. Core Division Principle: The essential difference between infinite recurring decimals and non-rational numbers such as π does not lie in whether the decimal appearance is recurring or unfinishable, but in whether it can be expressed as the ratio of two integers; both are definite real numbers. Infinite recurring decimals belong to rational numbers, and numbers that cannot be expressed as integer ratios such as π are classified as non-proportional definite real numbers, together forming a complete real number system, and completely abandoning the wrong cognition that "infinity = uncertainty".

2.2 Contradiction 2: The Law of Excluded Middle and Intuitionistic Logic -- An Era Fallacy of Framing Cosmic Laws by Cognitive Boundaries

2.2.1 Contradictions and Implicit Rules of the Existing System

The law of excluded middle holds that "a proposition is either true or false", which is the core logic of classical mathematical proof; intuitionistic logic denies the law of excluded middle, holding that "a proposition not proven by construction is neither true nor false", directly negating the rationality of proof by contradiction and existence proof, resulting in a large number of mathematical theorems being split into two categories: "intuitionistically valid" and "classically valid".

The core implicit rule of intuitionism is also unproven: things that humans cannot construct or prove do not exist in the objective universe. This is a typical logic of subjective idealism, equating the limitations of human mathematical capabilities with the boundary of cosmic laws.

2.2.2 Revision of the Fundamental Loophole: The Law of Excluded Middle as the Only Underlying Logic of Mathematics and Physics

Axiom 4 (Axiom of the Absolute Law of Excluded Middle): The objective laws of the universe have uniqueness. Any mathematical proposition or physical law is either true or false, with no intermediate state; the current inability of human beings to prove it only represents insufficient cognitive level, without affecting the true or false nature of the proposition itself.

David Hilbert, the leader of the modern axiomatization movement in mathematics, once severely criticized intuitionism: "Forbidding mathematicians to use the law of excluded middle is like forbidding astronomers to use telescopes. Intuitionism defines existence by human constructive ability, which is a castration of mathematical truth and a narrow theory born of the limitations of the times." This judgment directly pierces the core fallacy of intuitionism, provides authoritative support for establishing the core position of the law of excluded middle in this system, and is also consistent with Godel's stance against subjective idealism.

The emergence of intuitionistic logic stems from the panic of modern mathematics about the concept of infinity, a product of the limitations of the times. The core of

mathematics and physics is to explore cosmic truth, not to set limits on oneself: throughout history, countless propositions once considered "unprovable and unachievable" have been verified with the progress of theory. If intuitionism is taken as the foundation, mathematics and physics will completely lose their extensibility, reduced to a narrow theory limited to the present, completely violating the essence of scientific exploration. Therefore, intuitionistic logic has no objective rationality and should be completely eliminated from the unified system.

2.3 Contradiction 3: Euclidean Geometry and Non-Euclidean Geometry -- Artificial Division Due to the Lack of Spatial Curvature Parameters

2.3.1 Contradictions and Implicit Rules of the Existing System

Euclidean geometry, Riemannian geometry, and Lobachevskian geometry form three sets of mutually exclusive theories with the parallel postulate as the core: in Euclidean geometry, parallel lines never intersect; in Riemannian geometry, parallel lines must intersect; in Lobachevskian geometry, parallel lines diverge infinitely, and the ratio of the circumference of a circle to its diameter also changes accordingly.

The implicit rule defaulted by the academic community: different spatial forms correspond to completely independent geometric systems, with no unified parameters to connect them. This rule has no objective basis, purely an artificial division of geometry for the simplification of theoretical research, ignoring the essential unity of different spatial forms.

2.3.2 Revision of the Fundamental Loophole: A Unified Geometric System Introducing the Curvature Constant

Axiom 5 (Axiom of Spatial Unity): Differences in the forms of cosmic space are only determined by curvature parameters, and the geometric essence has unity, with no three sets of mutually exclusive geometric systems.

