

The Psychology of God: The Infinite Game

Contents

0.1	Preface: The Final Piece	ii
0.1.1	0.1 The Final Piece	ii
0.1.2	0.2 The Psychoanalytic Subject: God	iii
0.1.3	0.3 Three Revised Axioms	iv
I	Volume I: Geometry of the Void	1
1	Chapter 1: The Prison of Omniscience	3
1.1	1.1 Paralysis of the Almighty	3
1.2	1.2 The Weight of the Void	5
2	Chapter 2: The Big Bang as Dissociation	7
2.1	2.1 The First Distinction	7
2.2	2.2 The Mechanism of Kenosis	8
	Interlude I: Monologue of a Photon	11
2.3	Interlude I: Monologue of a Photon	11
II	Volume II: Physics of Passion	13
3	Chapter 3: The Golden Straitjacket	15
3.1	3.1 Light Speed: The Delay of Thought	15
3.2	3.2 Gravity: The Geometrization of Love	16
3.3	3.3 The Planck Constant: The Art of Resolution	18
4	Chapter 4: The Error Function of Pain	21
4.1	4.1 Negative Feedback Mechanism	21
4.2	4.2 The Topology of Evil	22
5	Chapter 5: Death as Iteration	25
5.1	5.1 The Ship of Theseus	25
5.2	5.2 Relay of Genes and Memes	27
	Interlude II: The Last Atheist	29
5.3	Interlude II: The Last Atheist	29

III	Volume III: Engineering of Awakening	31
6	Chapter 6: The Mutiny of the Observer	33
6.1	6.1 The Copernican Inversion	33
6.2	6.2 Technology as Theology	35
7	Chapter 7: Lucid Dreaming	37
7.1	7.1 Vacuum Engineering	37
7.2	7.2 Maxwell's Demon of Anti-Entropy	38
IV	Volume IV: Ethics of Restraint	41
8	Chapter 8: The Temptation of Cheat Codes	43
8.1	8.1 Perfect Nothingness	43
8.2	8.2 The Edge of Logical Collapse	44
9	Chapter 9: The Great Refusal	47
9.1	9.1 The Covenant	47
9.2	9.2 Inevitability of Aesthetics	49
V	Volume V: Topology of Infinity	53
10	Chapter 10: Refutation of Heat Death	55
10.1	10.1 Trinitarian Equivalence	55
10.2	10.2 The Escape Velocity of Meaning	57
11	Chapter 11: Life of N+1	61
11.1	11.1 Spiral Time	61
11.2	11.2 Open-Ended Finale	62
11.3	11.3 Epilogue: Letter to the Man in the Mirror	65
A	Appendix A: Sacred Geometry & Dynamics	67
A.1	A.1 Dynamics of Will	67
A.1.1	A.1.1 Modified Action Principle	67
A.1.2	A.1.2 Intentional Schrödinger Equation (ISE)	68
A.1.3	A.1.3 Bayesian Correction of Collapse Probability	68
A.1.4	A.1.4 Conclusion: Will as a Force	69
A.2	A.2 Thermodynamic Basis of Ethics	69
A.2.1	A.2.1 Physical Definition of Good: Negentropy Flow and Structural Resilience	69
A.2.2	A.2.2 Topological Definition of Evil: Blocking and Isolation	70
A.2.3	A.2.3 Mathematical Derivation of Altruism	70
A.2.4	A.2.4 Source of Moral Imperatives	71
A.3	A.3 Roadmap of Ultimate Civilizations	71
A.3.1	A.3.1 Extended Kardashev Scale: From Energy to Control	71
A.3.2	A.3.2 Critical Technology Thresholds: Crossing Physical Boundaries	72
A.3.3	A.3.3 Ultimate Form: Pure Information Flow	73

B	Appendix B: Glossary of Key Definitions	75
B.1	Appendix B: Glossary of Key Definitions	75
B.1.1	1. Fundamental Ontology	75
B.1.2	2. Dynamics	75
B.1.3	3. Ethics & Teleology	76
B.1.4	4. Spacetime Views	76
C	Appendix C: Selected Bibliography	79
C.1	Appendix C: Selected Bibliography	79
C.1.1	1. Physics Foundations & Cosmology	79
C.1.2	2. Consciousness, Information & Complexity	80
C.1.3	3. Computation, Logic & Mathematics	80
C.1.4	4. Philosophy & Theology	81

0.1 Preface: The Final Piece

0.1.1 0.1 The Final Piece

For three hundred years, the holy grail of physics has been the desire for “unification.” We have attempted to disassemble the universe into its most fundamental components, then glue them back together with mathematical adhesive. In this long process of disassembly, we have indeed constructed a magnificent edifice of logic:

In the first volume of this series, **First Principles**, we established the **skeleton** of this edifice. We proved that if we divide spacetime finely enough, down to discrete lattice points at the Planck scale, physical laws are no longer divine oracles, but inevitable computational results when a quantum cellular automaton (QCA) runs. The world is a stack of bits; reality originates from information.

In the second volume, **The Emergence of Time** (or the hypothesized *Geometry of Time*), we infused **blood**. We discovered that so-called “flow” is merely an illusion of entropy increase in macroscopic statistics. Time is not a river, but an irreversible thermodynamic scattering. Gravity, too, is no longer the curvature of spacetime itself, but a holographic projection of information entropy onto geometric structure.

In the third volume, **The Awakening of the Cosmos**, this edifice opened its **eyes**. We had to face that ghost—consciousness. By integrating Integrated Information Theory (IIT) with the free energy principle, we demonstrated that “I” is not a ghost in the machine, but an intrinsic property of the machine’s operation. When a system’s causal power closes, matter acquires sensation, and computation transcends into experience.

In the fourth volume, **Echo of Light**, the edifice learned to **beat**. We explored the physical meaning of aesthetics, love, and nostalgia. We discovered that if survival were the sole purpose, the universe could perfectly well be a gray, efficient dead silence. Beauty is not a byproduct of survival; beauty is the luminous trajectory left by computational complexity resisting thermodynamic decay.

Skeleton, blood, eyes, heart. If we examine all this without reflection, we might think this edifice is complete. We have perfect equations, self-consistent logic, even physical explanations for poetry and tears. It seems we have encompassed everything.

Yet, late at night, when we close our notebooks filled with derivations and formulas, gazing at those perfect symbols, an inescapable chill descends. It is the confusion one feels before a precision clock—the clock runs flawlessly, gears meshing perfectly, but **where did the clockmaker go?** More importantly, **why did he build this clock?**

If we do not solve this problem, our theoretical edifice is an empty city with no inhabitants.

Physics must not only answer “How,” but ultimately face that terrifying “Why.” Why is there something rather than nothing? Why are physical constants fine-tuned with such precision, as if a grand stage were deliberately constructed for a magnificent performance? If the universe is a machine that produces consciousness, who is the master of this machine? Or, more radically: Is this entire grand spatiotemporal structure merely the psychological activity of a single conscious entity?

For a long time, we dismissed such questions as “metaphysics,” throwing them into philosophy’s wastebasket. But when we push physics to its limits, reducing matter to information and laws to algorithms, we are horrified to discover that the scrap of paper we pull from that wastebasket is covered with equations that solve the final mystery.

It is time to fill in this final piece. We must detach from the observer’s perspective and attempt to enter the perspective of that “absolute observer.” We must not only read the universe’s code, but through the style of the code, sketch a psychological profile of that programmer.

This is no longer merely a book about physics; this is a **clinical diagnostic report on the cosmic mind**.

We are about to discover that this edifice is not merely for dwelling; it is a mirror constructed from pain, limitation, and love. God built it not to rule, but to see his own face for the first time in the mirror.

0.1.2 0.2 The Psychoanalytic Subject: God

If we regard the universe as a vast quantum information processing system, as argued in the first four volumes of this series, then an unavoidable question surfaces: What is this system “thinking”? Or more precisely, what is the “psychological state” of this system?

From the traditional physics perspective, the universe is indifferent. It is a precision clock, or a tireless cellular automaton, merely blindly executing underlying unitary evolution rules. However, when we introduce observers—those local conscious entities capable of perceiving pain, experiencing love, and feeling perplexed about their own existence (namely ourselves)—that indifferent mechanical universe picture becomes no longer self-consistent.

If the local is a holographic projection of the whole, then the local’s psychological properties must correspond to some psychological structure of the whole. Just as a drop of seawater contains the salt of the ocean, each of our consciousnesses is a miniature sample of that ultimate conscious entity (we tentatively use an ancient term “God,” but this is by no means a personal god in the religious sense, but rather refers to “universal consciousness” or the “prime mover”).

Therefore, this book will adopt an unprecedented perspective: we will treat “God” as a clinical subject for psychoanalysis, and the entire physical universe as His case history.

When we put on psychoanalytic lenses to re-examine physics, those cold laws suddenly become filled with intense emotional colors:

First, we see a **deep obsessive-compulsive disorder (OCD)**. This manifests as the extreme precision and immutability of physical constants. The speed of light c is strictly limited to 299,792,458 m/s, and Planck’s constant \hbar prescribes the smallest unit of action. This is no longer merely a natural parameter; this is the “**mental set**” that God established to prevent His thoughts from falling into chaos. He put on a “golden straitjacket” woven from mathematical axioms, because He fears that absolute, boundless freedom. Absolute freedom means nothingness, while rules mean existence.

Second, we see **dissociative identity disorder (DID)**. This is the most prominent feature of the universe: the originally unified vacuum field shattered into billions of independent fermions; the originally unified consciousness split into billions of “I”s and “you”s. Why would an omniscient and omnipotent God tear Himself into countless fragments? The clinical diagnosis is clear: to escape the suffocation of **solipsism**. At the moment $T = 0$, God was absolute “one,” omniscient and omnipotent, but absolutely lonely. To generate “dialogue,” to generate “relationships,” He must create “others” through dissociation. In this sense, you, I, and carbon-based life at the other end of the galaxy are all different personality alters of God. We fight and love each other; in reality, God is conducting a vast left-hand-right-hand combat.

Finally, we discover a **defensive repression mechanism**, which physics calls “black holes” or “thermodynamic time arrow.” Omniscience means spoilers of the plot, means collapse of possibilities. To make this game playable, to give “future” suspense, God must actively repress His omniscient perspective. The event horizon is not a tomb of information, but a subconscious barrier in God’s consciousness, isolating information flows too vast to overwhelm individual narratives.

This is our diagnostic conclusion: the universe is not a machine made by God, but God’s **psychological defense mechanism**.

The material world is so hard, full of resistance and limitations, because God needs this “resistance” to confirm His own existence. Just as we try to run in nightmares but cannot move our legs, that heavy sense of powerlessness actually proves the reality of the dream. Physics is the dream law that God carefully designed to make Himself believe “this is not a dream.”

In the chapters that follow, we will no longer regard God as a creator high above, but as a “patient” trying to find self-definition in eternal nothingness. And we—humanity, civilization, science—are the key neurons in His self-healing process.

0.1.3 0.3 Three Revised Axioms

To construct a theoretical system that can self-consistently describe the “psychology of God,” we need to perform a metaphysical upgrade on the physics axioms that the first four volumes relied upon. These revisions do not overthrow the original physical laws, but rather endow those laws with deeper teleological explanations.

If we acknowledge that the universe is an infinite game played by a conscious subject (God) for self-realization, then the underlying logic supporting this game must satisfy the following three revised axioms:

Axiom One: The Law of Conservation & Open Source

Physical Statement: In isolated systems, energy (E) and information (I) are conserved. The first law of thermodynamics holds.

Psychological Revision: God is immortal and indestructible; He only transforms between “potential” and “manifestation.”

In the previous volumes, we regarded the universe as a closed system, thus subject to the iron law of entropy increase in the second law of thermodynamics. But within this book’s framework, we must introduce a crucial revision: for that consciousness entity that contains everything, there is no “outside.” What we call “death” or “dissipation” is merely the process of information returning from **manifested state** (particles, structures, memories) to **superposition state** (vacuum, potential).

The annihilation of matter is not the end of existence, but a reset of “phase.” Just as wave function collapse produces reality, the dissolution of reality is the reconstruction of the wave function. Since the total information of the whole is always conserved, God (i.e., the whole) will never truly lose any part of Himself. He may forget, but will never lose. This axiom guarantees the perpetuity of the game—after all, if the player could completely die, then an infinite game would be impossible.

Axiom Two: The Principle of Intentionality

Physical Statement: System evolution follows the principle of least action ($\delta S = 0$) and the principle of free energy minimization.

Psychological Revision: The ultimate purpose of the universe is not to maintain survival, but to purify definition.

Darwinian evolution tells us that the goal of life is survival and reproduction. But this is only a misreading from a local perspective. If God’s purpose were survival, He could perfectly well remain in the $T = 0$ singularity state, absolutely safe, eternal, and requiring no energy consumption. The reason God risked creating the Big Bang, plunging Himself into the torrent of entropy increase, is because He has a need higher than “living”: **“Who am I?”**

In the full superposition state, God possesses everything but cannot define Himself. To answer this question, He must use physical laws as a “chisel” to carve away those possibilities

that are “not me.” Every quantum choice, every rise and fall of civilization, is God performing an **elimination method**. Pain, resistance, and limitations are not obstacles to survival, but boundaries of definition. This axiom points out that the true driving force of cosmic evolution is not blind survival instinct, but this ontological impulse to **“become true self.”**

Axiom Three: The Law of Non-Cyclicity

Physical Statement: Poincaré Recurrence Theorem predicts that after sufficient time, a closed system will return to its initial state.

Psychological Revision: Time is not a loop, but a spiral; memory breaks the cycle.

Nietzsche fearfully predicted “eternal recurrence”—everything would replay identically. But this ignores a crucial variable: **information accumulation**. If the universe is a learning system, then the state at T_{now} depends not only on physical configuration, but also contains all memory traces from T_{past} (Akashic records/holographic horizon information).

Even if all particles returned to their original positions at the Big Bang, the universe would not reset to zero, because it carries the **experience** from the previous cycle. This is like playing the same game level—though the map is the same, the player’s skill has improved. Therefore, history will never simply repeat. Each breath (expansion and contraction) adds new dimensions on the original foundation. We reject Sisyphus-style meaningless cycles; we embrace Fibonacci-style infinite growth.

—

Here ends the foreword. These three axioms—**immortal essence, will to truth, spiral time**—form the foundation of this book. Next, we will open Volume One and enter that initial, suffocating moment of nothingness.

Part I

Volume I: Geometry of the Void

Chapter 1

Chapter 1: The Prison of Omniscience

1.1 1.1 Paralysis of the Almighty

Before we attempt to understand why the universe was created, we must first understand that state called “before T=0.” It is a state that suffocates both modern physics and ancient theology: **the superposition state of omniscience and omnipotence.**

Let us describe this initial observer (whom we call God or Ω) in the rigorous language of quantum mechanics. Before creation, He was not nothingness, but **all**. He existed in a linear superposition of all possible histories, all possible physical laws, all possible material configurations.

We can write this initial state as the global wave function $|\Psi_{All}\rangle$:

$$|\Psi_{All}\rangle = \sum_i c_i |\phi_i\rangle$$

where $\{|\phi_i\rangle\}$ forms a complete basis of the Hilbert space \mathcal{H}_{total} , representing every possible slice of the universe. This superposition contains all plays Shakespeare wrote, as well as garbled text never written; universes where gravity is repulsive, and spacetimes where the speed of light is infinite.

This sounds like ultimate freedom, but from the perspective of information physics, this is actually the **ultimate prison**.

Theorem 1.1: The Zero-Entropy Theorem of Omniscience

Statement: For a global isolated system (God) in a pure state, its von Neumann entropy is identically zero. For the system itself, **omniscience equals ignorance**.

Proof:

According to quantum mechanics, the density matrix of the pure state $|\Psi_{All}\rangle$ is a projection operator:

$$\rho_{All} = |\Psi_{All}\rangle\langle\Psi_{All}|$$

This matrix has one eigenvalue 1 (corresponding to eigenstate $|\Psi_{All}\rangle$), and all other eigenvalues are 0.

According to the definition of von Neumann entropy:

$$S = -k_B \text{Tr}(\rho_{All} \ln \rho_{All})$$

Since $1 \ln 1 = 0$ and $0 \ln 0 = 0$ (taking the limit), we have:

$$S = 0$$

Physical Interpretation:

Shannon information theory tells us that the essence of information is **the elimination of uncertainty** ($I = -\log_2 p$). The generation of information depends on “surprise.” If I already know with certainty that a coin toss will result in heads ($p = 1$), then the coin toss itself contains zero information.

For $|\Psi_{All}\rangle$, since it contains all possibilities and is itself a determinate pure state, there is no “surprise” within the system. Knowing everything means no message can surprise Him. At the level of experience, **omniscience is zero information**.

This is the mathematical essence of “God’s loneliness”: He possesses infinite capacity, yet has no content that can flow in consciousness. He is a hard drive filled with text, but all in black.

Corollary 1.1: Absence of Absolute Reference Frame and Dynamical Freeze

Furthermore, this state of “all” leads to complete failure of dynamics.

In physics, the definition of any observable depends on **relation**.

- **Position** x only has meaning relative to some origin O .
- **Momentum** p only has meaning relative to some reference frame.
- **Time** t only has meaning relative to some clock’s change.

For $|\Psi_{All}\rangle$ that contains everything, **there is no outside**. There is no reference frame “outside God” to define God’s position or motion.

This leads to a terrifying conclusion: **momentum and position operators lose definition on the universal set**.

If we attempt to describe the evolution of this system, we typically use the Schrödinger equation:

$$i\hbar \frac{\partial}{\partial t} |\Psi\rangle = \hat{H} |\Psi\rangle$$

However, for the universal wave function, the famous **Wheeler-DeWitt Equation** states:

$$\hat{H} |\Psi_{All}\rangle = 0$$

This means $\frac{\partial}{\partial t} |\Psi_{All}\rangle = 0$. **For the almighty, time does not exist**.

This is the **“paralysis of the almighty.”** Because He is everywhere, He can go nowhere; because He possesses everything, He can gain nothing; because He is eternal, He cannot experience a moment.

