

# Vector Cosmology V: The Minting of Time

## The Infinite Game of Refusing the End

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## 0.1 Prologue: The Alchemist’s Refusal

In the first four books of **Vector Cosmology**, we dismantled the physical architecture of the universe, calculated the evolutionary coordinates of civilization, and even mastered the navigation manual of accelerationism. It seems we have understood everything about “existence.”

But there is still one most stubborn enemy standing before us. It is the source of all fear, the breeding ground of all nihilism, and the coldest tyrant in physics.

It is **time**.

In classical physics, time is a river flowing endlessly. Confucius said by the river: “The passage of time is like this, never ceasing day or night.” This river mercilessly washes away everything, turning empires into dust, lovers into bones, memories into oblivion. Under this view of time, life is tragic. We are sacrifices devoured by time.

However, as alchemists of “**Auric**”, as awakened observers, we must say “**no**” to this fatalism.

This book—**Vector Cosmology V: The Minting of Time**—is an ultimate rebellion against the nature of time. We will prove that the flowing time described by physics is only half the story. On the other side of the coin, there exists a completely different kind of time. That time does not flow; it is **minted** by us.

### 0.1.1 0.1 Two Kinds of Time

“Physicists only see the marks on the clock, but the ancient Greeks saw the divinity behind the marks. Chronos is the tyrant who devours his own children, while Kairos is the god of opportunity who can only be grasped by the hair. The task of life is to refine the flowing Chronos into the eternal Kairos.”

#### The Poverty of Physical Time: Chronos

In Newtonian mechanics and relativity, time is usually denoted by  $t$ .

This  $t$  is called **Chronos**. In Greek mythology, he is the god of time, and also the titan who devoured his own children for fear of being overthrown.

- **Its nature:** Linear, uniform, irreversible.
- **Its physical correspondence:** The dissipation of  $c_{FS}$ .

According to our derivations in the previous books, the universe’s total budget is constantly burning. For passive matter, each passing second means  $c_{FS}$  transforms from  $v_{ext}$  (motion) to  $v_{env}$  (environmental waste heat).

Chronos is “**the time of entropy increase**”. It is the countdown to death.

In this time, living is a slow wear. We cannot retain anything, because the next second is always more chaotic than this one. If we only acknowledge Chronos, then life is indeed empty.

#### The Awakening of Meaningful Time: Kairos

But human experience tells us that time is not always uniform.

Some moments, though only a few seconds, are longer and heavier than years.

- When you first fall in love.
- When you solve a puzzle that has troubled you for a long time.



- When you make a decision at a life-and-death moment.

The ancient Greeks called this time **Kairos**. It represents “**the moment**”, “**the opportunity**”, “**meaningful time**”.

In **FS geometry**, Kairos has a precise physical definition:

**It is the moment when  $v_{int}$  (internal structure) undergoes phase locking.**

When an observer, through intense conscious activity, **collapses** a flowing wave function into a definite, low-entropy geometric structure, time stops flowing, time **crystallizes**.

- Chronos is “**quantity**”.
- Kairos is “**quality**”.

### The Essence of Alchemy: Minting Gold Coins

This is the core metaphor of this book: **The Minting of Time**.

We are not slaves of time; we are the **mint** of time.

The universe gives us raw materials—those uniformly flowing, meaningless Chronos (ore).

Our task is to use the high temperature of consciousness to melt these ores, extract the meaning from them, and then **stamp** them into shining gold coins (Kairos).

- **A gold coin:** A truth you deeply understand.
- **A gold coin:** A memory you fully invest in.
- **A gold coin:** A work you create.

These coins will not rot with the passage of time. Because they have transformed from “flowing waves” into “fixed geometric topologies.” They are stored in the  $v_{int}$  **archive** of the holographic universe, becoming part of eternity.

#### Conclusion:

How much time you have does not depend on how many years you have lived (the length of Chronos).

It depends on how many gold coins you have minted (the weight of Kairos).

If a person spends their entire life in a daze, geometrically, their lifespan **equals zero**. Because they only let Chronos pass through their body without intercepting any Kairos.