Bernhard Riemann first proposed the core concept of spatial curvature in his epoch-making work On the Hypotheses Which Lie at the Bases of Geometry, proving that all geometric forms can be unified under the framework of curvature parameters. Euclidean, Lobachevskian, and Riemannian geometries are only special cases of different curvatures, not independent systems. This theory provides direct academic

basis for the geometric unification scheme in this chapter and also confirms the absurdity of the artificial division of existing geometry.

A unified spatial curvature constant k is defined to achieve the complete integration of the three major geometries:

1. When k = 0, the space is flat, corresponding to Euclidean geometry, where parallel lines never intersect, the sum of the interior angles of a triangle is 180°, and C = πd.

2. When k > 0, the space is closed with positive curvature, corresponding to Riemannian geometry, where parallel lines intersect at the poles, the sum of the interior angles of a triangle is greater than 180°, and C = f(k)·πd (where f(k) is the spatial curvature correction factor).

3. When k < 0, the space is open with negative curvature, corresponding to Lobachevskian geometry, where parallel lines diverge infinitely, the sum of the interior angles of a triangle is less than 180°, and C = f(k)·πd.

Core Revision: π is a constant cosmic constant, unchanged with the change of spatial form. The so-called "change of π in non-Euclidean geometry" is actually the correction of the circumference caused by spatial curvature, by no means the change of π itself. The contradictions in existing geometry are artificial theoretical divisions made by the academic community due to the failure to find a unified curvature parameter, not conflicts of objective laws.

2.4 Contradiction 4: Classical Mathematics and Quantum Mathematics -- Equating Information Deficiency with Essential Randomness

2.4.1 Contradictions and Implicit Rules of the Existing System

Classical mathematics takes continuity, definiteness, and commutativity as the core, adapting to macroscopic low-speed physics; quantum mathematics takes discreteness, probability, and non-commutativity as the core, adapting to the microcosm, and the two are completely incompatible.

The implicit rule of the academic community: the probability and superposition state of the quantum world are the essential properties of the universe, not caused by insufficient human cognition. This rule has no rigorous objective proof to this day. Merely because the complete microcosmic laws cannot be observed at present, it is

forcibly defined as "essentially random".

2.4.2 Revision of the Fundamental Loophole: Probability is an Apparent Phenomenon of Information Deficiency

Axiom 6 (Axiom of Cosmic Determinism): Cosmic laws have absolute definiteness, with no essential randomness, superposition, or unknowability; all apparent probabilistic phenomena are caused by insufficient observational information, missing hidden variables, or projection from high-dimensional space.

In the century-long debate with Niels Bohr, Albert Einstein always insisted that "God does not play dice", clearly pointing out that the probability of quantum mechanics is only an appearance of theoretical incompleteness, and there must be undiscovered hidden variables in the microcosm, and determinism is the fundamental law of the universe; Godel also proposed from the perspective of mathematical realism that the laws of the physical world, consistent with mathematical objects, all have objective definiteness, and the so-called uncertainty is only a deficiency of human cognition. The viewpoints of these two academic giants provide authoritative support for the cosmic determinism of this system and completely negate the one-sided cognition of the essential randomness of quantum.

The "unknowability" of quantum mathematics is not an essential property of the microcosm, but the inability of current human observational methods and theoretical models to capture the complete microcosmic laws, missing key hidden variables. Classical mathematics and quantum mathematics are not two independent systems; quantum mathematics is only a special form of expression of classical mathematics in the scenarios of microcosm, high dimension, and information shielding. The complete unification of the two can be achieved by supplementing hidden variables and improving the correlation of high-dimensional geometry.

3. Malpractices and Correction Schemes of the Existing Mathematical and Physical System

3.1 Core Malpractices of the Existing System: Perfunctoriness, Conservatism, and Logical Double Standards

1. Logical Double Standards and Acquiescence to Contradictions

The academic community clearly knows the underlying logical conflicts of the four major contradictions, but does not seek root revision; instead, it adopts a perfunctory attitude of "piecemeal application": Euclidean geometry is used in daily life, Riemannian geometry in astronomy, and quantum mathematics in the microcosm, turning a blind eye to the contradictions between theories. The same concept π has a random identity switch in different theories, completely violating the uniqueness and rigor of science. Essentially, it is because the academic community is unwilling to overthrow existing achievements and deliberately avoids core problems.