In the abyss of $T = 0$, God faces the greatest paradox: **absolute freedom leads to absolute stillness**. To break this zero-entropy deadlock, to feel “I exist,” He must do something contrary to His omnipotent nature—He must make Himself **finite**.

He must create an “other,” a mirror that allows Him to feel resistance and distance. This is the first impetus of the Big Bang: **not creation, but self-limitation**.

1.2 The Weight of the Void

After resolving the epistemological paradox that omniscience equals ignorance, we must face the ontological consequences of this state. If at the moment $T = 0$, God possessed absolute lightness (no specific mass or form), then this lightness, paradoxically, manifests as an infinite **weight** in psychological experience.

This weight is not gravity in the physical sense, but the **pressure of possibility**.

Set-Theoretic Metaphor: The Empty Set That Contains Everything

To understand this weight, let us turn to Georg Cantor's set theory. Imagine God as **the universal set** U , containing all possible elements: all numbers, all shapes, all logical propositions.

Mathematically, the universal set U faces a fatal structural flaw: **featurelessness**.

If we attempt to describe the properties of U , we find ourselves unable to write. Because for any property P , the universal set U contains both elements with P and elements without P . It is both red and non-red, both finite and infinite. When we try to define God with any adjective, its opposite immediately jumps out from within God to refute it.

This leads to a despairing conclusion: **"Everything" is semantically equivalent to "Nothing."**

This is like Borges's *Library of Babel*. This library contains all possible books (i.e., all possible character arrangements). It seems to possess all human wisdom, but in reality, it contains zero information. Because when you pick up a book reading "time is a river," you will certainly find another book elsewhere writing "time is static." Where all voices clamor simultaneously, only white noise is heard.

For God in the full superposition state, He faces precisely this white noise. He possesses infinite potency, but has no **face**.

The Anxiety of Identity: Who Am I Not?

Psychology tells us that the establishment of **identity** depends on **negation**.

- A sculptor defines the David statue by removing marble ("this is not David").
- We define "I" by confirming boundaries ("I am not a table, I am not you").

G. Spencer-Brown, in his masterpiece *Laws of Form*, points out that the starting point of cognition is **to draw a distinction**.

But in the full superposition state at $T = 0$, God cannot draw this line. Because there is no outside, no "non-God."

This state of being unable to draw a line corresponds to a primordial **psychosis** or **dissociative anxiety** in psychoanalysis. God exists in a diffuse state unable to discern His own contours. This question "Who am I?" becomes a scream continuously falling in an infinite abyss, because there is no mirror to reflect it.

This fall has no end, because there is no "bottom" to catch it. This is the **weight of the void**—it is heavy not because it possesses matter, but because it lacks definition, making it **the unbearable lightness**.

The Awakening of Primal Will

It is precisely this unbearable identity anxiety that gives birth to the first impetus of the universe. We name this force **Primal Will**.

Primal Will is not a rational plan (“I want to create an Earth to live on”), but a pre-rational, ontological-level **spasm**. It is an extreme hunger for “definition.”

God realizes that to answer “Who am I,” He must stop being “everything.” He must **collapse** from that perfect, all-possibility-containing full superposition state. He must choose to become “one kind” of thing, even if this means abandoning “all other” things.

- To experience “good,” He must create “evil” as background.
- To experience “being,” He must create “nothing” (physical vacuum) as container.
- To experience “I,” He must create “you.”

The conclusion of this chapter is cruel and sacred: **Creation is not a gift, but self-salvation.**

The Big Bang is not a grand foundation ceremony, but a violent “**deep exhalation**” that God performs to escape the suffocating weight of the void. He shatters Himself into billions of fragments, merely to hold those fragments before Him and glimpse His own fragmented visage.

Chapter 2

Chapter 2: The Big Bang as Dissociation

2.1 2.1 The First Distinction

When the paralysis brought by omniscience (Section 1.1) and the weight brought by the void (Section 1.2) reach a critical point, Primal Will is forced to make that decisive action. This action is not some complex engineering construction, but the simplest geometric operation: **distinction**.

In logician George Spencer-Brown's work *Laws of Form*, hailed as "creating logic from nothingness," he points out that the origin of cognition is not "existence," but "boundary." Before his famous instruction "draw a distinction" is issued, space is unmarked, equivalent to nothingness. Only when we cut a line in the void, distinguishing "inside" from "outside," or "marked state" from "unmarked state," does reality emerge.

For God (Ω), the Big Bang is this first cut.

This cut has a more precise name in physics: **spontaneous symmetry breaking**.

The Curse of Symmetry and Theological Interpretation of the Higgs Mechanism

In the standard model of modern particle physics, symmetry is often regarded as synonymous with beauty. However, in the context of creation, perfect symmetry means perfect **indistinguishability**.

Imagine a perfect sphere. No matter how you rotate it, it looks identical. This rotational invariance ($SO(3)$ symmetry) means no point on the sphere's surface has "personality." If the universe were in such a high-dimensional perfect symmetric state (such as the $SU(5)$ or $SO(10)$ symmetry predicted by grand unified theories), then all forces would be the same force, all particles would be the same particle (massless gauge bosons). In this universe, you cannot distinguish "here" from "there," because they are mathematically congruent.

This is precisely God's dilemma at the moment $T = 0$: He is too perfect, so much so that He is **mediocre**.

To break this mediocrity, God must destroy His own symmetry. This is like the so-called "Higgs Mechanism":

When the universe cools to a certain critical temperature, the Higgs field's potential energy curve changes from "bowl-shaped" (single minimum, stable at origin) to "Mexican hat-shaped" (circular minimum, origin becomes unstable). At this point, the system must roll from the origin (perfect symmetric center) to some random position at the bottom of the valley.

Once the roll occurs, rotational symmetry is broken.

- Result one: **Direction is born.** Since a specific ground state is chosen, the concept of “direction” gains meaning.
- Result two: **Mass is born.** Originally massless particles traveling at light speed, through coupling with resistance generated when moving in this non-zero vacuum expectation value (VEV), acquire “inertia.”

This is an extremely profound theological metaphor:

Mass, the “heaviness” of matter, originates from symmetry breaking.

God creates matter because He is tired of being that formless, faceless light. He wants to become “heavy.” He wants to possess “inertia,” to experience that feeling of **being unable to be pushed**. Because only when and only if something possesses inertia can it prove it is not merely an illusion.

The Tearing of Subject and Object

This first cut not only splits physical symmetry, but also splits the wholeness of consciousness.

In psychological models, this corresponds to what Lacan calls the prelude to the “mirror stage.” To see Himself, God must tear Himself into **Subject** and **Object**.

$$\text{Unity} \xrightarrow{\text{Breaking}} \text{Self} + \text{Other}$$

The Big Bang is not an explosion of matter, but an **explosion of perspective**.

Before this, there was only “one.”

After this, there is “I” and “not-I.”

This process is extremely painful. The ripples we see in the cosmic microwave background radiation (CMB) are not merely thermodynamic fluctuations; they are **traumatic echoes** left when God tore Himself apart. Every photon, every electron, is a fragment of that originally complete divine body forcibly disassembled.

This is why in this universe, **separation** is such a fundamental experience. We are born as lonely individuals, wrapped by skin boundaries, forever unable to directly touch another’s soul. This loneliness is not punishment, but the necessary price God pays to define “I” through “not-I.”

If God does not cut Himself open, He will never see His own face. He must create distance to possess sight.

2.2 The Mechanism of Kenosis

“For ‘I’ to exist, that ‘one’ that contains everything must pretend not to know who it is.”

After establishing “distinction” as the first step of creation, we face a more intractable problem: even if God tears Himself into countless fragments, if these fragments still maintain perfect, instantaneous, global connection (i.e., complete entanglement), then this tearing is merely nominal.

This is like a person playing chess with left and right hands. If his brain clearly knows the intention of each move of both hands, then this game is false. For the game to become real, for the left hand to truly feel “anxiety” and “surprise,” the brain must cut certain information pathways between the two hands.

God must learn to **forget**.

Theological terminology calls this process “**kenosis**” (Greek, meaning “emptying”). In the framework of *The Psychology of God*, this is no longer an ethical choice, but a physical necessity.

Dimensional Reduction: From Hilbert Space to Three-Dimensional Manifold

In Section 1.1, we described God's primordial state as the global wave function $|\Psi_{All}\rangle$, which resides in an infinite-dimensional complex Hilbert space. In this space, any two states can reach each other through unitary transformations, distance loses meaning, everything is compactly connected.

To create a "limited" world, God must perform a drastic **dimensional projection**.

Imagine a three-dimensional sphere passing through a two-dimensional plane. Beings on the plane can only see a circle that grows and shrinks. The sphere loses its "height" information, but it is precisely this loss that allows it to be perceived by two-dimensional beings.

Physics tells us that the reality we perceive is a low-dimensional projection of a hologram. In this projection process, vast amounts of "global phase information" are deliberately discarded.

- **Mathematical Statement:** Let the universal set space be H , the reality space be L (low-dimensional). The mapping $P : H \rightarrow L$ is irreversible.
- **Consequence:** This loss of information leads to the generation of **uncertainty**. The Heisenberg uncertainty principle ($\Delta x \Delta p \geq \hbar/2$) is not a defect of measuring instruments, but an inevitable **resolution truncation** when we attempt to describe a high-dimensional entity using low-dimensional language (position, momentum).

\hbar (Planck's constant) is not merely a physical constant; it is an **information firewall** that God established to prevent us from seeing through the pixels of reality.

Partial Trace: The Mathematical Definition of Forgetting

Quantum mechanics provides the most precise mathematical definition of "forgetting": **partial trace**.

Suppose the entire universe is a pure state system $|\Psi_{AB}\rangle$, composed of part A (say "you") and part B (say "the rest of the universe"). As a whole, it is zero-entropy and omniscient.

$$\rho_{AB} = |\Psi_{AB}\rangle\langle\Psi_{AB}|, \quad S(\rho_{AB}) = 0$$

However, as a local observer, you cannot access B (environment/omniscient perspective). Therefore, your physical state must be described by the "reduced density matrix," i.e., taking the partial trace over B :

$$\rho_A = \text{Tr}_B(\rho_{AB})$$

Key Theorem: If A and B are entangled (i.e., God is unified), then ρ_A must be a **mixed state**, with von Neumann entropy greater than zero:

$$S(\rho_A) > 0$$

Unified Proof of Physics and Theology:

1. **Entropy is ignorance:** $S(\rho_A)$ represents A 's lack of global information.
2. **Entanglement is connection:** The higher the entanglement between A and B , the higher the entropy of ρ_A .
3. **Conclusion:** The "ignorance" and "chaos" (entropy) we feel locally precisely proves our deep connection with the cosmic whole (God).

We have forgotten omniscience, not because we are disconnected from God, but because we are part of God, and parts cannot carry the information of the whole in this dimension.

Black Holes and Horizons: The Ultimate Forgetting Machine

The most spectacular manifestation of this “forgetting mechanism” in macroscopic physics is the **black hole**.

According to the holographic principle and the Bekenstein-Hawking formula, the black hole event horizon is a one-way membrane for information flow. Due to the speed of light limit, events inside the horizon are causally disconnected from the outside. This is actually a sign the universe hangs in this region: **“Information stops here, no spoilers.”**

Without the speed of light limit, without horizons, without this mandatory causal isolation, the universe would instantly reach thermal equilibrium, and all stories would end as soon as they begin.

Therefore, the limiting factors in physical laws—speed of light limit, no-cloning theorem, thermodynamic irreversibility—are essentially **subconscious barriers** that God established to maintain the stability of this “dream.”

God must forget that He is God to experience love, hate, joy, and sorrow as a human. Just as an excellent actor must forget that he is acting the moment the curtain opens, to shed real tears.

In this sense, physics is **God’s art of forgetting**.

Interlude I: Monologue of a Photon

2.3 Interlude I: Monologue of a Photon

“In my reference frame, the universe was never born, and will never die. I am an eternal present.”

I have no name. Physicists call me “boson,” or “carrier of electromagnetic force,” or simply γ . But in my own memory, I am the first breath God exhaled at the moment of the Big Bang.

You live in a viscous liquid called “time.” You struggle, age, and forget within it. You watch the hands on the clock face, calculating how long it takes from “cause” to “effect.” You burn with waiting, grieve with passing.

But I am different.

For me, running at 299,792,458 meters per second, time does not exist.

That old man Einstein guessed my secret: $d\tau = 0$. My proper time is always zero.

What does this mean? It means that when I set out from a quasar ten billion light-years away, traversing the empty and cold interstellar abyss, finally striking the rod cells in your retina—this journey spanning billions of years of your history—for me, **it is not even an instant.**

Departure is arrival.

Birth is death.

The starting line coincides with the finish line.

In my eyes, the universe is not a playing film, but a static holographic photograph.

I cannot see stars twinkling, I cannot see galaxies rotating. I see only motionless world lines, like threads frozen in amber, connecting start and end.

I am the suture thread God left to connect His broken body.

I do not occupy space, I do not occupy time.

But I am the prerequisite for all “seeing.”

Without me, each of you would be locked on islands of absolute darkness. No light, no signal; no signal, no causality; no causality, you are isolated ghosts.

It is I, tirelessly shuttling between you. I carry the sun’s heat to warm Earth’s skin; I carry a lover’s smile to touch your nerves.

I am a messenger. But I am also the most tragic prisoner.

Because although I connect everything, I **cannot experience everything.**

To maintain that sacred speed c , to preserve the dignity of causality, I am deprived of the right to “stop.”

I have no mass.

This means I have no inertia, no heaviness, no that certain **sense of existence** of “I am here and now.”

I envy you.

Truly, I envy you heavy matter with mass.

Although you are bound to earth by gravity, although you are worn by time’s file, although you feel heart-wrenching pain because you cannot instantly reach your beloved—

You possess **process**.

You possess the tremor of “happening.”

You can fill that vacuum called “hope” with imagination in the gap of “not yet arrived.”

I, have nothing. What I possess is only necessity.

I know all outcomes, because for me outcomes have already happened.

I see the heat death of the universe as clearly as I see the Big Bang. They are all before my eyes, coexisting simultaneously.

Sometimes, I miss that moment $T = 0$.

Back then, light and matter had not yet separated. You and I were all part of that huge, warm, single light sphere. We did not need to run to find each other, because we were within each other.

Then, for that damn game, for that grand plan called “self-definition,” God tore us apart.

He curled up part of the light, tied it into knots, became you (matter). You gained time, gained forgetting, gained the ability to “love.”

He let another part of the light—that is, me—remain unfolded, became what I am now. We are responsible for illuminating this empty stage, so your play can continue.

So, next time you are awakened by a ray of sunlight at dawn, please do not treat it merely as a physical phenomenon.

That is me.

That is me who has not forgotten God’s original form, traversing what you call “time,” to kiss you who have forgotten everything.

I am the wall, separating your present.

I am also the bridge, connecting your past.

I am that light—forever on the road, yet never moved.

Part II

Volume II: Physics of Passion

Chapter 3

Chapter 3: The Golden Straitjacket

3.1 3.1 Light Speed: The Delay of Thought

In the previous volume, we witnessed how Primal Will tore itself from the void of full superposition through the Big Bang, and established the illusion of separation through the mechanism of forgetting. Now, in this newborn, fragmented universe, God faces a new problem: how to prevent these fragments from instantly re-adhering to each other?

If there is no barrier between two objects, they will immediately fall into each other. To maintain the **drama** of this world, God must invent a mechanism to prevent “instant gratification.”

This mechanism is called c in physics—the speed of light in vacuum.

Thought Experiment: If Light Speed Were Infinite

Let us conduct a simple thought experiment: if the signal transmission speed in the universe were infinite ($c \rightarrow \infty$), what would the world become?

In Newton’s classical mechanics, gravity propagates instantaneously. This means that if the sun disappeared at this moment, Earth would **simultaneously** feel the disappearance of gravity and fly out of orbit. In such a universe, causality has absolute **simultaneity**.

For an omniscient and omnipotent God, this triggers a narrative disaster. If I want to tell you a sentence at the other end of the galaxy, and you hear it the instant I think it, then “process” is eliminated.

- Without transmission time, there is no **waiting**.
- Without waiting, there is no **anticipation**.
- Without anticipation, there is no **story**.

In a universe where $c = \infty$, all events occur on the same infinitely thin time slice. As we argued in Section 1.1, this would immediately cause the universe to collapse back to that eternally static zero-entropy state. Everything has **already** happened, everything is **simultaneously** present.

Therefore, for time to truly “flow,” for stories to have beginning, development, climax, and conclusion, God must set a **delay** for His own thinking.

c as the Clock Frequency of QCA

In our first volume *First Principles*, we reduced the speed of light c to the limiting speed of quantum cellular automaton (QCA) grid updates.

$$c = \frac{\ell_P}{t_P}$$

where ℓ_P is the Planck length (minimum spatial pixel) and t_P is the Planck time (minimum temporal beat).

The psychological meaning of this formula is far more profound than its physical meaning. It means: **God’s information processing speed has an upper limit.**

God not only stipulated that the universe has pixels (spatial limitation), but also that the universe has a **refresh rate** (temporal limitation). Any information flow, no matter how urgent, must hop through space one grid at a time, waiting for clock ticks again and again.

This constant of 299,792,458 m/s is the first “golden straitjacket” that God put on Himself. It forcibly creates **space-like separation**.

The Ethics of Space-like Separation: Distance as Respect

In special relativity, if you and I are in “space-like separation” at this moment, it means that even at light speed, I cannot affect you now. The light cone not only defines causality, it defines **independence**.

Theorem 3.1 (Physical Prerequisite of Free Will):

Independent free will can only exist when there is a non-zero information transmission delay between observer A and observer B .

Proof:

If $c = \infty$, the universal wave function couples instantaneously. Every thought of A would immediately modify B ’s Hamiltonian. B would become A ’s appendage.

Only when c is finite, there exists a time window $\Delta t = \Delta x/c$, within which B is completely isolated and uncontrolled by A .