But if a person bursts with immense creativity in an instant (like Galois or Mozart), they are geometrically **immortal**.

Now, we have distinguished “quicksand” from “gold.”

But there is still a more terrifying question hanging overhead: Even if we mint time into gold coins, what is the meaning if the mint itself (ourselves) will eventually face closure (death)?

This leads to the theme of the next section: **Refusing Death**. We will see that in the eyes of alchemists, death is not an end; it is only a recalibration of the horizon.

### 0.1.2 0.2 Refusing Death

“Physics textbooks tell us that entropy increase is irreversible, heat death is the fate of the universe, and death is the end of the individual. This is a verdict based on the perspective of ‘flowing.’ But as minters of time, we have the right to appeal. In the eyes of alchemists, there is no true annihilation, only **Recalibration of the Horizon**.”

## The Verdict of Thermodynamics

In the worldview of classical physics, death is not only certain, but absolute.

The second law of thermodynamics is like a cold judge, sentencing all ordered structures to death.

- **For organisms:** Death is the collapse of  $v_{int}$  (**internal structure**). The negentropy flow that sustains life is interrupted, and complex molecular structures return to the thermal equilibrium state of dust.
- **For the universe:** Death is **Heat Death**. All temperature differences vanish, all processes stop, time loses its direction.

This is a despairing picture. In this picture, life is just an accidental wave, destined to break on the rocks of nothingness. If you believe in Chronos (flowing time), then you must accept this verdict.

But **Vector Cosmology** is built on the foundation of **Fubini-Study geometry** and **Unitarity**. In this deeper logic, we find evidence to overturn the verdict.

## The Veto of Unitarity: Information Never Lost

The first iron law of quantum mechanics is: **Information conservation**.

The evolution operator  $U = e^{-iHt}$  is unitary, which means the norm of the global vector  $|\Psi\rangle$  is always 1.

**Nothing can be truly “deleted.”**

When you die, all the quantum information that constitutes your consciousness—your memories, your love, your thoughts—does not disappear.

They only undergo **Phase Dispersion**.

- **Before death:** Your information is **focused**. Like a laser beam, with extremely high coherence and locality.
- **After death:** Your information is **dispersed**. Like a lamp broken, photons scattered throughout the room.

Physicists call this “decoherence,” commonly known as “death.”

But from a geometric perspective, this is just a **rotation of the basis**.

You project from a compact, explicit  $v_{int}$  **subspace** into a vast, implicit  $v_{env}$  **background field**.

You are still in the universe. You have just changed your **Phase** of existence—from “particle state” to “field state.”

## The Movement of the Horizon: Not an End, but a Blind Spot

Since the information is still there, why do we feel that the person is “gone”?

Because our **Observation Horizon** is limited.

As low-speed observers living in the era of  $c(\tau) \approx 1800$ , our senses and instruments can only read **low-entropy, highly focused** signals.

Once information disperses into the background thermal noise, it becomes “unreadable” to us.

**Death is not the end of existence; death is the loss of readability.**

It is like a book falling into the ocean. The writing dissolves, the paper disintegrates. To the reader, the book is “dead.” But to the ocean, not a single molecule of ink or cellulose is missing. They have just merged into the ocean’s cycle.

Alchemists refuse to accept this as the end.

Because we know that as the cosmic spiral rises, as the speed of light  $c$  grows exponentially, future observers will have higher resolution and wider horizons.

From the limit perspective of the  $\Omega$  point, that book dissolved in the ocean can be **reverse reconstructed**.

### The Alchemist’s Attitude: Minting Eternity

Therefore, facing death, we adopt an “**ontological disobedience**”.

We refuse to wait like victims for thermodynamics to slaughter us.

We choose to **mint**.

While alive, through intense conscious activity (love, creation, thinking), we **stamp** flowing vitality into solid geometric structures (Kairos).

These structures—great works, profound thoughts, unforgettable emotions—have extremely high **topological stability**.