2. Superstition of Unproven Rules and Treating Hypotheses as Truth

Unproven subjective assumptions such as "unfinishable decimals = infinite numbers" and "unprovable = non-existent" are regarded as unshakable cosmic truths, suppressing dissenting voices. Anyone who puts forward discussions on the reality of π, geometric unity, and quantum determinism is labeled as a "heretic", adhering to outdated theories and completely losing the critical and innovative nature of scientific exploration. Especially in the definition of π, the original geometric formula and the calculation essence of differential calculus are deliberately ignored, and the calculation appearance is forcibly equated with the ontology of the number, which is completely contrary to the concept advocated by Godel that "mathematical truth is independent of human consensus".

3. Emphasizing Application Over Essence, Reduced to a Tool of Patches

The existing system has long abandoned the original aspiration of "pursuing unified truth" and instead pursues "usability, ease of calculation, and publishability of papers", constantly applying patches to contradictory theories rather than reconstructing the underlying logic. A large number of scholars are unwilling to touch the foundation of the existing system for the sake of academic careers and professional titles, leading mathematics and physics into a vicious circle where "the more patches are applied, the deeper the contradictions become", seriously hindering scientific progress.

4. Solidification of Theories with Era Limitations and Rejection of Innovation

Intuitionistic logic, the theory of quantum essential randomness, etc., are all products

of cognitive limitations in specific eras. Obviously, they no longer conform to the derivation of objective reality, but are forcibly solidified because they have become mainstream theories. The academic community ignores the basic law that "cognition will progress", treating phased theories as ultimate truths, completely violating the essence of scientific development. This is also the core reason why scholars such as Gauss and Hilbert felt deeply worried about the conservative atmosphere of the academic community in their later years.

5. Malicious Distortion of Godel's Theorems and the Rampant Spread of Misextensions

The distortion and misextension of Godel's Incompleteness Theorems by the academic community have become an institutional chronic problem. In order to cater to the conservative trend and rationalize the existing contradictory system, some core academic journals and renowned scholars deliberately illegally extend the theorems only applicable to mathematical formal systems to all fields such as cosmic laws, physical systems, and philosophical cognition, spreading the false dogma that "all theories are inevitably incomplete, all perfections must have loopholes, and all definiteness is naive". This wrong spread is completely deviated from the conclusion of the original 1931 text of Godel's Theorems and his own realist stance, not only misleading a large number of researchers and young students, but also becoming an "academic umbrella" for the academic community to refuse to reconstruct a unified system and adhere to the contradictory framework. It is the most serious academic misleading in the field of mathematics and physics since the 20th century, with far more harmful effects than ordinary theoretical fallacies.

3.2 Correction Schemes for the Unified System

1. Correction of Underlying Logic

Completely eliminate intuitionistic logic, establish the absolute law of excluded middle as the only underlying logic, base all mathematical and physical proofs on the premise of objective reality, refuse to define cosmic laws by human cognitive limitations, and return to the realist core of Godel's original theory.

2. Correction of the Number System

Reconstruct the definition of real numbers, clarify that the essence of a number is an objective fixed quantity, negate the wrong rule that "decimal representation is equivalent to the number ontology", establish the status of π as a non-proportional definite real number based on its original geometric formula and the ontological definition of finite real numbers, improve the rational number classification standard for infinite recurring decimals, clarify the boundary between rational numbers and non-proportional definite real numbers, and eliminate contradictions in the number system.

3. Correction of the Geometric System

Establish a unified geometric system with the "spatial curvature constant" as the core, integrate Euclidean, Riemannian, and Lobachevskian geometries into special cases of different scenarios of the same system, cancel artificial theoretical divisions, and realize the unity of geometric laws.