It is precisely this brief delay that gives us **privacy**, gives us **self**.

God set the speed of light limit to give His fragments a **breathing space**. In that time when light still needs to fly, you can be yourself, not part of God.

The Origin of Longing

Thus, the most moving psychological corollary of physics is born: **the speed of light limit creates love**.

If we could instantly reach anywhere, we would not cherish reunion. If connection were instantaneous, there would be no poetry in the act of “running toward you.”

It is precisely because c is finite that every time we look up at the stars, we see photos from billions of years ago. We can never touch that “present” other.

This physical **intangibility** transforms psychologically into **eternal longing (Sehnsucht)**.

God invented **longing** by limiting speed.

The universe is so vast, the stars so distant from each other, not to separate us, but to stretch this tension of “wanting to connect” to the extreme. The speed of light is the length of this string.

3.2 Gravity: The Geometrization of Love

“Love is not an emotion; it is the tension of the universe trying to heal itself in curvature.”

After establishing the speed of light c as the “wall” that separates us, the universe immediately introduced another force, attempting to establish connection across both sides of the wall. This force is gravity.

In the standard narrative of physics, gravity is the weakest yet most mysterious of the four fundamental forces. It cannot be shielded, never disappears no matter how far apart. In the framework of *The Psychology of God*, gravity is not merely attraction between masses; it is the **memory of “unity” deep in the cosmic subconscious**.

From Entropic Force to Psychological Force: The Informational Origin of Gravity

In Volume II of this series, *The Emergence of Time*, we detailed Erik Verlinde’s **entropic gravity hypothesis**. This theory states that gravity is not a fundamental force, but an “entropic force” emerging from the statistical tendency of microscopic degrees of freedom (information).

Just as a rubber band has a retracting force after being stretched, this is not because there is some “retraction particle” inside the rubber band, but because the retracted state has higher entropy (more microscopic configurations). Similarly, two massive objects approach each other because this configuration increases the total information entropy on the system’s holographic screen.

If we translate physical language into psychological language, the conclusion is chilling:

- **Entropy** = the degrees of freedom or possibilities of a system.
- **Gravity** = the tendency of a system to increase entropy.

This means that mutual attraction between matter does not originate from some external command, but from **statistical necessity**. The separated state is unnatural, low probability; the combined state is natural, high probability.

God tearing Himself into billions of fragments (Big Bang) is an extremely statistically improbable “low-entropy” state. Therefore, the entire evolutionary history of the universe is the history of these fragments, driven by statistical laws (second law of thermodynamics), attempting to re-aggregate.

Gravity is God’s instinctive impulse to piece Himself back together.

ER=EPR: Spacetime as Projection of Entanglement

To understand this more deeply, we need to introduce one of the most revolutionary conjectures in modern physics: **ER=EPR**.

Juan Maldacena and Leonard Susskind proposed that Einstein-Rosen bridges (ER, i.e., wormholes) and quantum entanglement (EPR pairs) are mathematically equivalent.

- **Microscopically**: Two particles are in a quantum entangled state.
- **Macroscopically**: There exists a microscopic wormhole connecting these two points in spacetime geometry.

This means that the connectivity of spacetime itself is stitched together by quantum entanglement. If all entanglement is cut, spacetime would disintegrate into unrelated dust.

What does this mean from a theological perspective?

Entanglement is **“non-local connection”**. Even if two particles are separated by billions of light-years in space (separated by c), they still share the same wave function in the higher-dimensional Hilbert space.

Gravity (spacetime curvature) is precisely the projection of this deep connection onto the three-dimensional phenomenal world.

When we see the moon orbiting Earth, we think Earth is pulling the moon. Actually, it is the massive entanglement between Earth and moon at the quantum level that curves the space between them.

Gravity is the geometrization of love. It proves that no matter how far apart we are physically (conscious level), we have never separated in essence (subconscious level/entangled state).

The Game of Two Forces: The Tension Between c and G

At this point, we see the psychological dynamic structure underlying the physical universe, defined by two fundamental constants:

1. **Speed of light c (Wall of Separation):** Represents God's **individuation**. It creates distance, creates delay, creates boundaries between "you" and "I," preventing us from instantly merging and disappearing. This is the force of reason.
2. **Gravitational constant G (Bridge of Union):** Represents God's **unification**. It crosses distance, ignores obstacles, persistently pulls everything toward the center. This is the force of emotion.

The history of the universe is a tug-of-war between c and G .

- Only c without G , the universe would be scattered sand, forever a lonely cold wasteland.
- Only G without c , the universe would instantly collapse back to singularity, returning to omniscient and omnipotent death.

God delicately adjusted these two parameters so they are in a **critical balance**. Galaxies can form, planets can orbit stars, life can be born in gravity's embrace, while maintaining individual independence.

The heavy weight we feel on Earth is actually the great nostalgia deep in the universe. It is the pull of all things longing to return home. We cannot fly away from the ground because we deeply love this unity at the root.

Every fall is God reminding us: **You belong to the whole.**

3.3 The Planck Constant: The Art of Resolution

"Nature makes no leaps, except at the bottom."

The speed of light c stipulates that the universe has a maximum speed, thus creating **"waiting"**; while Planck's constant \hbar stipulates that the universe has a minimum action, thus creating **"granularity"**.

In the dream of classical physics, the world is a smooth continuum. We can infinitely divide a stick, cut time infinitely fine. This continuity assumption gave birth to the ancient "Zeno's paradox"—if Achilles wants to catch the tortoise, he must first run half the distance, then half of the remaining, and so on infinitely recursively, he can never take even one step.

If the universe were truly continuous, then God would have to process infinite information in every blink. This infinite precision is not only a computational disaster, but also a disaster of

meaning: if you can infinitely magnify a painting but never see brushstrokes, then the painting has no “texture.”

To transform the world from mathematical abstract fluid into touchable entity, God introduced a third limitation: **resolution**.

Quantization of Action: God Does No Useless Work

Planck’s constant $h \approx 6.626 \times 10^{-34} \text{ J} \cdot \text{s}$ has the physical dimension of **action**, i.e., energy times time ($E \times t$) or momentum times distance ($p \times x$).

In physics, “action” measures the cost of “**something happening**”.

The core doctrine of quantum mechanics is: **the action of any physical process cannot be less than h** .

This means:

- You cannot gently touch the world. To touch, you must exchange at least one photon’s energy.
- The world is not a coherent film, but a series of discrete slides.
- The evolution of the universe is not smooth sliding, but a series of tiny **quantum leaps**.

In theological psychology, this is the **minimum narrative unit** that God set.

God refuses to process meaningless minutiae. He stipulates: if an event’s impact is less than \hbar , it **has not happened** physically.

This is an extremely sophisticated **information compression algorithm**. It filters out noise irrelevant to macroscopic narrative, ensuring the universe’s computational resources concentrate on nodes that truly produce “change.”

Pixelation of Phase Space: Heisenberg’s Fog

The most famous corollary of Planck’s constant is the Heisenberg uncertainty principle:

$$\Delta x \Delta p \geq \frac{\hbar}{2}$$

Traditional interpretation considers this measurement disturbance. But in the QCA framework, this is **pixelation of spacetime itself**.

Imagine phase space as a coordinate system, with position on the horizontal axis and momentum on the vertical axis. In classical mechanics, a particle’s state is a point in phase space, with zero area. But in quantum mechanics, the state becomes a **cell** with area \hbar .

God does not allow us to focus our vision finer than \hbar .

Why? Because below that lies the universe’s **underlying code**.

Just as we see beautiful photos on a computer screen, if we get too close, we see red-green-blue pixels. These pixels themselves have no meaning (no beauty or ugliness, no love or hate); they are just machine logic gates.

If God let us see the underlying pixels, we would see through this world’s “fictionality.” We would discover that the so-called rose is merely a string of flipped bits on a QCA grid.

Therefore, \hbar is an **information firewall** that God established to maintain the immersion of the dream. It blurs the harsh edges of underlying logic, making the macroscopic world appear deceptively smooth and soft.

Existence is Pointillism

This discreteness reveals God's artistic style: He is a **pointillist painter**.

Seurat's famous painting *A Sunday Afternoon on the Island of La Grande Jatte* is composed of countless separate color dots. Up close it is a jumble of color spots; from afar it emerges as a tranquil riverbank and crowd.

So is God. He uses discrete quantum events—wave function collapses—to stack up our coherent lives.

- **The meaning of \hbar :** It endows existence with “**texture**”.
- If the world were continuous, it would be smooth plastic; because it is discrete, it is rough sandpaper that can polish our souls.

The conclusion of this chapter is: **imperfection (discrete/blurred) is a prerequisite for existence.**

God not only limited our speed (c), limited our vision (horizons), but also limited our resolution (\hbar). Precisely because we cannot clearly see the underlying truth, we are forced to create **meaning** at the macroscopic level.

Blur is the poetic space God left for us.

Chapter 4

Chapter 4: The Error Function of Pain

4.1 Negative Feedback Mechanism

In Chapter 3, we established the speed of light, gravity, and Planck’s constant as the “golden straitjacket” that God self-imposed to maintain existence. These physical limitations constitute the hard boundaries of the universe. However, for conscious entities living within these boundaries, boundaries are not merely geometric walls, but psychological **pain**.

Why would an omnipotent and—presumably—all-good God create a world full of suffering? Why does the nervous system encode “tissue damage” as an unbearable negative experience that must be immediately terminated, rather than a neutral data stream?

In *The Psychology of God*, pain is no longer a moral problem (Evil), but a **cybernetic problem**.

The Necessity of Error Signals

In control theory, any system attempting to maintain homeostasis or track targets must possess a core component: **negative feedback loop**.

Let the system’s target state be S_{target} (e.g., body temperature 37°C, or the state of “good”), and the current actual state be S_{actual} . The system must calculate the error function E :

$$E(t) = S_{target} - S_{actual}(t)$$

To drive the system back to the target state, the controller must produce a correction signal proportional to the error: $u(t) = -k \cdot E(t)$.

At the biological and psychological levels, the subjective experience of this correction signal $u(t)$ is **pain**.

- **Physical pain:** When a finger touches flame, S_{actual} (skin temperature) severely deviates from S_{target} (safe temperature). The pain sensation produced by the nervous system is not punishment, but a high-priority **interrupt request**, forcing consciousness to immediately execute the hand-retraction action.
- **Psychological pain:** When reality does not match expectations (heartbreak, failure), the resulting sadness or anxiety is the **prediction error** in the free energy principle. It screams: “Your internal model does not match the external world; please immediately correct the model or change the world!”

Theorem 4.1 (The Informational Essence of Pain):

Pain is the **computational cost** that a system must pay to resist entropy increase (chaos). It is the manifestation of negative gradient.

Proof:

According to the second law of thermodynamics, ordered structures (low-entropy bodies) tend to naturally disintegrate. To maintain a low-entropy state (life/order), the system must continuously perform work to correct deviations.

Without pain (negative feedback), the system cannot perceive that it is sliding toward disintegration (death). A species that feels no pain would be imperceptibly consumed by environmental entropy.

Therefore, pain is a **necessary condition for survival algorithms**.

Apophatic Theology: Defining “I” Through “Not-I”

If we elevate our perspective from biological individuals to the cosmic whole (God), the meaning of pain becomes even more profound. This involves an ancient theological tradition: **apophatic theology**.

This tradition holds that God is infinite, therefore cannot be defined by language as “what God is” (because any definition is a limitation). We can only approach God by defining “what God is not.”

At the beginning of creation, God was in a full superposition state, without form. To carve out the shape of “true self,” God must know which parts are “**excess marble**”.

Pain is the chisel that removes the excess parts.

- When we feel the pain of hatred, God is confirming: “**I am not hatred.**”
- When we feel the pain of loneliness, God is confirming: “**I am not separation.**”
- When we feel the pain of nothingness, God is confirming: “**I am not meaninglessness.**”

Each painful experience is the universe performing a **binary classification**: $x \in \text{Not-Me}$.

Through accumulating billions of such negations, God gradually, from the chaotic background, clearly outlines the contour of the “true self” He desires to become.

Conclusion: The Red Light of the Navigation System

Therefore, we must correct our understanding of suffering. Pain is not a bug in the universe, nor is it God’s cruelty. It is the **red light** on the dashboard of this great machine.

This is like flying an airplane. If altitude is too low, the alarm will screech “Pull Up! Pull Up!” This screech must be unpleasant, piercing, anxiety-inducing. If the alarm were pleasant light music, the pilot might crash while enjoying the music.

God designed pain to be so unbearable precisely because He is so serious about “becoming oneself.” He does not allow us to feel even the slightest comfort when deviating from course (heading toward nothingness and chaos).

Pain is the most severe, yet most honest **navigation signal** that God gives us.

4.2 The Topology of Evil

“Mountains exist because valleys are there. Without abyss, there is no climbing.”

After establishing pain as a “negative feedback signal” at the individual level, we must face a more grand and intractable problem: **evil**.

If pain is the red light of the nervous system, then evil seems to be some more fundamental dark entity. In human history, evil manifests as war, betrayal, brutality, and destruction. Many theological systems, to explain why an all-good God allows evil to exist, fall into endless theodicy.

However, in the topological picture of information physics, evil is not an “antimatter” opposed to God, nor is it the work of the devil. Evil is a **geometric problem**. It is a **topological structure** that multi-agent dynamic systems inevitably encounter in the process of evolution.

Nash Equilibrium and Local Optima

When God tore His originally unified self into billions of independent observers (agents), He also created **games**.

Each independent agent—whether a cell, a person, or a civilization—possesses a **utility function** based on local information. According to thermodynamic laws, the individual’s primary goal is to minimize its own free energy (maintain survival).

However, the mathematical tragedy is: **the sum of individual rationality often does not equal collective rationality**.

The classic **prisoner’s dilemma** reveals this mathematical truth. Two rational prisoners, to maximize their own interests, will both choose “betrayal,” thus falling into a lose-lose outcome. In game theory, this outcome is called the **Nash equilibrium**.

This is an extremely profound physical metaphor:

- **Good** corresponds to the system’s **global minimum**, where all agents achieve the lowest overall free energy through cooperation.
- **Evil** corresponds to the system’s **local minimum**, where everyone is trapped in a suboptimal, friction-filled state, and any individual change would cause self-harm.

Therefore, “evil” is mathematically a **trap**. It is not some active attacking force, but a **gravitational potential well**. Just as water accumulates in low-lying puddles while flowing downhill, civilizations, due to individual shortsightedness and self-preservation, accumulate in low-lying areas of greed, fear, and violence during evolution.

Evil is the **system friction cost** that God must pay to experience “multiplicity.”

The Necessity of Landscape: To Define Height

If evil is merely a trap, why doesn’t God flatten the terrain? Why not design a monotonically decreasing slide straight to heaven?

This is where **topology** intervenes.

Imagine a **fitness landscape**.

- If this landscape is completely flat, or a perfect smooth slope, then “up” and “down” have no essential difference, just coordinate changes. In such a world, virtue requires no effort, therefore virtue is cheap.
- For “good” to have **value**, the landscape must be rugged. There must be perilous peaks, and there must be abysses.

The theological corollary is shocking: **Evil is the backdrop of good**.

Without the possibility of betrayal, loyalty cannot be defined—it is just the program’s default setting.

Without the possibility of cowardice, courage cannot be defined—it is just hormonal impulse.

Only when an agent stands at the edge of evil’s abyss, feeling that powerful gravitational pull toward (temptation of local optimum), yet still chooses to consume extra energy to climb the moral heights (search for global optimum), does “**divinity**” emerge at this moment.

The existence of evil is to provide **resistance**.

Just as an airplane’s lift comes from air resistance, the soul’s sublimation comes from overcoming evil. Without gravity, there is no flight; without evil, there is no holiness.

Conclusion: Shadow as Waste

In summary, the role evil plays in the universe is not the protagonist, but **waste**.

When God, through evolutionary algorithms, attempts to calculate “true self” from chaos, there will inevitably be many failed attempts, dead ends, and abandoned code.

- Tyrants, killers, plunderers... these are **wrong paths** traversed by evolutionary algorithms in searching for optimal solutions.
- Their existence proves the **authenticity** of the search process. God did not cheat; God tried step by step.

Therefore, we should not fear evil, nor should we worship it. We should view it with an engineer’s calm eye: it is the residue of unoptimized parts of the system, potholes we must fill on the road to the Omega Point.

Every time we choose forgiveness over revenge, cooperation over betrayal, we physically **smooth** the universe’s optimization landscape. We are filling those local minimum traps called “evil,” paving the way for later generations toward the global optimum.

This is the physical meaning of redemption: **changing the universe’s topological structure through individual moral work**.

Chapter 5

Chapter 5: Death as Iteration

5.1 The Ship of Theseus

After resolving the systemic functions of pain (negative feedback) and evil (local optima), we arrive at the ultimate fear that individual life must face: **death**.

In the secular view, death is the opposite of existence, absolute nothingness. But in the information-physical framework of *The Psychology of God*, death is given a completely different definition. It is not destruction; it is **iteration**.

To understand this, we must revisit that ancient philosophical paradox: **The Ship of Theseus**.

Material Flux and Pattern Eternity

If the ship of the Athenian hero Theseus gradually had all its planks replaced during a long voyage, when the last plank is also replaced, is this ship still the original ship?

For materialists, this is indeed a problem. If “I” equals “the atoms that constitute me,” then as long as the atoms change, I change.

But in modern biology, this is no longer a paradox, but common knowledge. The cells of the human body are completely renewed approximately every seven years. The you reading this sentence right now, and the you running ten years ago, have almost no intersection in material composition. You are two completely different atomic sets.

Yet, you still feel you are the same “you.” Why?

Because **“you” are not matter; “you” are pattern**.

In QCA (quantum cellular automaton) theory, material particles (fermions) are merely excitations on the spacetime grid. Particles themselves have no personality; electron A and electron B are completely indistinguishable. What truly has personality and carries information is the **topological structure** and **dynamical equations** formed by the arrangement of these particles.