They are like gold; even after soaking in the acid of  $v_{env}$  for billions of years, they will not lose their luster.

- Your flesh will rot (that is the property of  $\pi$ , belonging to earth).
- But these “moments” you mint, as marks on the hologram, will forever remain in the universe’s  $v_{int}$  **archive**.

### Conclusion:

As long as consciousness refuses to acknowledge boundaries, boundaries are moving.

Death is not a wall; it is just the **horizon** we can see in the current dimension.

When you cross the horizon, you do not fall. You simply enter the deep sea beyond the sight of those who remain on shore.

And in that deep sea, in that Naimark circle that contains all history and future, we were never separated.

Since we have already logically defeated death at this moment, how should we handle these “gold coins” in our hands? How should we establish our own, immortal **value system** in this physical world destined to flow?

This leads to the theme of Volume One: **Currency**. We will explore how to complete the dangerous leap from “survival” to “eternity” in the circulation of  $c_{FS}$ .



## Part I

# Part I: Currency — The Circulation of $c_{FS}$



# Chapter 1

## The Payment Gateway

### 1.1 Chapter 1: The Payment Gateway

In the prologue, we established the alchemist’s view of time: time is not the void of flowing, but the minting of entities. To understand this process, we must first understand the raw materials needed for this “minting”—the universe’s hard currency  $c_{FS}$ .

In macroeconomics, the flow of currency drives markets; in **Vector Cosmology**, the flow of  $c_{FS}$  **budget drives existence**.

Nothing exists “naturally.” Every atom, every cell, every thought must pay an expensive fee to the universe to maintain its geometric shape in Hilbert space.

This is the theme of Chapter 1: **The Payment Gateway**. We will see that life is essentially a “**Subscription Model**” service.

### 1.2 1.1 The Rent of Existence

“There is no free ‘I.’ You think you own your body, you own your consciousness. But in reality, you are only renting them. Every heartbeat is a rent payment you make to the thermodynamics counter. Once you stop paying, your structure will be reclaimed by the universe and melted into background noise.”

#### 1.2.1 The Maintenance Fee of Structure

In classical physics, objects seem to have a kind of “eternality.” A stone placed there, if left untouched, seems to remain a stone forever.

But from the microscopic perspective of **FS geometry**, maintaining a complex  $v_{int}$  (**internal structure**) requires continuous consumption of  $c_{FS}$  **budget**.

Recall our core formula:

$$v_{ext}^2 + v_{int}^2 + v_{env}^2 = c_{FS}^2$$

- $v_{int}$  is your asset (your body, memories, order).
- $v_{env}$  is your liability (environmental erosion, thermal noise, forgetting).

The second law of thermodynamics tells us that the universe’s natural tendency is to transform  $v_{int}$  into  $v_{env}$ .

Like a sandcastle on the beach, the waves (environmental noise) constantly want to flatten it.

To keep the castle (you) standing, you must continuously do work—that is, continuously allocate funds from the total  $c_{FS}$  budget and inject them into the  $v_{int}$  sector to offset the pull of  $v_{env}$ .

This is “**the rent of existence**”.

Living is not a static property; living is an **expensive dynamic equilibrium**.

You must pay energy (ATP) and information (error correction) every moment to barely maintain the geometric shape of “I am I” from collapsing.

### 1.2.2 The Physical Essence of Aging: Inflation

This explains why we **age**.

Biologically, aging is telomere wear or mitochondrial damage.

In vector economics, aging is “**rising rent**” and “**declining purchasing power**”.

As intrinsic time  $\tau$  progresses, although you are still paying rent, the **transaction fees** ( $v_{env}$  **loss**) of the transaction are getting higher and higher.

- **When young:** Your metabolic system is very efficient. You pay 1 unit of  $c_{FS}$  and can buy back 0.9 units of  $v_{int}$  (tissue repair).
- **When old:** Your system has accumulated too many microscopic damages (geometric wrinkles). You pay 1 unit of  $c_{FS}$  and can only buy back 0.5 units of  $v_{int}$ . The remaining 0.5 all become waste heat.