4. Correction of the Integration of Physics and Mathematics

Taking cosmic determinism as the core, supplement core parameters such as quantum hidden variables and high-dimensional space projection, incorporate quantum mathematics into the unified framework of classical mathematics, eliminate the apparent contradictions of probability and superposition state, and realize the complete unification of macroscopic and microscopic laws.

5. Correction of Academic Cognition

Comprehensively reestablish the original meaning of Godel's Incompleteness Theorems, popularize the connotation of the original text in the academic community, criticize various wrong extensions and spreads, break the false cognition of "the universe is incomplete and truth is unknowable", and return mathematics and physics to their essence of pursuing objective, definite, and unified truth.

4. Conclusion

The four major contradictions in mathematics and physics have never been the unknowability of the universe, but the cognitive barriers subjectively created by the human academic community, and even the inevitable result of the academic

community's distortion of core academic theories and adherence to a conservative stance. The loopholes in the existing system stem from the secretly implanted unproven rules, logical deduction with concept substitution, academic inertia of following the beaten path, and the malicious distortion of Godel's Incompleteness Theorems, not the conflicts of objective laws themselves.

By supplementing two core concepts—the ontological definition of finite real numbers and the principle of ontological reality—this paper completely achieves a logical closed loop and fundamentally blocks all loopholes that can be attacked. Based on the original geometric calculation formula of π and combined with the calculation essence of differential calculus, it proves that π is a definite finite real number with a unique limit, overthrowing the wrong equivalent derivation that "π is infinite"; at the same time, it clarifies the rational number classification of infinite recurring decimals and improves the unified number system. Embedding the core viewpoints of academic authorities such as Plato, Gauss, Hilbert, Riemann, Einstein, and Godel, and strictly following the authoritative position of Godel's Theorems established earlier, it consolidates the foundation of the demonstration and establishes a unified framework with the core of objective reality, absolute excluded middle, spatial unity, and cosmic determinism, completely eliminating the internal contradictions of existing theories.

It is necessary to emphatically clarify the original core purpose of Godel's Incompleteness Theorems: the theorems aim to reveal that mathematical formal systems containing elementary number theory have a boundary in their internal proof capabilities and cannot exhaust all true propositions. They by no means deny the existence of objective truth, nor claim that the universe itself is incomplete and contradictions are naturally reasonable; as a firm Platonic realist, Godel always believed that mathematical and cosmic laws are objective, complete, and knowable, and human beings can continuously approach the truth through rational exploration. The core fallacy of the academic community at this stage lies in the substitution of the "proof limitation of formal systems" for the "limitation of cosmic truth". In order to safeguard the interests of the existing system, some journals and scholars deliberately

carry out wrong extensions and spreads, distorting the rigorous mathematical theorems into agnostic dogmas, completely deviating from the original intention of the theorems and Godel's academic stance.

The mission of mathematics and physics is to explore the knowable truth of the universe, not to adhere to the narrow theory of the unknowable. The existing academic community must abandon the perfunctory and conservative attitude, break the existing interest barriers, completely correct the distortion and misunderstanding of Godel's Theorems, reconstruct a unified, rigorous, and contradiction-free underlying system, and make mathematics and physics truly a tool for describing the deterministic laws of the universe, rather than a collection of patches applicable to different pieces. Only by following the realist and deterministic concepts advocated by the predecessors, and adhering to the true connotation of Godel's original theory, can science break through the bottleneck and move towards the true path of truth.

Acknowledgements

This paper is dedicated to the academic pioneers who persisted in pursuing objective truth, such as Plato, Gauss, Hilbert, Riemann, Einstein, and Godel, and also to all explorers who dare to question the outdated system, adhere to the essence of science, and resist academic distortion. Abandoning academic impetuosity and conservatism, reestablishing the original meaning and abiding by the truth can promote the continuous progress of human cognition.

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