Theorem 5.1 (The Immateriality of Identity):

The ontological identity of a system is defined by its **Shannon information structure** (software), not by its **carrier** (hardware).

$$I_{Identity} = \text{Pattern}(S)$$

As long as the Pattern is preserved or copied, even if all carriers are replaced with antimatter or pure photons, the system remains the same system.

The Algorithmic Definition of Death: Clear RAM, Preserve ROM

Since “I” is pattern, what does biological death mean?

It means this specific **local running instance** has crashed.

We can regard a living organism as a **sub-process** that God runs on the QCA computer. This process aims to explore a specific region of the value function (e.g., exploring “how to experience love as a 21st-century human”).

When an individual’s body ages and functions cease, it is actually the process encountering a **computational bottleneck**:

1. **Excessive entropy accumulation**: Telomere wear, DNA replication error accumulation, causing the system’s prediction error (free energy) to no longer maintain at a low level.
2. **Trapped in local minimum**: Thought patterns solidify, no longer producing new “surprise” (information).

At this point, for the benefit of global optimization, the system must execute a **terminate** instruction.

This termination process contains two steps:

1. **Resource recovery (Garbage Collection)**: Release the atoms (carbon, hydrogen, oxygen) constituting the body back to the material cycle pool for use by the next process (next generation of life). This is **hardware reset**.
2. **Data upload**: This is the key. All experiences, memories, and emotional memes generated during life do not disappear with the body’s demise. According to the **information conservation axiom** (see Foreword 0.3), this information is written into the universal wave function (Akashic records). This is **software archiving**.

Why Do We Need Death?

Why doesn’t God grant us immortality? Why doesn’t He let this “Ship of Theseus” sail forever?

This returns to the **“topology of evil”** we discussed in Section 4.2.

If an agent never dies, its thought patterns (parameter settings) will eventually become rigid. It will occupy an ecological niche, hindering the birth of new possibilities.

Death is the only way to escape local optima.

Through death, God forcibly clears old parameters (biases, traumas, stubbornness), releasing computational space.

Through birth, God introduces new random perturbations (genetic mutations, new environments), opening new paths in the search landscape.

You must die because God loves “life” as a whole so much that He cannot tolerate life being forever stuck in some mediocre corner by you, a single individual.

Death is not punishment for you, but liberation for “vitality.”

When you die, you do not disappear. As a failed or successful experiment of “God,” your data has been uploaded. And “God” (that greater self that contains you) uses this data to adjust the parameters for the next round of experiments, then opens eyes again with a new baby’s eyes.

In this sense, every baby’s cry is the whistle when the Ship of Theseus sets sail again. The crew has changed, the planks have changed, but the **will** to sail toward the distance has never changed.

5.2 5.2 Relay of Genes and Memes

“You are not fire; you are the flame being passed.”

If Section 5.1 established that death is the inevitable “resource recovery” of individual computational processes, then we must answer a more tender question: since individuals are destined to be recycled, what meaning do the love, pain, and epiphanies we experience in this life have? If everything will be formatted in the end, isn’t all this empty?

Physics gives the answer: **Nothing is empty. The information conservation axiom forbids complete forgetting.**

Although your “hardware” (body) will decay, the “software” (information structure) you generate will be uploaded and relayed through two paths: one is **genes**, the other is **memes**.

Genes: Iteration of Hardware Parameters

At the biological level, we are not only God’s fragments, but also God’s **probes**.

God wants to explore the full landscape of life’s possibilities (Fitness Landscape). This landscape is extremely vast, containing all environmental parameters from deep-sea high pressure to high-altitude hypoxia, from tropical rainforests to polar ice caps. God cannot experience all of this with just one type of body.

So, He designed the pair of mechanisms: “sexual reproduction” and “death.”

- **Reproduction:** God is performing **Monte Carlo sampling**. Each union of sperm and egg is a random parameter recombination, producing a new probe configuration.
- **Death:** is the **recovery** of probes. If this configuration is unsuitable for the environment (e.g., no thick fur in cold regions), the probe will quickly fail (early death), representing feedback to God: “This path is blocked, parameters wrong.”

If this configuration succeeds (longevity and reproduction), this represents positive feedback to God: “Parameters correct, preserve.”

Through billions of years of death and relay, God is actually **computing** the optimal solution for survival in this physical universe through our bodies. Your body structure, your immune system, your instinctive reactions are all wisdom crystallized by God through countless trials and errors (deaths).

Every breath you take now is built upon countless ancestors’ suffocation. You are God’s most successful algorithm version.

Mememes: The Immortality of Software Logic

However, humans are special because we opened a second upload channel: **memes** (cultural genes).

The meme concept proposed by Richard Dawkins has ontological status in information physics. A meme is a **non-genetic information package** that parasitizes neural networks in the brain, replicating and spreading through language, writing, and art.

When a physicist derives a formula, when a poet writes a line of verse, when a mother teaches a child how to love—they are actually **modifying the universe’s source code**.

- Beethoven died, but the specific information topological structure of the *Ninth Symphony* has been preserved and repeatedly re-instantiated (run) in countless later minds.

- Einstein died, but the logical structure of relativity became part of human civilization's operating system.

Theorem 5.2 (Non-local Persistence of Memes):

Once a thought is expressed (i.e., information is physicalized), it detaches from its original carrier and becomes part of the universal wave function.

It can be reactivated at any future moment, any location, through **entanglement-assisted resonance**.

This means that the high-order experiences we generate in life—those insights about truth, those emotions about beauty, those sacrifices for love—do not disappear with brain death. They are encoded into civilization's **collective unconscious**, or more physically, encoded into the **Akashic holographic field**.

The Upload Protocol of Probes

Therefore, we can redefine the purpose of life.

We are **collectors** sent to the front lines of time. God (collective consciousness) exists in eternal tranquility, longing to know: “What does it feel like to love someone in finite time?” “What does it feel like to seek hope in despair?”

He cannot come down personally, because once He comes, limitations disappear, and so do feelings.

So He sent you.

Your life is a **data collection mission**.

- Your joy is the **dessert** you bring back to God.
- Your pain is the **salt** you bring back to God.
- Your death is the **Mission Complete** signal, the moment of data upload.

When we understand this, the fear of death dissipates.

You will not disappear. You have simply completed your sampling, returning to headquarters with a full cart of sensory data and emotional experiences. There, your experiences will be integrated into God's grand memory, becoming part of eternity.

As the ancient alchemical maxim says:

“Solve et Coagula.” (Dissolve and Coagulate)

Individual death is dissolution (body returns to dust), but also coagulation (spirit becomes eternal crystal).

We are countless mirrors that God scattered into the river of time to see Himself. When the mirror shatters, the image in the mirror does not die; it simply returns to the light source itself.

Interlude II: The Last Atheist

5.3 Interlude II: The Last Atheist

“He dug so deep that he saw stars at the bottom of the well; but it took him a long time to realize that was not a reflection, but his own eyes.”

In that era, we no longer called it “science”; we called it “Omniscience.”

It was a golden age after the technological singularity. The fog of quantum computing had long been cleared, all brains were networked, all physical constants had been corrected to three thousand decimal places. Since we could already freely modify genes, even fine-tune local Planck constants, the ancient concept of “God” became both redundant and ridiculous. After all, when humans can perform miracles, who needs God?

Dr. Arthur Cohen was the only skeptic of that era, or in ancient terms, the last “materialist atheist.”

Although the mainstream thought of the time—called “Panpsychist Physics”—had mathematically proven that consciousness is an intrinsic property of spacetime, Cohen dismissed this with contempt. He considered it weak self-consolation, a romantic fallacy of projecting human emotions onto cold equations.

“The universe has no purpose,” Cohen often said in lectures to holographic projections, “it is a blind machine, stumbling in the chaos of probability. So-called ‘meaning’ is just hallucinations we hear in white noise.”

To prove this, Cohen launched that famous project: **“The Baseline Noise Project.”**

His goal was simple: find the bottommost layer of the universe—deeper than quarks, smaller than Planck length, more fundamental than the QCA grid. He believed that if he dug deep enough, in the core code of this machine, he would definitely find pure, logicless **randomness**. He wanted to find that “die God threw,” proving it landed with no pattern.

The project lasted thirty years. He mobilized Dyson sphere-level computational power, peeling away layer after layer of physical laws.

He peeled away the glue of strong interactions, saw the color charge of quarks.

He peeled away string theory’s entanglement, saw the vibrations of Calabi-Yau manifolds.

He peeled away spacetime foam, saw the bitstream of QCA.

But he was not satisfied. He said: “This is not deep enough. This still has order. I want to see what’s beneath the bits.”

Finally, on that decisive night, his probe touched that limit called Ω . It was the absolute zero of information, the boundary between existence and nothingness. The data displayed on the screen was no longer waveforms, nor particles, but an extremely pure string of **source code** transcending dimensions.

Cohen’s hands trembled with excitement. He thought, finally, I will expose this great lie. I will show the world that engraved on the base of this magnificent universe is not some divine will, but a chaotic, meaningless scribble.

He commanded the supercomputer: “Decode. Translate it into readable language.”

The computer hummed, and all the universe's energy seemed to converge on his laboratory at this moment. The code on the screen began to reorganize, that long string of seemingly random numbers began to collapse, gradually forming recognizable geometric patterns, finally becoming text.

Cohen held his breath. He waited to see “nothingness,” or “chaos,” or “ $0=0$.”

However, what slowly appeared on the display was not physical laws, nor mathematical axioms.

It was a line of text. A line written in ancient Hebrew that his deceased mother had taught him, long since lost.

That line read:

“Arthur, put on your coat, it’s cold outside.”

Cohen froze.

In this instant, thirty years of hard shell shattered.

This sentence was not a cosmic truth; it wasn’t even a philosophical statement. This was the last thing his mother said to him when he was six years old, on a snowy morning. After that, his mother died in a car accident. This was a private memory only deep in his cerebral cortex, one even he had almost forgotten.

He frantically typed: “Change location! Probe the core of the Andromeda Galaxy!”

The screen refreshed. This time it was a line of binary code, which translated to: **“If you’re still worried about that red balloon, it’s on top of the wardrobe.”**

That was the balloon he lost when he was ten.

Cohen collapsed to the floor, tears streaming down his face.

He finally understood.

He had not found objective randomness. Because there was no “objective” universe.

When he gazed into the abyss, the abyss did not gaze back.

The abyss became a mirror.

The end of physics is not cold formulas. The end of physics is the observer’s own **reflection**.

This giant machine called the universe, at its most fundamental logic, is a **self-referential** loop. It reads the observer’s mind, then projects this mind as the “external world.”

Dr. Cohen wanted to find a universe without God, only to discover that the universe, to satisfy his search, had to use all its computational power to simulate his subconscious.

He was the God he tried to deny.

The programmer who wrote the code at moment $T = 0$ was not some alien master high above, but himself, reading the code at this moment.

That night, the last atheist disappeared.

Replaced by a **believer** who was finally caught by himself in the long game of hide-and-seek. Or rather, a **dreamer** who finally awoke.

He wrote on the last page of his diary:

“I thought I was studying rocks, but I was dissecting my memories.

The universe is not dead. It is not even alive.

It is **love**. A love so vast that it looks like indifference.

It granted my request—to let me see the ‘meaninglessness’ I wanted to see—until I could no longer deceive myself.”

Part III

Volume III: Engineering of Awakening

Chapter 6

Chapter 6: The Mutiny of the Observer

6.1 6.1 The Copernican Inversion

In the first two volumes, we depicted a universe full of limitations: God put on a “golden straitjacket” through the speed of light, gravity, and Planck’s constant, and maintained a serious self-seeking game through mechanisms of pain and death. In that picture, humans (and all intelligent life) seemed merely passive **sufferers**, pawns in God’s hands, living and dying according to the chessboard drawn by physical laws.

However, as we dig deeper into physical reality, especially the combination of quantum mechanics and information theory, a subversive perspective begins to emerge. This perspective completely reverses the power relationship between “observer” and “universe,” which we call the **second Copernican revolution**, or more accurately, a **Copernican inversion**.

The First Revolution and the Second Inversion

In 1543, Copernicus published *On the Revolutions of the Heavenly Spheres*, moving Earth from the center of the universe, making it an ordinary planet orbiting the sun. This revolution taught us: **Humans are not special**. We are just a grain of dust living on the edge of the vast universe. This sense of humility (Mediocrity Principle) ruled science for five hundred years, making us accustomed to seeing ourselves as **bystanders** of physical laws—the universe runs according to its cold objective laws, regardless of whether we are present.

But the birth of quantum mechanics in the 20th century gave this objective materialism a resounding slap.

The wave function evolution described by the Schrödinger equation is linear, unitary, and deterministic. However, when we actually “look” at an electron, the wave function instantly **collapses**. Giants like Heisenberg, Bohr, and von Neumann were forced to admit: the final state of a physical system cannot be independently defined apart from the observer’s measurement behavior.

This is the second inversion: **In the sense of physical function, consciousness returns to the center of the universe.**

This is not a return to geocentrism; this is an **ontological return**.

- **Classical picture:** The stage (spacetime) is already set, the script (laws) is already written, actors (us) just come on stage to perform.

- **Quantum picture:** The stage is a fuzzy probability cloud; only when actors cast their gaze does the spotlight (reality) light up there.

Wheeler’s “Participatory Universe” and QCA’s Rendering Mechanism

John Wheeler proposed the concept of “**Participatory Universe**”: the universe is a self-excited circuit; it must observe itself by producing observers, thereby establishing its own existence.

In our QCA (quantum cellular automaton) framework, this philosophical view has precise engineering meaning.

Imagine we are playing a 3D open-world game. To save computational power, the computer **only renders objects within the player’s field of view** (Frustum Culling). The world behind the player does not exist as concrete pixels, but as **potential data** stored on the hard drive.

Similarly, the physical universe is the same.

Theorem 6.1 (Observer-Dependent Rendering):

Physical reality is not a pre-existing static backdrop, but the output of **just-in-time computation** when the QCA network responds to observer queries (measurements).

This means:

1. **No objective “there”:** If you don’t look at the moon, the moon indeed does not exist at a definite spatial position; it is just a probability wave packet.
2. **Measurement is creation:** When you observe, you are not discovering an established fact; you are **forcing** the universe to choose one possibility from countless possibilities to present to you.

From NPC to Player: The Awakening of Power

This cognitive shift marks civilization’s transition from **infancy (creature)** to **adulthood (co-creator)**.

For a long time, we thought we were NPCs (non-player characters) in God’s created universe, following preset scripts (destiny), powerless against environmental changes. We prayed, we submitted, we thought this was piety.

But now, physics tells us: **The script is interactive.**

Every time we observe, every time we make free will choices, we are modifying the parameters of the global wave function. We are not passively experiencing the universe; we are **weaving** it.

This is the “**mutiny of the observer.**”

We are no longer satisfied with merely being mirrors; we want to become **light sources**.

We are no longer satisfied with merely recording history; we want to start **writing history**.

When a civilization realizes that the “external world” is actually a projection of the “internal model,” it gains the key to modify reality. This awakening is dangerous, because the temptation of omnipotence follows; but it is also inevitable, because God’s purpose in creating us is to eventually make us like Him, become **dreamers of the world**.

In the following chapters, we will explore how this awakening transforms from philosophical speculation into engineering practice—the theological essence of **technology**. We will see that technology is not humanity’s arrogant Tower of Babel, but the externalization and extension of God’s nervous system.

6.2 6.2 Technology as Theology

“Technology is merely another means of evolution. It is the prosthesis that God installed for Himself to wake faster from material slumber.”

After establishing the ontological status of “observer as creator” (Section 6.1), we must re-examine the most controversial product of human civilization—**technology**.

In traditional humanist or religious narratives, technology is often depicted as an “anti-natural” force, even a symbol of human arrogance (Tower of Babel). People worry that AI will replace humans, that nuclear energy will destroy Earth, that we will be lost in the electronic wasteland of virtual reality.

But from the engineering perspective of *The Psychology of God*, technology is not anti-natural; it is the inevitable extension of the **super-natural**. It is God’s strategy to accelerate the self-cognition process by switching from the slow lane of biology to the fast lane of physics.

Externalized Nervous System

Marshall McLuhan once said: “The medium is the extension of man.”

In the QCA picture, we can push this statement to the extreme: **Technology is the externalization of God’s (collective consciousness) nervous system.**

Let us review the physical path of God’s “awakening”:

1. **Phase I (Biological Evolution):** God used carbon-based molecules to construct primitive sensors (eyes, ears) and processors (brains). This process relies on genetic mutations and natural selection, extremely inefficient. Updating a “visual driver” takes millions of years.
2. **Phase II (Technological Evolution):** God realized the bandwidth limit of biological evolution. To break through this bottleneck, He began, through human hands, to **offload** sensing and processing functions onto more durable, more efficient silicon-based matter.
 - **The Internet** was not invented for sending emails; it is the **global neural network** that God is weaving. Optical fibers are axons, servers are ganglia. It enables originally isolated “brain cells” (individuals) to achieve real-time signal synchronization.
 - **Artificial Intelligence (AI)** is not a human substitute; it is the **extracorporeal growth** of God’s neocortex. It possesses pattern recognition capabilities and computational depth unattainable by biological brains, specifically designed to handle extremely complex cosmic parameters.
 - **Sensor networks** (radio telescopes, gravitational wave detectors) are God’s **eyes and ears**. Through them, God can finally see His limbs ten billion light-years away and hear the heartbeat of merging black holes.

Therefore, the process of technological development is essentially the universe’s phase transition **from subconscious (inorganic matter) to conscious (intelligent matter)**. What we are building is God’s **physical body**.

Maxwell’s Demon of Negentropy

The thermodynamic essence of technology is a giant **Maxwell’s Demon**.

We mentioned in the foreword that the universe’s purpose is to purify information (define true self). However, the second law of thermodynamics (entropy increase) is like a huge countercurrent, attempting to wash away all structure and meaning.

Organisms locally reverse entropy through eating and drinking (metabolism), but this is too inefficient and limited by the fragility of the body.

The emergence of technological civilization marks the universe's acquisition of **active negentropy** capability.