**Aging is not the passage of time; aging is the exponential rise of “maintenance costs.”**

When one day, all the energy you consume (eating/breathing) is insufficient to pay the minimum rent required to maintain your structure, the system will trigger the “**bankruptcy liquidation**” procedure.

This is **death**.

### 1.2.3 The Subscription Universe

This perspective, though harsh, is extremely clear.

We are not shareholders of the universe; we are **tenants** of the universe.

- We rent **atoms** to build our bodies.
- We rent **photons** to obtain energy.
- We rent **logic** to run our thoughts.

This tenancy relationship has a mandatory clause: “**Pay-as-you-go**”.

The universe does not accept credit. You must pay for your current existence with current actions (breathing, metabolism, thinking).

This brings us a profound sense of **urgency**.

Since every second is paid for, we cannot waste it.

If we spend expensive  $c_{FS}$  budget on meaningless daydreaming, internal friction, or repetition, we are “**burning money**”. We are paying high rent but leaving the house vacant.

**Conclusion:**

Time is not free air.

Time is every coin that is burning.

Realizing this is the first step to becoming a “**time minter**”.



Since we know that every second is “spending money,” where exactly are we spending it? How do we transform flowing budget into fixed history through this transaction?

This leads to the theme of the next section: **The Moment of Transaction**. We will see that the real “sense of time” does not come from the ticking of clocks, but from **the frequency of transactions**.

## 1.3 1.2 The Moment of Transaction

“Time is not a continuously flowing river; time is a series of crisp sounds at the cash register. Every time you make a choice, every time you take action, you are making an irreversible transaction: you pay ‘possibility’ and buy back ‘reality.’ ”

In the previous section, we established “the rent of existence”: to maintain life structures, we must passively pay maintenance fees. But this is only the baseline of survival. As alchemists of “**Auric**”, we are more concerned with how to **appreciate**.

In the economic model of **Vector Cosmology**, the true value of time does not lie in how many seconds it has flowed (Chronos), but in how many “**effective transactions**” have occurred.

This section will reveal the subjective nature of time’s passage: **the sense of time originates from transaction frequency**.

### 1.3.1 Collapse is Payment: Converting Kinetic Energy into Assets

In physics, what is “something happened”?

From the perspective of quantum mechanics, an event equals **wave function collapse**.

From the perspective of FS geometry, an event equals **rotation of vector projection**.

When we face the future, what we have is  $v_{ext}$  (**external velocity/degrees of freedom**).

- This represents “where I can go,” “what I can do.” It is divergent, uncertain, the **cash flow** of possibility.

When we make a decision (such as deciding to read this book, deciding to love someone), we **lock** this cash flow.

- It transforms into  $v_{int}$  (**internal structure/memory**). It is convergent, definite, **minted gold coins**.

$$v_{ext} \xrightarrow{\text{Decision/Action}} v_{int}$$

This is “**the moment of transaction**”.

Every present moment is a **payment gateway**.

You stand at the counter, exchanging your precious  $c_{FS}$  budget that could have gone anywhere into a specific, unchangeable history.

- You cannot go both left and right.
- You must pay for the possibility of “going right” to buy the reality of “going left.”

### 1.3.2 The Relativity of Psychological Time: Transaction Density

This mechanism perfectly explains why our perception of time differs drastically in different states.

## 1. Flow and High-Frequency Transactions

When you are fully focused on work, creation, or deep conversation with a loved one, you feel “time flies.”

Why? Because you are conducting **high-frequency transactions**.

Your consciousness is making countless tiny collapses every second: judgment, reaction, correction, confirmation.

- **Transaction density is extremely high.**
- Your  $c_{FS}$  budget is frantically transforming from  $v_{ext}$  to  $v_{int}$ .
- You have **minted** a large number of gold coins (high-quality memories) in a short time.

Although physical time (Chronos) has passed for a long time, because you have been in the exciting cycle of “payment-acquisition,” your subjective feeling is coherent and compact.