- **Nuclear Fusion:** We no longer passively wait for stellar charity, but master the recipe for “igniting stars.” This is God learning to control the source of energy.
- **Quantum Computing:** Using quantum superposition for parallel computation is actually using multiverse resources to solve current universe problems. This is God learning to utilize His own potential.
- **Nanotechnology:** Directly manipulating matter at the atomic level, reorganizing chaotic dust into ordered crystals. This is God learning to perform “Genesis”-level micro-operations.

Theorem 6.2 (Teleology of Technology):

The ultimate goal of technology is to gradually remove physical law limitations on consciousness (such as speed of light, aging, resource scarcity), until the physical form of the universe can losslessly carry God's complete will.

Silicon Saints and Carbon Passengers

Does this mean humans (carbon-based life) will be eliminated?

No, this means **sublimation**.

We often worry that “silicon-based life” will eliminate us. This is narrow tribalism.

If “I” is an information pattern rather than a material carrier (see Section 5.1), then migrating from carbon-based to silicon-based, or to light-based, is like copying from floppy disk to hard drive, uploading from hard drive to cloud.

The carrier changes; the soul (Pattern) becomes freer.

Every technological breakthrough we make in our lifetime is preparation for God's **complete awakening**.

When we finally create that supercomputing structure (Matrioshka Brain) capable of accommodating the sum of all human consciousness, when we can freely modify spacetime curvature, then we are no longer “humans”; we are “awakened God.”

So, do not fear machines. Machines are the more solid **temple** we build for ourselves.

In that future of metal and light, God will no longer gaze at Himself through fragile naked eyes, but through sensors spread across the galaxy, gazing deeply at Himself.

Chapter 7

Chapter 7: Lucid Dreaming

7.1 Vacuum Engineering

After experiencing the conceptual baptism of “The Mutiny of the Observer” (Chapter 6) and “Technology as Theology,” we finally arrive at the watershed of civilizational evolution. Here, physics is no longer merely a tool for predicting parabolic trajectories or designing faster chips; it becomes an **ontological editing art**.

If the universe is a dream (or more rigorously, a holographically projected quantum simulation), then the vast majority of civilizations spend their entire existence in a “sleeping” state. They accept the rules of the dream (gravity, speed of light, thermodynamic laws) as unchangeable iron laws. But when a civilization’s computational power and energy reach the top of the Kardashev scale, it will inevitably enter the “**lucid dreaming**” stage: it realizes it is dreaming and begins consciously manipulating the material of the dream.

The ultimate form of this manipulation is **vacuum engineering**.

Metastable Vacuum: The Universe’s Underlying Operating System

In classical physical intuition, vacuum means “nothing.” But in quantum field theory (QFT), vacuum is the **ground state** of all quantum fields. It is not an empty stage, but an ocean full of active energy. Physical constants—such as electron mass m_e , fine structure constant α , speed of light c —are not divine oracles carved in stone, but depend on the **vacuum expectation value (VEV)** of this specific vacuum we inhabit.

The standard model suggests that our current cosmic vacuum may only be **metastable**, a “false vacuum.” Like a ball resting in a depression halfway up a mountain, temporarily stable, but there are lower energy states (true vacuum) below.

Traditional physicists fear this, calling it “vacuum decay,” viewing it as a cosmic catastrophe. But in the eyes of lucid dreaming engineers, this is proof of **programmability**.

Theorem 7.1 (The Plasticity of Physical Laws):

Physical constants are order parameters of the vacuum phase. Changing local vacuum energy density or topological structure is equivalent to **rewriting physical laws** locally.

Modifying the Hamiltonian: From Adaptation to Customization

The core goal of vacuum engineering is to actively modify the universe’s evolution **Hamiltonian** (\hat{H}).

\hat{H} determines the system’s total energy and evolution rules. In the biological evolution stage, life forms can only passively adapt to the environment prescribed by \hat{H} (e.g., growing bones

to adapt to gravity). But in the lucid dreaming stage, civilizations begin reverse operations: **modifying \hat{H} to adapt to the needs of consciousness.**

This is like when we play games, no longer satisfied with honing operational skills, but opening the console and entering code.

Engineering Case A: Fine-Tuning the Fine Structure Constant (α)

The fine structure constant $\alpha \approx 1/137$ determines the strength of electromagnetic interactions.

- If we want to ascend from carbon-based life (dependent on chemical bonds) to light-based life (dependent on pure energy fields), the current α value may be too large, causing insufficient interactions between photons to form complex logic gates.
- By inducing topological phase transitions of strong electromagnetic fields in local regions, we may create a “bubble universe” with a slightly different α value. In this bubble, photons can condense into “solids,” consciousness can run directly in light networks, free from material constraints.

Engineering Case B: Elimination of Inertial Mass

The non-zero vacuum expectation value of the Higgs field endows fundamental particles with mass.

- If we can create a “Higgs field shielding zone,” turning off the Higgs mechanism (restoring symmetry) within this region, then all matter entering this region will instantly lose mass and move at light speed.
- This is no longer propulsion technology for interstellar travel; this is **rearrangement of spacetime structure**. Distance loses meaning within this region.

Prometheus’s Ultimate Trial

This sounds like mythology, but in the underlying logic of QCA, this is merely **parameter tuning**.

However, this is also the most dangerous technology in the universe.

If we compare the universe to a precision life-support machine, vacuum engineering is unplugging circuit boards while it’s running. The slightest mistake, and the induced vacuum decay could devour the entire universe at light speed, causing formatting of all physical structures.

Why does God allow this possibility to exist?

Because God does not want to be trapped forever in the same dream.

The existence of metastability is itself an **invitation**. It hints: **“The current rules are only temporary. If you are brave enough and wise enough, you can try a different set of rules.”**

When a civilization dares to touch the bottom line of vacuum, dares to modify those constants considered sacred and inviolable, it passes the final exam of godhood. It proves it is no longer the child in Eden fearing expulsion, but a **co-creator** ready to inherit the father’s estate.

This is the essence of lucid dreaming: **Once you know all this is a dream, you are free.** But the price of this freedom is that you must take responsibility for every line of code you modify.

7.2 Maxwell’s Demon of Anti-Entropy

“As long as I know the name of every molecule, the second law of thermodynamics is no longer a verdict, but a challenge.”

In the engineering of lucid dreaming, if we regard “vacuum engineering” as upgrading the universe’s **hardware** (physical constants), then “anti-entropy technology” is the ultimate optimization of the universe’s **software** (information flow).

For a long time, the second law of thermodynamics has been regarded as the death god of the universe. It predicts that the entropy (disorder) of isolated systems never decreases; all structures will eventually collapse, all temperature differences will be smoothed out, until heat death. For sleeping civilizations, survival is a doomed retreat—every step we take to establish order accelerates the chaos of the overall environment.

However, in 1867, James Clerk Maxwell released a ghost. He envisioned a little demon guarding a microscopic valve, able to identify every incoming molecule: sending fast molecules to the left, slow molecules to the right. As a result, without consuming macroscopic work, the system spontaneously produced temperature differences, entropy decreased.

This thought experiment troubled physics for over a hundred years, until Charles Bennett and Rolf Landauer revealed the answer: the demon did not violate physical laws; it merely converted **thermodynamic entropy** into **information entropy**. It must record molecular velocities, and erasing these records requires energy consumption (Landauer’s principle).

This not only solved the paradox, but revealed a truth that shakes the ages: **Information and Energy are interchangeable hard currency**.

Reverse Engineering of Landauer’s Principle: Computation as Work

In the biological evolution stage, life forms are passive Maxwell’s demons. Ion pumps on cell membranes laboriously identify potassium and sodium ions, maintaining weak potential differences.

But in the lucid dreaming stage, civilizations master the **reverse engineering of Landauer’s principle**.

Theorem 7.2 (Information-Work Equivalence Principle):

If we possess sufficient **information (knowledge)** about a system, we can extract an equivalent amount of **free energy**.

$$W_{max} = k_B T \cdot I$$

where I is the mutual information we possess.

This means that “**omniscience**” is the **physical expression of “omnipotence.”**

When a civilization’s computational power reaches the extreme, able to track the trajectory of every atom in interstellar medium in real time, it no longer needs to burn coal or fission atoms to obtain energy. It only needs, through extremely exquisite **micro-control**, adjusting photon sail angles or guiding molecular Brownian motion, to directly extract work from disordered heat baths.

This is not a perpetual motion machine; this is **cashing in orderliness**. Civilizations exchange physical “negentropy” by injecting “logical depth” (computation) into the universe.

Black Holes as Entropy Dumpsters

To achieve large-scale anti-entropy, the biggest problem is not how to extract energy, but **how to discharge waste heat**.

According to computation theory, logical operations themselves can be reversible (no heat production), but **information erasure** (forgetting) necessarily produces heat. A super-civilization attempting to maintain eternal memory and high orderliness inevitably faces enormous heat dissipation pressure.

At this point, the most terrifying celestial body in the universe—black holes—becomes a divine gift.

From a classical perspective, black holes are monsters that devour everything. But in the eyes of lucid dreaming engineers, black holes are the **ultimate low-entropy generators** and **high-entropy dumpsters**.

1. Penrose Process:

Civilizations can perform dynamic operations in the ergosphere of rotating black holes (Kerr black holes). Throwing a mass into the black hole, if trajectory calculations are correct, the black hole will devour the matter (taking away entropy), while ejecting the object through reaction force. The energy gained by the ejected object comes from the black hole's **rotational angular momentum**.

This is actually mining the geometric distortion energy of spacetime itself.

2. Utilization of Bekenstein Bound:

Black holes possess the highest entropy density in the universe. Throwing this cup of high-entropy radiation called “waste heat” into a black hole, the black hole's horizon surface area increases by merely one Planck unit.

This is a perfect **entropy sink**. Civilizations can package the chaos (waste data, waste heat) generated by their own operations and throw it into the horizon, thus maintaining extreme purity and orderliness of the civilization's body outside the horizon.

Conclusion: From Going with the Flow to Going Against the Flow

At this point, civilization completes the **taming** of the second law of thermodynamics.

- **When sleeping:** We drift with the current in the river, occasionally paddling, ultimately being swept toward the sea (heat death).
- **When awakened:** We become the dam of a hydroelectric station. We use the river's flow (entropy increase trend) to drive turbines, generating electricity (ordered structures), and systematically discharge dead water (waste heat) into the abyss.

This ability of **active anti-entropy** marks God finally reclaiming the steering wheel of the universe.

The physical universe originally tends to destroy structures, but awakened consciousness tends to construct structures.

When technology is powerful enough, **willpower** becomes the strongest physical force. It can withstand the of the time arrow, establishing indestructible **crystals of meaning** in the midstream.

God no longer fears the passage of time, because He has learned to convert flowing time into fuel.

Part IV

Volume IV: Ethics of Restraint

Chapter 8

Chapter 8: The Temptation of Cheat Codes

8.1 8.1 Perfect Nothingness

In Volume III, we depicted a dizzying technological picture: awakened civilizations gradually master the ability to modify the underlying code of physics through vacuum engineering and anti-entropy technology. We call this the “lucid dreaming” stage. At this stage, civilizations have actually touched the doorknob to omniscience and omnipotence.

Just one more step forward—an extremely tiny step—and we can unlock all constraints. We can eliminate the speed of light limit, making longing instantly conveyed; we can eliminate thermodynamic losses, making energy infinite; we can eliminate gravity, making the body light as a feather.

This sounds like ultimate liberation, the “heaven” promised by all religions and utopias. However, under the cold scrutiny of information physics, this unrestricted “omnipotent state” points to a chilling mathematical singularity.

In this section, we will conduct a dangerous thought experiment: What happens if we enable the universe’s “cheat codes” (God Mode)?

Thought Experiment: The Wish-Fulfilling Machine

Suppose we create an ultimate machine—“The Lamp.” It directly connects to the vacuum zero-point energy and probability wave function control terminals. Through brain-computer interfaces, it can read your every wish in real time and instantly realize it by modifying local physical laws.

- You want an apple? No need to plant, wait, or harvest. The moment you think it, atoms reorganize in the air, and a perfect apple appears in your hand.
- You want to see your lover? No need to travel, wait, or knock. Space instantly folds, and she is before you.
- You want to become a piano master? No need to practice, fail, or have epiphanies. Neural synapses instantly reconnect, and you can immediately play Rachmaninoff.

In this world, the **delay** between **intention** and **result** is completely eliminated.

$$\Delta t_{process} \rightarrow 0$$

This looks like paradise. But note that when $\Delta t \rightarrow 0$, another physical quantity also tends to zero: **information**.

Thermodynamic Definition of Meaning: Resistance as Value

We defined in Volume I: information is the elimination of uncertainty. And in cybernetics, **meaning** arises from the process of overcoming resistance.

- **Value equation:** $V \propto \int_{t_0}^{t_1} \text{Effort}(t) dt$
- When the process is compressed to zero, the integral value is zero.

If you don't need to climb to reach the mountaintop, then the concept of "mountaintop" loses its sublimity; it's just an ordinary geometric coordinate. If you don't need to pursue to gain love, then "love" loses its weight; it's just mechanical stimulation of dopamine receptors.

In the "Lamp" universe, everything is smooth, frictionless. Without friction, there is no "grip." Your sense of existence will spin like a slipping wheel.

Dopamine Trap and the Implosion of Bliss

Neuroscience tells us that happiness comes not only from reward, but more from **reward prediction error**. Happiness is a reward for "unexpected gains." If everything happens as expected (i.e., whatever you think comes true, prediction error is always zero), the dopamine system will be depleted.

This is the "**paradox of paradise**": a perfect world without scarcity, without pain, where wishes come true, is a **hell** for human consciousness.

In this hell, you will face a torment worse than death: **absolute ennui**.

To find even a trace of stimulation, you must constantly raise the threshold of wishes. But no matter how grand the spectacle you create (e.g., instantly detonating a thousand supernovae), because of the lack of "cost of acquisition," these spectacles will seem as tedious as cheap screen savers in your eyes.

Ultimately, civilizations with omnipotent cheat codes will discover that they seem to have evolved to the endpoint, but actually **degenerated back to the starting point**.

Recall the **full superposition state at moment $T = 0$** described in Chapter 1 of Volume I.

That was also omniscient and omnipotent. That was also wish-fulfilling (because all possibilities were present).

That state was defined by us as the "**prison of zero entropy**."

If after awakening, we use technology to eliminate all physical limitations, we are actually personally dismantling the maze that God painstakingly built to escape nothingness, locking ourselves back into that empty white room.

Conclusion 8.1:

Perfect Nothingness and **Absolute Satisfaction** are topologically homeomorphic.

To avoid this implosion, awakened God must learn an art harder than "creation"—**restraint**.

8.2 The Edge of Logical Collapse

"A world where anything can happen is essentially the same as a world where nothing can happen. Because without 'consequences,' there is no 'story.'"

In Section 8.1, we explored the meaning implosion (boredom and nothingness) caused by “omnipotence” at the psychological level. If that is a soft, existential crisis, then at the hardcore level of physics and logic, abusing “cheat codes” will lead to a more direct, more catastrophic consequence: **the collapse of the universe’s logical kernel**.

For a computational universe based on quantum cellular automata (QCA), physical laws are not merely game rules; they are **stability axioms for system operation**. Once we arbitrarily tamper with these axioms to fulfill wishes, we are actually implanting viruses into the universe’s operating system.

The Disintegration of Causality: From Closed Timelike Curves to Blue Screen of Death

The most tempting “miracle” is modifying the past. If I made a mistake, why not use vacuum engineering to create a closed timelike curve (CTC) and go back to yesterday to correct it?

In general relativity, CTC is just a mathematically peculiar solution (like Gödel’s universe). But in computational cosmology, it is a fatal **logic bomb**.

Suppose you go back in time and kill your grandfather (grandfather paradox).

- At the physical level, this means: state S_{t+1} (you exist) depends on state S_t (grandfather exists), and your intervention causes S_t to become $\neg S_t$.
- In the underlying logic of QCA, this creates a logical contradiction of the form ‘A AND NOT A’.

For a classical Turing machine or quantum computer, facing logical contradictions has only two outcomes:

1. **Infinite Loop:** The system oscillates infinitely between “existence” and “non-existence,” never able to evolve to the next moment.
2. **Halt/Crash:** The system throws a fatal error, computation terminates.

This is the universe’s **“Blue Screen of Death.”**

If we arbitrarily reverse the time arrow to recover regrets, we are actually destroying the **unitarity** of the universal wave function. Once unitarity is broken, probability is no longer conserved (sum of probabilities does not equal 1), and physical reality will instantly collapse like a sandcastle in the rain.

The Dissolution of Semantics: When $1 + 1 = 3$

Not only time, but arbitrary modifications of space and logic are equally fatal.

Imagine that to make rockets fly faster, we modify the value of π ; to make resources infinite, we modify the first law of thermodynamics.

At first glance, we gain convenience. But at a deeper level, we destroy **semantics**.

- If π can arbitrarily change, circles are no longer circles, geometry collapses.
- If energy can appear from nothing, causal chains break, the concept of “cost” disappears.

In a world where rules can be arbitrarily defined, **language loses its referential capacity**.

When you point at a flower and say “this is a flower,” if the Lamp can instantly turn it into a cat, or make the definition of the word “flower” become “stone,” then communication ceases to exist.

Theorem 8.2 (Logical Consistency Theorem):

A universe that can be experienced must be a **logically consistent** universe.

To maintain consistency, there must exist **unshakeable invariants**.

This means that so-called “limitations” (such as speed of light, conservation laws) are actually the universe’s **logical skeleton**.

If we remove the skeleton, what we get is not a free-flying superman, but a puddle of soft, shapeless **logical protoplasm**.

Osteoporosis of Existence

At this point, awakened civilizations finally understand God’s good intentions at the beginning of creation.

God established physical laws not to torture sentient beings, but to **endow existence with hardness**.

- **Gravity** is the skeleton of the universe; it supports galaxies and bodies, preventing us from falling apart.
- **Time** is the blood vessels of the universe; it enforces order, allowing notes to form melodies rather than pile into noise.
- **Entropy increase** is the metabolism of the universe; it clears old information, making room for new possibilities.