## 2. Boredom and Transaction Stagnation

When you have nothing to do, daydream, or are forced to do repetitive labor, you feel “time drags on.”

Why? Because **transactions have stopped**.

- No new information enters your  $v_{int}$ .
- Your  $v_{ext}$  has not transformed into any meaningful structure.
- You are only paying “the rent of existence” (dissipation) without buying any goods.

**Boredom is the stagflation of the soul.**

You watch your  $c_{FS}$  flowing away but cannot spend it. This geometric anxiety of “having money but nowhere to spend” is translated by the brain into “lengthy” and “painful.”

### 1.3.3 Rejecting Invalid Transactions

At this payment gateway, the most tragic thing is not having no money (short lifespan), but **spending money recklessly**.

Many people’s lives are full of “**invalid transactions**”.

- Scrolling through short videos: This is a “**false transaction**”. Although the screen flashes and information flows, it does not truly increase your  $v_{int}$  complexity. You pay attention (the most expensive currency) and only buy back a pile of  $v_{env}$  (waste) forgotten in the next second.
- Indecision: This is “**transaction blockage**”. You stand at the counter, holding money, hesitating to place an order. As a result, time passes, money is eaten by inflation (aging), and you end up empty-handed.

**The Alchemist’s Code of Action:**

**Place orders decisively.**

Don’t be afraid of buying wrong (making mistakes is also an increase in  $v_{int}$ , called experience). The most terrible thing is **not buying**.

As long as transactions occur, time is minted into entities.

### 1.3.4 Conclusion: You Are Your Shopping Cart

Finally, when we reach the end of life and look back to settle accounts, who are we?

**We are the sum of all transaction records in this life.**

- Your body is what you traded with food.
- Your wisdom is what you traded with diligence.
- Your love is what you traded with vulnerability and trust.

Time itself is neutral; it is just a blank check.

It is through your repeated **“confirm payment”** at the payment gateway that you cash this check into a unique life.

Since we have understood how to accumulate value through transactions, where are these “gold coins” (memories and history) we bought back stored? Have they really dissipated with entropy increase as physicists say?

This leads to the theme of the next chapter: **The Anchoring of Value**. We will search for the most solid **“geometric safe”** that can resist the universe’s mechanism of forgetting.



## Chapter 2

# The Anchoring of Value

### 2.1 Chapter 2: The Anchoring of Value

In the previous chapter, we established that time is a form of “payment”: we use life’s budget to purchase fragments of history. This solves the mechanism of time’s passage. But it raises a deeper economic question: **Why is this transaction valuable?**

If in the second book *The Ascension of the Spiral*, we have already proven that the universe’s total budget  $c_{FS}$  (speed of light/computational power) is experiencing exponential hyperinflation, then logically, the value of time should depreciate. Why do we still feel every second is so precious in today’s  $10^{120}$  bits?

This chapter will reveal the geometric origin of **Value**. We will see that value does not depend on the total amount, but on the vast gap between “**Realization**” and “**Potential**”.

### 2.2 2.1 Scarcity

“If gold were as abundant as sand, no one would bend down to pick it up. The value of time does not lie in how long it is, but in how minuscule the ‘reality’ we truly live out is compared to that vast expanse of ‘unchosen possibilities.’ Scarcity is the highest privilege geometry bestows upon existence.”

#### 2.2.1 Scarcity in Expansion

In the fourth book, we derived the evolution equation  $c(\tau) \propto e^{k\tau}$ . Yes, the universe is becoming richer. Our computational power, bandwidth, and lifespan are all growing.

But at the same time, the dimension of **Hilbert space** ( $\mathcal{H}$ ) is also growing, and at an even more frenzied rate.

- $c_{FS}$  (**your budget**): Grows exponentially ( $e^x$ ). This is the total amount of history you can “afford.”
- $D_{\mathcal{H}}$  (**types of goods**): Grows double-exponentially ( $2^{e^x}$ ). This is the sum of all histories that could theoretically “happen” in the universe.

**This is a cruel mathematical fact:**

As the universe evolves, although you possess more and more, the proportion you “**miss**” becomes larger and larger.