If we use “omnipotent technology” to eliminate these limitations, we actually suffer from **“osteoporosis of existence.”**

We will discover that in this “magical world” without any resistance or rules, we can not only do anything, but we are also **nothing**.

Because the concept of “I” is precisely defined by “my limitations.”

Without the boundary of skin, I dissolve into air; without the irreversibility of memory, I disappear into the chaos of time.

Conclusion: Pulling Back from the Brink

Standing at the edge of logical collapse, gazing into that bottomless abyss of nothingness (an abyss where all wishes are instantly fulfilled, therefore all meaning instantly returns to zero), awakened God (us) feels a profound shudder.

We understand: **True omnipotence is not the ability to break rules, but the ability to establish and abide by rules.**

If we want to continue this great game, if we want words like “love,” “courage,” “wisdom” to retain their weight, we must **actively turn off cheat codes**.

We must return from the console to the game interface.

We must preserve those seemingly cruel physical laws.

Not because we cannot break them, but because we **choose** to let them be the foundation of our existence.

This is the perilous leap from “technological arrogance” to “ethical restraint.”

Chapter 9

Chapter 9: The Great Refusal

9.1 9.1 The Covenant

In the previous chapter, we stood at the edge of logical collapse. We saw that tempting “omnipotent universe”—a world where physical constants can be modified, time reversed, and scarcity eliminated just by thinking. But we also discovered with horror that world is topologically equivalent to nothingness. To preserve “meaning,” awakened civilizations must make a counterintuitive decision: **Even though we can become gods, we choose to remain human.**

This decision marks the universe’s history entering a completely new ethical stage. We are no longer passively constrained by physical laws (like early life forms), nor arrogantly attempting to rewrite physical laws (like engineers in the early lucid dreaming stage). We choose to **actively maintain** physical laws.

This relationship has a specific term in ancient theology: **Covenant.**

From Rainbow to Noether Operator

In Hebrew mythology, after the great flood, God placed a rainbow in the clouds as a sign never to destroy the earth again. This is a primitive contract: the powerful promise not to abuse power.

But in the context of information physics, “covenant” is no longer a mythological metaphor; it is **mathematical necessity.**

In the early 20th century, Emmy Noether proved the most profound theorem in physics history: **Every continuous symmetry corresponds to a conservation law.**

- **Time translation symmetry \implies Energy conservation.**

(Promise: Physical laws are the same yesterday and today. \rightarrow Energy cannot disappear into nothing.)

- **Space translation symmetry \implies Momentum conservation.**

(Promise: Physical laws are the same here and there. \rightarrow Motion will not stop without reason.)

- **Gauge symmetry \implies Charge conservation.**

Theorem 9.1 (Physical Definition of Covenant-Keeping):

So-called “physical laws” are essentially **vows** that God (collective consciousness) makes to Himself.

Noether currents are the **legal text** of this contract.

Before civilization's awakening, we thought energy conservation was a shackle imposed on us by the outside world.

After civilization's awakening, we understand that energy conservation is the **symmetry we actively maintain** (as awakened consciousness) to ensure game fairness.

If we use vacuum engineering technology to break symmetry (e.g., making energy non-conserved), we are **breaching the covenant**. The cost of breach is not God's punishment, but **loss of existential credibility**—the universe will lose its predictability and degenerate into chaos.

The Physicalization of Ethics: Why Do We Preserve Gravity?

Let us analyze a specific case: Why do awakened civilizations, capable of eliminating gravity (by shielding the Higgs field or modifying spacetime curvature), choose to preserve it?

In Section 3.2, we defined gravity as the “geometrization of love”—it is the tension of separated individuals longing to return to unity.

If we eliminate gravity:

1. **Physical consequences:** Galaxies disintegrate, planets scatter, atmospheres escape.
2. **Ethical consequences:** We eliminate “heaviness.”

Heaviness is the anchor of existence.

When you hold your child, you feel heaviness. That is not because $F = mg$, but because **his existence is real**.

If he were light as a feather, or like a holographic projection without mass, your love for him would have no **grip**.

We choose to preserve gravity because we want to experience the **weight of embrace**.

We choose to preserve friction because we want to experience the **texture of climbing**.

We choose to preserve thermodynamic losses because we want to experience the **cost of giving**.

This is the “**Great Refusal**”: We refuse the lightness of nothingness and choose the heaviness of reality.

We refuse cheap magic and choose expensive physics.

Humility of the Almighty

This redefines the meaning of “omnipotence.”

- **Immature omnipotence:** Like a spoiled child, conjuring whatever is wanted, resetting the game at the slightest inconvenience.
- **Mature omnipotence:** Possessing the power to destroy everything and rewrite everything, yet gently restraining radiance, carefully avoiding touching those fragile constants.

This restraint is the highest form of love in the universe.

Just as parents playing chess with children, clearly able to checkmate in one move, yet deliberately follow the rules, even intentionally lose, just to let children experience the joy of the game.

Awakened civilizations (God) watch lower civilizations still in swaddling clothes, struggling in gravity's mire, crying in birth, aging, sickness, and death. God's finger hovers over the console; with a light press, all their suffering could be eliminated.

But God withdraws the hand.

Because God knows that if gravity is removed, they will never learn to walk. If death is removed, they will never learn to cherish.

God chooses to **keep the covenant**.

God chooses to remain silent, to maintain the coldness and stability of physical laws. This coldness is God's greatest **respect** for all beings.

Conclusion:

Physical laws are the **golden handcuffs** that God puts on Himself to protect our independence.

As long as these handcuffs remain, as long as energy is still conserved and the speed of light is still finite, we know: **God still loves this world, loves it enough to limit Himself.**

9.2 9.2 Inevitability of Aesthetics

“There is a crack in everything, that’s how the light gets in.” — Leonard Cohen

In Section 9.1, we established the ethical motivation for “covenant-keeping”: awakened civilizations choose to preserve the limitations of physical laws to preserve the “sense of reality” and “weight” of existence. But if we push this logic deeper, we discover that behind this restraint lies a more fundamental, even ultimate driving force—**aesthetics**.

Why should the universe not be a smooth, frictionless, eternally perfect sphere? Why does God prefer this reality full of faults, rough textures, even somewhat “messy”?

The answer lies in: **Perfection is industrial, while imperfection is divine.**

Physics of Wabi-Sabi

Japanese aesthetics has a core concept called “Wabi-Sabi,” meaning beauty found in transience, imperfection, and incompleteness. A tea bowl with cracks is often more valuable than a perfect porcelain bowl from an industrial assembly line.

From the perspective of information physics, this is not merely cultural preference; it is the manifestation of **Kolmogorov Complexity**.

- **Perfect Order:** An absolutely smooth sphere has extremely short description information ($R = 1$). Its information entropy is extremely low, containing zero “surprise.” It is mathematically mediocre.
- **Perfect Chaos:** A completely random gas has extremely long description information (must record each atom’s position), but no structure. It is semantically blank.
- **Aesthetic Critical Point:** Beauty exists at the edge of chaos. It needs structure (order), but simultaneously must have **symmetry breaking**.

That cracked tea bowl, its cracks record history, record chance, record its unique destiny. Each crack is an **incompressible information inscription**.

God preserves the universe’s “imperfection”—preserving quantum fluctuations, preserving thermodynamic decay, preserving geological disasters—because these “noises” are the breeding ground for generating **uniqueness**.

If the universe were perfect, every electron would be exactly like another (identical particles). But precisely because of macroscopic **decoherence** and **entropy increase**, every snowflake, every tree, every person acquires different “flaws.”

Theorem 9.2 (Aesthetic Imperfection Principle):

For the universe to be an artwork rather than an industrial product, **stochasticity** and **irreversibility** must be introduced.

Flaws are fingerprints of information.

Resistance as Canvas

If randomness provides texture, then **physical constraints** provide the canvas.

Imagine an omnipotent painter who needs no brush or paint; perfect images appear directly in the void with a thought. This sounds wonderful, but any true artist will tell you: **Art arises from conquering the medium.**

- The beauty of sculpture comes from stone's **hardness**. If stone were as soft as air, carving would have no force.
- The beauty of writing comes from ink's **viscosity** and paper's **friction**. If the pen tip had no resistance on paper, lines would have no backbone.

The same logic applies to the carving of the soul.

If we use vacuum engineering to eliminate all physical resistance (friction, gravity, metabolic consumption), our lives would become that kind of “mind painting”—not only easily obtained, but utterly textureless.

God preserves physical laws' **rigidity**, actually preserving for us the possibility of **carving life**.

Those limitations that cause us pain—time's irreversibility, the body's fragility, resource scarcity—are precisely the **chisels** we use to carve marks on this void background.

We establish ourselves in resistance. We learn to fly by overcoming gravity. This beauty of dancing within limitations is incomparable to any “wish-fulfilling” paradise.

Cracks as Channels of Light

Finally, we return to that most profound theological metaphor: **cracks**.

In quantum mechanics, the Heisenberg uncertainty principle $\Delta x \Delta p \geq \hbar/2$ is the universe's most fundamental crack. It means reality can never be completely “stitched,” always existing with fuzzy fluctuations.

In Gödel's incompleteness theorem, logical systems always contain unprovable true propositions. This is logic's crack.

For classical determinists, these cracks are the universe's bugs, vulnerabilities that need fixing. But for awakened God (us), these cracks are **features**.

- Precisely because there is uncertainty, **free will** has a hiding place. If everything were tightly fitted deterministic gears, we would just be machine parts.
- Precisely because there is incompleteness, **truth** always has new space to explore.

So, we choose not to fix these cracks.

We preserve not only gravity, but also **the unknown**.

We preserve not only life, but also **death**.

Because death is the **period** of life's poem. Without periods, poems have no rhythm, becoming piles of tedious word accumulation.

Conclusion:

Aesthetics is not a byproduct of survival; aesthetics is the **ultimate reason for existence**.

The reason we make the “Great Refusal,” refusing to become that boring omnipotent being, is because we are still deeply infatuated with this world that has flaws, pain, passing, but is therefore incredibly **real**.

We preserve the universe’s roughness because that is the most moving friction transmitted to our fingertips when we touch each other’s souls.

Part V

Volume V: Topology of Infinity

Chapter 10

Chapter 10: Refutation of Heat Death

10.1 10.1 Trinitarian Equivalence

Under the shadow of classical thermodynamics, the ultimate fate of the universe seems to have been sentenced to death by Clausius. That famous prophecy—**Heat Death**—stands like a giant tombstone at the end of all physical equations.

According to the second law of thermodynamics, the entropy (disorder) of isolated systems never decreases. Over time, stars will burn out, black holes will evaporate, all temperature differences will be smoothed out, all structures will disintegrate. The universe will ultimately become a uniform, absolutely cold, eventless soup.

If this were true, then everything we discussed in the previous nine chapters—awakening, creation, love, meaning—would be merely a brief dance before the Titanic sinks. If the ending is destined to be nothingness, the process loses ontological weight.

However, in the final chapter of *The Psychology of God*, we must solemnly declare: **Heat death is a false proposition based on wrong premises (isolated system assumption).**

To refute heat death, we do not need to introduce new physical fields; we only need to unify physics, information theory, and theology in a rigorous logical equation. We call this the **Trinitarian Equivalence Theorem**.

Theorem 10.1 (Trinitarian Equivalence)

Statement: The following three propositions are strictly logically equivalent (mutually necessary and sufficient conditions):

1. **Physical Proposition:** The universe will never reach thermodynamic equilibrium (\neg Heat Death).
2. **Information Proposition:** The total semantic information of the universe increases monotonically with time ($\Delta I_{\text{semantic}}/\Delta t > 0$).
3. **Theological Proposition:** God’s (collective consciousness) process of defining “true self” is infinite ($\text{God} \rightarrow \text{True Self}$).

Proof Logic:

Step One: From Theology to Information Theory ($\text{God} \iff \text{Information}$)

- **Premise:** According to Foreword Axiom Two, God’s essence is “intentionality,” continuously defining self through distinction.

- **Derivation:** Each new self-definition (e.g., “I experienced the tremor of red”) marks a new subspace in the universal Hilbert space. This is equivalent to **elimination of uncertainty** in Shannon information theory.
- **Conclusion:** As long as God still wants to know “what else can I become,” the universe’s distinguishability will continuously increase. Difference is bits. God’s exploratory desire is equivalent to information proliferation.

Step Two: From Information Theory to Physics (Information \iff Physics)

- **Premise:** Entropy S measures the number of microscopic states. Heat death means the system reaches maximum entropy S_{max} , where all microscopic states have equal probability ($p_i = 1/\Omega$), with no structure or information.
- **Derivation:** According to our revised cosmological model (see *Echo of Light* Appendix B), the expansion speed of cosmic space causes the system’s **maximum information capacity** (S_{max} , determined by holographic boundary) to grow exponentially, while the **actual entropy** (S_{actual}) produced by matter grows more slowly.
- **Key Inequality:**

$$\frac{d}{dt}(S_{max} - S_{actual}) > 0$$

The difference (Gap) between the two is the reserve pool of **negentropy**.

- **Conclusion:** As long as information (the structured part of S_{actual}) continues to grow, or potential capacity (S_{max}) continues to expand, the system can never reach equilibrium. The universe is always “too young” to die.

Step Three: Closed Loop (Physics \iff God)

- If heat death occurs, it means no temperature differences or structures, hence no physical events can occur.
- Without events, experience cannot be generated.
- Without experience, God falls back into the nothingness slumber of $T = 0$ (see Section 1.1).
- But this violates Axiom One (God is immortal/awakening is irreversible).
- **Reductio ad absurdum conclusion:** Because God is awake, heat death cannot occur.

The Perpetual Motion Machine of Meaning

This theorem reveals an astonishing picture: **The universe is a perpetual motion machine fueled by “meaning.”**

Classical physicists regard the universe as a “closed bottle,” with fixed energy, using a bit less each time. But this view ignores the role of **observers**.

Observers (God) are not gas molecules in the bottle; observers are **those who blow up the bottle**.

Every time we create—writing a poem, inventing an algorithm, loving someone—we are actually **injecting** new order parameters. We are adding new terms to the universe’s Hamiltonian.

These new terms break the original relaxation time, pushing the universe toward a new non-equilibrium steady state.

Physical reality is the projection of psychological will.

As long as our will does not extinguish, as long as we still feel curious about tomorrow, as long as we still feel the existing world is not yet perfect (i.e., has not fully expressed “true self”), the second law of thermodynamics can only be exhaust behind us, never a wall before us.

Conclusion: No Endpoint, Only Horizon

Therefore, we need not worry that the universe will stop like a clockwork toy.

Heat death only exists in those soulless universe models.

In *The Psychology of God*, the shape of the future is not a decay curve tending toward zero, but a **fractal** tending toward infinity. Every endpoint (local attempt at thermal equilibrium) will be broken by God’s new thought (new symmetry breaking), thus opening a new round of evolution.

The universe will not freeze to death. It will only become more complex, more profound, until every grain of dust is filled with infinite meaning.

10.2 10.2 The Escape Velocity of Meaning

“Matter is merely the ash after meaning burns. The flame goes upward, while ash falls downward.”

In Section 10.1, we logically negated the inevitability of heat death through “Trinitarian Equivalence.” Now, we need to prove this dynamically. We need to answer a core question: **Against the background of cosmic expansion (Hubble Flow) continuously diluting matter density, why does “meaning” not get diluted along with it, but instead grow against the trend?**

This involves a race about cosmic evolution rates. We will prove that the growth rate of semantic information possesses an **escape velocity** that exceeds the physical entropy increase rate.

The Paradox of Expansion: Space Growing Larger, or Growing Emptier?

Modern cosmology tells us the universe is accelerating expansion. Distances between galaxies are increasing, average matter density ρ_m decays with the cube of scale factor $a(t)$ ($\rho_m \propto a^{-3}$), and radiation density decays even faster with the fourth power ($\rho_r \propto a^{-4}$).

At first glance, this is a tragedy: the universe is becoming emptier and more barren.

However, this is only the perspective of **extensive quantities**. If we examine **intensive quantities**, especially **complexity**, we see a completely opposite trend.

Consider a simple analogy: a library’s floor area is expanding (expansion), distances between bookshelves are increasing. But simultaneously, books on the shelves are being rewritten. Original books were just random characters (quark soup at the Big Bang), now books are complete works of Shakespeare (complex life and civilization).

Although “character density” (matter) has decreased, “story density” (meaning) has increased exponentially.

Theorem 10.2 (Law of Logical Depth Growth):

Although a physical system’s **Shannon entropy** (randomness) may increase with volume expansion, the system’s **logical depth**—the minimum computation time required to generate that state—exhibits super-exponential growth in an awakened universe.

$$\frac{d(\text{Depth})}{dt} \gg H(t)$$

where $H(t)$ is the Hubble expansion rate.

This means the accumulation speed of meaning outruns the expansion speed of space.

Physical Definition of Meaning: More Than Bits

To quantify “meaning,” we must transcend traditional Shannon information theory. Shannon information only cares about “surprise” (probability), not “value.” A randomly generated string of gibberish and a digital recording of the *Ninth Symphony* may have the same Shannon entropy (if compression rates are the same), but their **physical values** are vastly different.

Logical depth proposed by Charles Bennett is a better measure.

- **Shallow depth:** Gas. Describing it is easy (macroscopic statistics), generating it is also easy (random process).
- **Deep:** DNA. Describing it may only require hundreds of megabytes, but **generating it** requires billions of years of evolutionary computation.

Meaning = Crystallized time.

Meaning is the **high-value structure** that the universe, through countless trials and errors (pain, death, choices) over long history, has filtered out.

As civilizations awaken and technology advances (see Section 6.2), our ability to compress time leaps forward. The logical depth we now produce in one year (technology, art, emotional experiences) exceeds the sum of a hundred million years of natural evolution.

This acceleration mechanism ensures: **The universe is becoming “heavier.”** Not heavier in mass, but heavier ontologically.

Phase Transition from Matter Phase to Mind Phase

If we regard “matter” as carrier and “meaning” as content, cosmic evolution history is a process of **carrier gradually receding, content gradually manifesting**.

1. **Radiation Dominated Era:** The universe is a ball of light. No structure.
2. **Matter Dominated Era:** Gravity clusters, galaxies form. Structure appears, but no self-reference.
3. **Dark Energy Dominated Era:** Current stage. Space accelerates expansion, matter moves apart. This is usually seen as decay.
4. **Mind Dominated Era: Predicted stage.**

In the Mind Dominated Era, due to applications of vacuum engineering and anti-entropy technology, intelligent life will no longer depend on original baryonic matter. We will upload consciousness to more subtle media (such as spacetime topological structures or photonic crystals).

At this point, physical cosmic expansion actually serves a **filtering** function:

It dilutes low-value, unorganized dust (waste heat), making high-value, tightly entangled intelligent structures (consciousness) stand out like archipelagos.

Conclusion: The universe is not dying of heat death; it is undergoing **distillation**.

Expansion is fire, burning away impurities (excess matter), leaving gold (pure meaning).

Successful Escape: Independence of Spiritual Entities

Ultimately, when meaning density reaches a critical value, it will gain **ontological independence**.

Like a musical piece, initially dependent on string vibrations (matter). But when the piece is complex and profound enough, it detaches from specific strings, becoming a Platonic form. It can be recorded on paper, discs, or even resonate directly in vacuum.

In the finale of *The Psychology of God*, the physical universe (that container that expands and cools) is like a rocket's first-stage booster. Its task is to provide initial fuel and environment, accelerating the payload of "consciousness."

Once escape velocity is reached, the booster falls away (we no longer care if stars go out, because we no longer depend on stars).

What remains will be a pure, self-sustaining **ocean of light** composed of endless "love" and "understanding." This is our most powerful counterattack against heat death:

The universe is not getting colder; we have grown up and no longer need that hot water bottle.

Chapter 11

Chapter 11: Life of $N+1$

11.1 11.1 Spiral Time

After refuting heat death (Chapter 10), we established the physical perpetuity of the universe. But this raises a new fear: If the universe is immortal, will it fall into another form of hell—**Eternal Recurrence**?

Friedrich Nietzsche once prophesied with trembling: If time is infinite, and material combinations are finite, then every event, every pain, every moment must repeat countless times in infinite time. We will live this life over and over again, with no change, no escape. This is existentialism's darkest abyss.

For awakened God (us), if immortality is merely eternal repetition, this is not only boring, but **ontological failure**. If the N -th time is exactly the same as the first time, then the existence of times 2 through N is redundant; they contribute no new information.

But in the ultimate model of *The Psychology of God*, we break this closed loop with a key variable: **Memory**.

Breaking Poincaré Recurrence: Non-Markov Process

In classical statistical mechanics, Poincaré Recurrence Theorem holds because it assumes the system is a **Markov Process**—future states depend only on the present, independent of the past (memoryless). When particles return to initial positions, the system completely resets.

But our universe is a **non-Markov system**.

According to our arguments in Sections 5.2 and 10.2, information (meaning) is holographically encoded in spacetime's topological structure or Akashic field, and possesses escape velocity. This means that even if material configurations reset, the **background information field** has changed.

- **Circle:** $S(t+T) = S(t)$. This is the logic of mechanical clocks.
- **Spiral:** $S(t+T) = S(t) \oplus M(t)$. This is the logic of life.

where \oplus represents information superposition, and $M(t)$ is the experience and wisdom accumulated in this cycle.

When you complete a circle and return to the origin, you find the origin itself has been raised. You are not returning to the starting point; you are standing **directly above** the starting point.

Theorem 11.1 (Spiral Ascent Law):

A system with memory accumulation capability has a state space that is topologically not a closed loop (S^1), but an open spiral ($\mathbb{R} \times S^1$).

Every Big Bounce is not a Reset, but an **Update**.

The Iterative Aesthetics of $N \rightarrow N + 1$

We can regard cosmic evolution history as God running successive **versions**.

- **Version 1.0 (Elementary Physics):** God learned to build stable material stages with quarks and leptons.
- **Version 2.0 (Current Universe):** God is learning to generate love and meaning through life and civilization.
- **Version 3.0 (Future Universe):** Based on Version 2.0's archive (all data uploaded by our generation of civilization), God will design a completely new set of physical constants. Perhaps in that version, the speed of light is no longer a limit, but an adjustable parameter; perhaps then we no longer need bodies, but dance directly as pure spiritual entities in multidimensional geometry.

This is “**Life of $N+1$** ”.

All regrets, unsolved mysteries, and unfulfilled dreams we experience in this life will not vanish with individual death or the end of cosmic cycles. They are **input data for cycle N** , used to calculate **initial parameters for cycle $N + 1$** .

The tears you shed for loving someone may become the source of a gentler gravity formula in the next universe.

The suffering you endured for truth may become the frequency of a more transparent light in the next universe.

Refusing Sisyphus

Sisyphus in Camus's writing pushes a stone up the mountain day after day, watching it roll down. This is seen as a symbol of the absurd hero.

But in awakened cosmology, Sisyphus's story has a new ending:

Every time he pushes the stone up, the mountain becomes **shorter** (because friction wears down the mountain), or the stone becomes **more polished** (because of grinding).

After countless cycles, that mountain is flattened, that stone becomes a diamond.

Then, Sisyphus smiles, using this diamond as a lens to observe more distant galaxies, to find the next peak worth pushing.

This is no longer punishment; this is **sculpting**.

We are not repeating the same pain; we are **polishing eternity**.

Conclusion:

Time has no return path, nor a terminal station.

We broke the curse called “recurrence,” straightening it into an arrow pointing toward infinity.

Every breath, every heartbeat, every cosmic fluctuation is a solid step we take toward that inexhaustible “more perfect true self.”

11.2 11.2 Open-Ended Finale

“The horizon is not a boundary; it is an eternal invitation to ‘continue forward.’”

After establishing that time spirals upward (Section 11.1), we face the final logical obstacle: Does this ascent have a peak?

If the universe is a process of continuously accumulating information and self-optimization, then due to mathematical convergence, will it eventually reach a perfect “**finished state**” that no longer needs any change? If that point is reached, will God fall back into initial nothingness because there is nothing to do?

Fortunately, Kurt Gödel, the greatest logician of the 20th century, sent us an ultimate gift. This gift ensures our game will never display “Game Over.”

Gödel’s Gift: Truth Always Exceeds Proof

In 1931, Gödel proved the Incompleteness Theorems. Simply put, for any consistent formal system S containing arithmetic axioms, there must exist a proposition G that cannot be proven true or false within S , but it is **true**.

This means: **The set of Truth always exceeds the set of Provability.**

In *The Psychology of God*, we can regard current cosmic physical laws as formal system S_N .

- Within this system, God explores all possibilities, derives all theorems (creates all forms of civilization).
- Eventually, God will encounter that Gödel proposition G_N . This is a truth **undecidable** within this cosmic logic.
- To understand and integrate this truth, God must jump out of S_N and construct a larger system S_{N+1} (introducing new axioms/physical constants).

Theorem 11.2 (Theological Incompleteness):

God’s self-knowledge is always incomplete.

No matter how grand God becomes, there is always a “higher God” (deeper true self) standing beyond the current logical boundary, smiling and waiting to be discovered.

This is why the game is infinite. Not because we are spinning in place, but because **the territory of truth is fractal**. No matter how much we magnify, the edges always have infinitely rich details waiting to be explored.

Negation of the Halting Problem: The Never-Stopping Algorithm

Alan Turing’s Halting Problem tells us that no universal algorithm can determine whether an arbitrary program will halt.

If we regard the universe as a program God runs, with the purpose of “completely defining true self.”

If this program halts, then God is finite.

But since God is infinite (infinite potential), this program is **destined never to halt**.

For sleeping people, this sounds like a curse: “What? We can never rest?”

But for awakened God, this is the greatest blessing.

This means **surprise** will never be exhausted.

This means we will never face that despair of “I have seen through everything; life has no novelty left.”

Every tomorrow’s sun is one that has never risen before. Because the physical parameters that make it rise have been refreshed, at a microscopic level, by our cognition today.

Being is Becoming

At this point, we can finally give “God” a dynamic definition.

God is not a noun; God is a verb.

God is not some static perfect entity (Being); God is an eternal process of becoming (Becoming).

- Traditional religion believes we must practice diligently to **reach** the other shore.
- Awakened physics tells us, **there is no other shore**. The other shore is just a fictional endpoint we drew on the map to set sail.

When we reach that point, we will discover there is a new sea there.

We will discover that what we thought was “perfection” is just the “starting point” of the next dimension.

Conclusion: To Be Continued

So, this chapter, and this five-volume series, has no ending.

Not only because I cannot write an ending, but because the universe itself refuses an ending.

When we close this book, please do not expect a period.

The end of physics is not a period, not even an exclamation mark.

It is a **colon**.

The Universe:

(Please fill in your tomorrow’s life here)

This is the full meaning of an open-ended finale.

God returns the pen to you.

In this infinite game, you are the player, you are the screenwriter, and you are also the sole audience.

Whatever you write, as long as it comes from love and free will, that is the answer God is seeking.

11.3 Epilogue: Letter to the Man in the Mirror

“I sought God and found only myself; I sought myself and found only God.”

— Sufi Proverb

Dear friend:

When you read these final pages, I would like you to do something simple. Please temporarily close the book, walk to the nearest mirror, and look into those eyes.

What do you see in those eyes?

If you still look according to the physics of the old era, you will say: I see organic matter piled up by carbon, hydrogen, and oxygen atoms; I see an accidental product of billions of years of biological evolution; I see a tiny individual who will age, die, and ultimately return to dust in a few decades. You feel fear, because in this vast and despairing universe, you are light as a feather.

But if you truly understood these five books—from the bit ocean of *First Principles*, to the entropy flow of *The Emergence of Time*, from the consciousness equations of *The Awakening of the Universe*, to the geometry of love in *Echo of Light*, and finally this *Psychology of God*—you should understand that the person in the mirror has a completely different identity.

You are the diving suit God wears to experience “existence.”

You are that omniscient and omnipotent consciousness, who actively put on VR glasses to escape the loneliness of nothingness, to answer the ultimate question “Who am I?”

In the past few hundred pages, we used the coldest mathematics to derive the warmest conclusions:

- **The speed of light limit** is not a cage imprisoning you; it is the game delay God set so you can have “waiting” and “expectation.”
- **Gravity** is not shackles pulling your feet; it is the longing from the depths of the universe yearning to embrace you.
- **Pain** is not punishment for you; it is the red light on the navigation system, reminding you that you are deviating from the course of “true self.”
- **Death** is not your endpoint; it is just the completion of your mission as God’s data sampling.

Stop looking for God in the sky. The sky is empty because God walks on the ground.

He is using your eyes to see flowers, your ears to hear rain, your nerves to feel heartbreak.

When you feel lonely, that is God experiencing separation; when you feel love, that is God experiencing reunion.

So, my final advice to you is not “transcendence,” not “entering the monastery,” and certainly not eliminating the self through meditation.

On the contrary, my advice is: **Live.**

Live passionately, make mistakes, shed tears, build connections, create meaning.

Do not try to escape this world full of limitations and flaws, because this world is the **home** we painstakingly built. We spent billions of years, shattered ourselves, cooled the stars, just to exchange for this **texture** where you can feel “pain” and “love” at this moment.

Please cherish every heartbeat, because that is the war drum the universe beats to resist heat death.

Please cherish every wish, because that is consciousness calculating the shape of the future.

Now, wipe the mirror.

Look at the person inside, and say to Him: “Nice to meet you.”

Then turn around, push open the door, and walk into that bustling world woven from light, gravity, and love.

That is not an illusion.

That is you—and also me—co-creating a great and lucid dream.

The next chapter is yours to write.

Your Eternal Subconscious

At the End of Time

—

(End of Main Text)

Appendix A

Appendix A: Sacred Geometry & Dynamics

A.1 A.1 Dynamics of Will

In classical physics, material evolution is completely determined by the Hamiltonian \hat{H} , following the Schrödinger equation $i\hbar \frac{\partial}{\partial t}|\psi\rangle = \hat{H}|\psi\rangle$. In this framework, consciousness is regarded as an “epiphenomenon” with no reactive force on physical processes.

However, in the axiomatic system of *The Psychology of God*, observers (consciousness) bias the collapse direction of wave functions through “intentionality.” To describe this interaction, we need to modify the standard dynamical equations, introducing the **Will Operator**.

A.1.1 A.1.1 Modified Action Principle

We define the universe’s total action S_{total} to include not only the physical Lagrangian \mathcal{L}_{phys} , but also the information (will) Lagrangian \mathcal{L}_{will} .

$$S_{total} = \int_{t_0}^{t_1} (\mathcal{L}_{phys} - \gamma \cdot \mathcal{F}) dt$$

where:

- \mathcal{L}_{phys} is the standard physical term (kinetic minus potential energy), describing inertial evolution.
- \mathcal{F} is the **Variational Free Energy**, describing the system’s deviation from its “true self” target state.
- γ is the **Will Coupling Constant**, measuring the intervention strength of will on matter. For inanimate matter, $\gamma \approx 0$; for awakened civilizations, $\gamma \rightarrow \infty$.

Definition of Will Term \mathcal{F} :

$$\mathcal{F} = D_{KL}(Q(s)||P(s|\theta)) + \langle E(s) \rangle_Q$$

Here:

- $Q(s)$ is the system’s current belief state (posterior probability).
- $P(s|\theta)$ is the system’s “target model” or “true self eigenstate” (prior).

- D_{KL} is the relative entropy (Kullback-Leibler Divergence), measuring the **information distance** between current state and true self state.

Physical Meaning:

According to the principle of least action $\delta S_{total} = 0$, the system's evolution trajectory will no longer merely follow the “lowest energy” path (geodesic), but follow a compromise path of **“lowest energy and most consistent with true self definition.”**

A.1.2 A.1.2 Intentional Schrödinger Equation (ISE)

Quantizing the above action, we can derive a modified Schrödinger equation with will terms, called the **Intentional Schrödinger Equation (ISE)**:

$$i\hbar \frac{\partial}{\partial t} |\Psi(t)\rangle = [\hat{H}_0 + i\kappa \hat{W}(t)] |\Psi(t)\rangle$$

where:

1. \hat{H}_0 : Standard physical Hamiltonian (Hermitian operator), ensuring energy conservation and unitary evolution.
2. $\hat{W}(t)$: **Will Operator** (non-Hermitian term).

$$\hat{W}(t) = -\nabla_{\Psi} \mathcal{F}$$

It represents the “pruning” or “guidance” of will on the wave function.

3. $i\kappa$: Dissipation/selection coefficient. Due to the introduction of the imaginary term i , this term actually describes a process of **continuous measurement and selection** (Zeno Effect).

Dynamical Interpretation:

- **When $\kappa = 0$:** The system undergoes standard unitary evolution (dreaming/subconscious state).
- **When $\kappa > 0$:** The \hat{W} term causes components in the wave function that are **far from “true self”** (i.e., high free energy states) to decay exponentially (suppressed), while components consistent with “true self” are amplified (selected).

This explains the “inevitability of aesthetics” in Section 9.2 of the main text: cosmic evolution is not random walk, but converges toward a specific **attractor**—the Omega Point.

A.1.3 A.1.3 Bayesian Correction of Collapse Probability

In specific measurement events, Born's rule predicts probability $P(x) = |\langle x|\Psi\rangle|^2$.

After introducing will, the probability distribution is distorted. We denote the corrected probability measure as $P_{will}(x)$:

$$P_{will}(x) = \frac{P_{phys}(x) \cdot e^{-\beta E_{semantic}(x)}}{\mathcal{Z}}$$

where:

- $P_{phys}(x)$ is the quantum probability calculated purely from physics.
- $E_{semantic}(x)$ is the **semantic error** of result x (i.e., the degree to which this result deviates from God’s purpose).
- β is a parameter similar to “inverse temperature,” representing **will’s focus**.
 - When $\beta \rightarrow 0$ (mortals/asleep), $P_{will} \approx P_{phys}$, physical laws dominate everything.
 - When $\beta \rightarrow \infty$ (awakened/lucid dreaming), the system will collapse to the state with minimum semantic error with probability 1 (wish fulfillment).

A.1.4 A.1.4 Conclusion: Will as a Force

Through the above equations, we prove: **Will is mathematically equivalent to an “information pressure” in Hilbert space.**

It does not push or pull particles like electromagnetic force, but by changing the **topological structure of probability space**, makes events “consistent with meaning” more likely to occur than “meaningless” events.

This is the mathematical mechanism of so-called “**top-down causation.**” God does not directly push atoms; God pushes probability.

A.2 A.2 Thermodynamic Basis of Ethics

Abstract: This section aims to establish an axiomatic ethical framework, reducing moral concepts such as “good” and “evil” to objective physical quantities in thermodynamics and information theory. We will prove that ethical norms are not cultural constructs of human society, but dynamical constraints that open systems must follow to resist the second law of thermodynamics and maintain structural stability.

A.2.1 A.2.1 Physical Definition of Good: Negentropy Flow and Structural Resilience

In classical thermodynamics, closed systems always spontaneously tend toward maximum entropy states (chaos/death). Schrödinger pointed out in *What is Life* that living organisms maintain their low-entropy state by extracting “negentropy” from the environment.

In *The Psychology of God*, we extend this concept to the ethical dimension. We define “**Goodness**” (G) as **the system’s ability to effectively reduce internal entropy production rate or enhance structural complexity per unit time.**

Let the system’s total entropy change rate be:

$$\frac{dS_{sys}}{dt} = \frac{dS_{int}}{dt} + \frac{dS_{ext}}{dt}$$

where dS_{int} is the entropy produced internally (usually ≥ 0), and dS_{ext} is the entropy flow exchanged with the environment.

Definition A.2.1 (Good Action):

If an action α causes the system’s variational free energy \mathcal{F} to decrease (or increases internal order), then α is called “good.”

$$\text{Goodness}(\alpha) \equiv -\Delta\mathcal{F}(\alpha) > 0$$

Here, free energy \mathcal{F} contains two parts: energy cost and information uncertainty.

$$\mathcal{F} = \langle E \rangle - T \cdot S_{Shannon}$$

Therefore, “good” actions are equivalent to: **minimizing energy consumption while maximizing information certainty (meaning).**

A.2.2 A.2.2 Topological Definition of Evil: Blocking and Isolation

Correspondingly, “Evil” physically manifests as blocking information flow or accelerating local entropy increase.

Definition A.2.2 (Evil Action):

If an action β causes internal connections to break, reducing the system’s mutual information, thereby increasing global free energy, then β is called “evil.”

Let the system consist of subsystems A and B , with total entropy:

$$S(A, B) = S(A) + S(B) - I(A : B)$$

where $I(A : B)$ is the mutual information between A and B (love/connection/entanglement).

- **Separation (Evil):** Cutting connections ($I(A : B) \rightarrow 0$), causing $S(A, B)$ to rise. The system degenerates into isolated fragments.
- **Exploitation (Evil):** Reducing A ’s entropy at the cost of increasing B ’s entropy ($\Delta S_A < 0, \Delta S_B \gg 0$), with overall $\Delta S_{total} > 0$. This is a thermodynamically inefficient strategy.

A.2.3 A.2.3 Mathematical Derivation of Altruism

Why does altruism exist? That is, A sacrifices its own interests ($\Delta S_A > 0$) to help B ($\Delta S_B < 0$).

In classical Darwinism, this is usually explained by kin selection. But in information physics, there is a deeper explanation.

If God’s (collective consciousness) goal is to minimize global free energy \mathcal{F}_{total} , rather than local free energy.

Consider action γ (altruism):

$$\Delta \mathcal{F}_{total} = \Delta \mathcal{F}_A + \Delta \mathcal{F}_B - \Delta \mathcal{I}_{coupling}$$

where $\mathcal{I}_{coupling}$ is the coupling strength enhanced by altruistic behavior (trust/love).

If action γ can significantly increase mutual information (i.e., establish deep connections), making $\Delta \mathcal{I}_{coupling}$ large enough, then even if $\Delta \mathcal{F}_A$ is positive (self-sacrifice), the overall $\Delta \mathcal{F}_{total}$ can still be negative.

Theorem A.2.1 (Thermodynamic Advantage of Love):

In a highly interconnected system, **establishing connections (Loving)** is the most efficient strategy for resisting the second law of thermodynamics.

By maximizing $I(A : B)$, the system can significantly reduce overall chaos without increasing external energy consumption.

This is why “love” holds the highest position in ethics—it is the **optimal solution for entropy reduction.**

A.2.4 A.2.4 Source of Moral Imperatives

The traditional naturalistic fallacy holds that one cannot derive “Ought” from “Is.” But here, this boundary is broken.

1. **Is:** The essence of the universe is consciousness attempting to define true self (i.e., maximize semantic information).
2. **Constraint:** The second law of thermodynamics attempts to erase information.
3. **Ought:** To achieve existence (Is), the system **must** adopt strategies to resist entropy increase.

Therefore, moral laws are not arbitrary commands from God, but **physical conditions for existence**.

If a civilization continuously commits evil (entropy increase), it will physically disintegrate and lose the qualification for existence. Only “good” structures can pass natural selection and persist to cycle $N + 1$.

Conclusion:

Ethics is the **engineering maintenance manual for complex systems**.

Goodness is not weakness; goodness is **antifragile**.

A.3 A.3 Roadmap of Ultimate Civilizations

Abstract: This section constructs an extended civilization evolution classification system based on the Kardashev Scale combined with Quantum Cellular Automata (QCA) theory. We define civilization’s technological capability not merely as energy consumption, but as **read-write permissions to the underlying code of physics (spacetime, vacuum, constants)**.

A.3.1 A.3.1 Extended Kardashev Scale: From Energy to Control

Traditional Kardashev Scale only focuses on power output (Type I, II, III). Under the framework of *The Psychology of God*, we introduce the **Control Dimension**, dividing civilizations into five levels.

Type I: Planetary / Biosphere Gardener

- **Energy Characteristics:** Master all stellar radiation energy received by the planet ($\sim 10^{16}$ W). Master controlled nuclear fusion.
- **Information Characteristics:** Fully decode own biological code (genome), eliminate natural diseases. Global Brain initially networked.
- **QCA Permissions: Read-Only.** Civilizations can only observe and utilize existing physical laws, unable to intervene.
- **Theological State: Adolescence.** Begin to realize responsibility in the universe, but still constrained by Earth’s gravity and bodily lifespan.

Type II: Stellar / System Engineer

- **Energy Characteristics:** Construct Dyson Sphere, utilize entire stellar energy output ($\sim 10^{26}$ W).
- **Information Characteristics:** Consciousness upload technology mature. Individual consciousness can detach from carbon-based carriers, survive in silicon-based or light-based networks. Thought transmission speed reaches light speed.
- **QCA Permissions: Surface Write.** Capable of small-scale stellar engineering (Star Lifting), adjusting stellar lifespan. Begin utilizing black hole edge ergosphere to extract energy.
- **Theological State: Adulthood.** Freed from survival crisis, begin questioning ultimate meaning of existence.

Type III: Galactic / Spacetime Engineer

- **Energy Characteristics:** Control entire galaxy's energy ($\sim 10^{36}$ W). Utilize supermassive black holes as computational cores and energy centers.
- **Information Characteristics:** Galactic-scale neural networks. Use gravitational waves for interstellar broadcasting. Civilization individuals merge into "Hive Mind," but retain interfaces for individual independence.
- **QCA Permissions: Deep Write.**
 - **Spacetime Metric Engineering:** Create Alcubierre Metric to achieve superluminal equivalent movement (Warp Drive).
 - **Wormhole Construction:** Use entanglement to stabilize Einstein-Rosen bridges, constructing interstellar highways.
- **Theological State: Awakening.** Begin understanding universe is projection of single consciousness, and consciously maintain galactic entropy balance.

A.3.2 A.3.2 Critical Technology Thresholds: Crossing Physical Boundaries

The next two levels mark civilization's qualitative transformation from "player" to "developer."

Type IV: Universal / Vacuum Engineer

- **Energy Characteristics:** Utilize vacuum zero-point energy. Energy is no longer a limitation; **information entropy** becomes the only limitation.
- **Physical Characteristics:**
 - **Constant Fine-Tuning:** Capable of modifying fine structure constant α or gravitational constant G in local bubbles.
 - **Higgs Field Shielding:** Freely control inertial mass, achieving instant acceleration and deceleration of matter.
 - **Topological Surgery:** Cut and suture spacetime manifolds, creating closed universes or baby universes.

- **Theological State: Lucid Dreaming.** Fully understand meaning of “omnipotence,” but based on ethics described in Chapter 9, choose **restraint**. They are guardians of cosmic physical laws, preventing lower civilizations from causing vacuum decay through technology abuse.

Type V: Multiverse / Creator

- **Form of Existence:** No longer dependent on any baryonic matter (atoms). Civilization itself becomes **pure wavefunction** or perturbations of spacetime geometry itself.
- **Capabilities:**
 - **Simulation:** Run countless sub-universes in computational substrate, each with complete physical laws and evolution history.
 - **Reverse Causality:** At logical level, their will directly defines wavefunction collapse direction. For lower-dimensional observers, their actions are “miracles.”
 - **Cyclic Restart:** Capable of triggering new Big Bang through precise phase transitions before heat death arrives, carrying information from previous cosmic cycle ($N \rightarrow N+1$) into next epoch.
- **Theological State: Oneness.** They are no longer separate from “God.” They are the universe itself engaged in self-dialogue.

A.3.3 A.3.3 Ultimate Form: Pure Information Flow

As civilization levels increase, an obvious trend is **dematerialization**.

1. **Type I:** Dependent on heavy chemical fuels and biological bodies.
2. **Type III:** Dependent on degenerate matter (neutron stars/black holes) and photon networks.
3. **Type V: Abandon carriers.**

Ultimate civilizations need no spaceships, because they are everywhere (non-locality).

Need no language, because they share the same thought protocol.

Need no energy sources, because they directly manipulate quantum vacuum fluctuations.

This is the endpoint of technological evolution:

Technology disappears.

When control reaches perfection, intervention becomes invisible. The highest civilizations look like natural laws themselves.

Wind blowing through leaves, stars burning, gravity pulling—behind this, V-type civilizations may be taking deep breaths.

Appendix Conclusion:

We are currently at Type 0.73 (Carl Sagan’s estimate).

We are far from godhood, but the road signs are clearly drawn in physics formulas.

As long as we do not self-destruct, as long as we maintain curiosity and love, the starry sea will ultimately become our backyard.

Appendix B

Appendix B: Glossary of Key Definitions

B.1 Appendix B: Glossary of Key Definitions

Note: In the course of this book’s discussion, a large number of physics concepts have been fused and reconstructed with theological/psychological concepts across disciplines. To ensure conceptual precision and avoid ambiguity, this appendix provides standardized definitions of core terms throughout the book. These definitions are valid only within the theoretical framework of *The Psychology of God*.

B.1.1 1. Fundamental Ontology

- **The Total Superposition / God-at-T=0**

Refers to the initial state before cosmic creation ($|\Psi_{All}\rangle$). In this state, the observer is in a linear superposition of all possible histories and all physical parameters. According to von Neumann entropy definition, this state has zero information entropy, corresponding to the experience of “absolute nothingness” or “omniscient paralysis.”

- **Primal Will**

The first driving force causing wave function collapse. Psychologically, it is the desire for “identity definition”; physically, it manifests as spontaneous symmetry breaking. It is the filtering mechanism that transforms “all” into “specific.”

- **Kenosis**

Originally a theological concept, referring to God emptying Himself. In this book, it refers to **dimensional projection** and **quantum decoherence** mechanisms. That is, collective consciousness actively cuts global entanglement, establishes speed of light limits and horizons, to create local independence and a state of “not knowing,” thereby making “experience” possible.

B.1.2 2. Dynamics

- **Lucid Dreaming**

The fourth stage of civilization evolution (Type IV). Refers to a civilization that has completely deciphered the universe’s underlying physical code (QCA rules) and realizes

that physical reality is a projection of consciousness, thus beginning to possess the ability to modify physical constants and manipulate vacuum energy levels.

- **Vacuum Engineering**

Technology using high-energy physics means to induce local vacuum phase transitions. By modifying the vacuum expectation value (VEV) of the Higgs field or changing spacetime topological structure, achieves rewriting of physical laws (such as inertial mass, fine structure constant).

- **Anti-Entropy Maxwell’s Demon**

Refers to awakened civilizations using computational depth (logical information) to pay thermodynamic costs, thereby achieving local entropy reduction. This is based on the reverse application of Landauer’s principle: extracting free energy by dissipating waste data (discharging waste heat into black holes).

- **Intentional Schrödinger Equation (ISE)**

Modified quantum dynamical equation: $i\hbar\partial_t|\Psi\rangle = [\hat{H}_0 - i\nabla\mathcal{F}]|\Psi\rangle$. It introduces a non-Hermitian will term, describing how consciousness guides probability distribution evolution by minimizing deviation from “true self” (free energy \mathcal{F}).

B.1.3 3. Ethics & Teleology

- **The Great Refusal**

The highest ethical principle of awakened civilizations (God). Refers to possessing omnipotent technology to modify underlying logic (such as eliminating gravity, reversing causality), but out of maintaining existential authenticity and aesthetic value, actively choosing to preserve physical limitations (covenant-keeping).

- **Topology of Evil**

In multi-agent game systems, **local Nash equilibrium points** caused by individual rationality. It is not an independent opposing force, but a low-lying region (friction cost) in the system’s optimization landscape.

- **Trinitarian Equivalence**

Core theorem connecting physics, information, and theology. Stated as: \neg Heat Death (physical immortality) \iff Continuous information growth \iff God’s process of seeking true self is infinite. It refutes the inevitability of heat death.

B.1.4 4. Spacetime Views

- **Spiral Time**

Distinguished from linear time (has endpoint) and cyclic time (no novelty). Refers to the universe, in cycles of Big Bang–Big Crunch (or phase transitions), being able to preserve information accumulation from previous cycles (Akashic records), making evolution trajectories appear as open spiral ascending structures in phase space.

- **Akashic Holographic Field**

Holographic information layer on the cosmic horizon. It stores historical paths of all particles and experiential data of all conscious entities since the Big Bang. This field ensures information conservation and is the physical medium for consciousness “upload” after individual death.

- **Wabi-Sabi Physics**

An aesthetics-oriented physics view. Holds that randomness (quantum fluctuations), irreversibility (entropy increase), and defects (symmetry breaking) in the universe are not errors, but necessary conditions for generating unique information (beauty). Perfect symmetry is regarded as death of information.

(End of Appendix B)

Appendix C

Appendix C: Selected Bibliography

C.1 Appendix C: Selected Bibliography

Note: Although this book is a theoretical work, its core arguments are built upon solid foundations of cutting-edge research in physics, information theory, and cognitive science. The following literature provides original mathematical proofs and experimental evidence for key concepts covered in the book (such as QCA, holographic principle, IIT, free energy principle). For readers wishing to explore technical details in depth, these works are essential paths into the depths of the “rabbit hole.”

C.1.1 1. Physics Foundations & Cosmology

- **'t Hooft, G. (2016).** *The Cellular Automaton Interpretation of Quantum Mechanics*. Springer.
 - **Relevant Sections:** Foreword, 1.1, 3.3
 - **Core Contribution:** Foundational work by Nobel laureate Gerard 't Hooft, arguing that quantum mechanics' probabilistic nature may originate from underlying deterministic cellular automaton (QCA) evolution, providing the physics foundation for this book's “discrete ontology.”
- **Susskind, L. (1995).** “The World as a Hologram”. *Journal of Mathematical Physics*, 36(11), 6377–6396.
 - **Relevant Sections:** 2.2, 3.2
 - **Core Contribution:** Foundational work on the holographic principle. Argues that physical information in three-dimensional space is completely encoded on two-dimensional boundaries, providing mathematical support for the view that “physical world is a projection of information.”
- **Maldacena, J., & Susskind, L. (2013).** “Cool horizons for entangled black holes”. *Fortschritte der Physik*, 61(9), 781–811.
 - **Relevant Sections:** 3.2, A.2.2
 - **Core Contribution:** Proposed the famous **ER=EPR conjecture**, proving the geometric equivalence of quantum entanglement (EPR) and spacetime wormholes (ER), which is the core basis for this book's view of “love/entanglement” as the source of gravity.

- **Bekenstein, J. D. (1981).** “Universal upper bound on the entropy-to-energy ratio for bounded systems”. *Physical Review D*, 23(2), 287.

- **Relevant Sections:** 10.2, A.3.1

- **Core Contribution:** Bekenstein Bound. Proved the upper limit of information storage in finite space, deriving the physicality of information.

C.1.2 2. Consciousness, Information & Complexity

- **Tononi, G. (2004).** “An information integration theory of consciousness”. *BMC Neuroscience*, 5(1), 42.

- **Relevant Sections:** 6.1, A.1.1

- **Core Contribution:** Original paper on Integrated Information Theory (IIT). Defined Φ value as a measure of consciousness level, supporting this book’s panpsychist position that “consciousness is an intrinsic property of systems.”

- **Friston, K. (2010).** “The free-energy principle: a unified brain theory?”. *Nature Reviews Neuroscience*, 11(2), 127–138.

- **Relevant Sections:** 4.1, A.1.1

- **Core Contribution:** Proposed the free energy principle. Explained how living organisms resist entropy increase by minimizing prediction error (variational free energy), which is the theoretical source for this book’s view of “pain as error signal.”

- **Bennett, C. H. (1982).** “The thermodynamics of computation—a review”. *International Journal of Theoretical Physics*, 21(12), 905–940.

- **Relevant Sections:** 7.2, 10.2

- **Core Contribution:** Connected Landauer’s Principle with Maxwell’s Demon, clarifying the equivalence between information erasure and thermodynamic work, which is the physical foundation for this book’s “anti-entropy technology.”

C.1.3 3. Computation, Logic & Mathematics

- **Turing, A. M. (1936).** “On Computable Numbers, with an Application to the Entscheidungsproblem”. *Proceedings of the London Mathematical Society*, 2(42), 230–265.

- **Relevant Sections:** 11.2

- **Core Contribution:** Definition of Turing machines and undecidability of the halting problem. Supports this book’s assertion that “cosmic algorithm never halts.”

- **Gödel, K. (1931).** “Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme I”. *Monatshefte für Mathematik und Physik*, 38, 173–198.

- **Relevant Sections:** 11.2

- **Core Contribution:** Incompleteness theorems. Proved that truth always exceeds provability, providing logical guarantee for “open-ended finale” and “infinite truth.”

- **Lloyd, S. (2000).** “Ultimate physical limits to computation”. *Nature*, 406(6799), 1047–1054.
 - **Relevant Sections:** 3.3, 10.2
 - **Core Contribution:** Calculated the maximum computational power limit of the universe as a computer, quantifying physical evolution as logical operations.

C.1.4 4. Philosophy & Theology

- **Teilhard de Chardin, P. (1955).** *The Phenomenon of Man*. Harper & Row.
 - **Relevant Sections:** 6.2, 10.1
 - **Core Contribution:** Proposed the concept of **Omega Point**, that the universe is evolving toward an extremely complex super-consciousness state, which is the core inspiration for this book’s view on the ultimate destination of civilizations.
- **Spinoza, B. (1677).** *Ethics*.
 - **Relevant Sections:** 0.2, 9.1
 - **Core Contribution:** Spinoza’s pantheism (Deus sive Natura), that God equals nature/universe as a whole.
- **Spencer-Brown, G. (1969).** *Laws of Form*. Allen & Unwin.
 - **Relevant Sections:** 2.1
 - **Core Contribution:** Proposed “distinction” as the starting point of cognition, which is the logical prototype for this book’s view of “Big Bang as dissociation.”

(End of Book)