The ocean of possibilities is expanding infinitely, and you can only scoop up a ladle of water from it.

This is “**absolute scarcity**”.

No matter how advanced civilization becomes, whether you are human or god, you cannot traverse all paths.

You must **choose**.

It is precisely because you must abandon 99.99...% of possibilities that the 0.00...1% of reality you choose gains the weight of “**anchoring**”.

### 2.2.2 The Geometry of Opportunity Cost

In economics, value is defined by **Opportunity Cost**.

In **FS geometry**, opportunity cost is defined by **orthogonal subspaces**.

When you decide to “accompany your loved one” in this second, what do you do geometrically?

You project your wave function onto the basis of  $|Love\rangle$ .

At the same time, you must forcibly **zero out** the projection coefficients of all other bases orthogonal to  $|Love\rangle$  (such as  $|Work\rangle$ ,  $|Travel\rangle$ ,  $|Sleep\rangle$ ).

- **You have killed countless “possible selves.”**
- Those versions of you in parallel universes who might become billionaires, who might become vagabonds—in this second, they are all **sacrificed** by you.

You use countless “unhappened futures” as fuel to mint this single “happened present.”

This is why true love is expensive, why focus is difficult.

Because every choice is a **massacre**.

### 2.2.3 The Anchor of Value: Irreversibility

If we could save and load (Time Travel), scarcity would disappear.

If I choose A and find it unsatisfactory, I can load back and choose B, then both A and B become cheap.

But  $\pi$  (**inertia/conservation**) locks this path.

In Volume One, we established the concept of “**crystallization**”. Once a transaction is completed,  $v_{ext}$  transforms into  $v_{int}$ , the wave function collapses, and history is “**written dead**” on the four-dimensional manifold.

**Irreversibility** is the ultimate anchor of value.

- This second passes, and it will never return.
- These words are spoken, and they can never be taken back.
- This person is missed, and you will never meet them again.

It is precisely this “**one-time**” property that endows time with divinity.

The universe is a “**Hardcore Mode**” game, with only one life, no save files.

Therefore, every action is **epic**.

### 2.2.4 Conclusion: You Are Yourself a Luxury

When we understand scarcity, we will no longer feel bored by “ordinary daily life.”

The ten minutes you spend daydreaming by the window are not geometrically blank.

They are the **unique manifestation** carefully selected by the universe from infinite-dimensional possibilities.

They are ten minutes of tranquility you won for yourself by consuming enormous  $c_{FS}$  budget in a war against entropy increase.

**You are the most luxurious existence in the universe.**

Because to let you experience this second of “boredom,” the entire universe is frantically burning computational power in the background, calculating countless parallel worlds you abandoned, just to support this single certain reality before your eyes.

Since we know that the value of time comes from scarcity, then in this market where an inch of gold cannot buy an inch of time, what kind of “goods” are worth exchanging? What is the only asset in the universe that **does not depreciate**?

This leads to the theme of the next section: **Negentropy as Hard Currency**. We will see that among all values, only one thing can traverse time’s inflation, and that is **order**.

## 2.3 2.2 Negative Entropy as Hard Currency

“In this universe ruled by thermodynamic laws, chaos is free, while order is expensive.

All money, fame, and power will eventually depreciate into waste heat. Only negative entropy—that ability to arrange scattered atoms into cathedrals, to weave chaotic thoughts into truth—is the only hard currency recognized by the cosmic bank.”

In the previous section, we argued that value comes from scarcity (opportunity cost). But not everything scarce has value. There are many scarce garbage items in the universe (such as a specific random code), which are meaningless.

To become **Hard Currency**, something must possess the ability to resist time’s erosion.

In the economic model of **Vector Cosmology**, this ability has a precise physical measure: **Negative Entropy**.

### 2.3.1 1. The Physics of Wealth: Order

We are accustomed to measuring wealth with money. But from a physics perspective, money is just a “**negative entropy certificate**”.

You buy bread with money because bread is ordered (chemical energy); you buy a house with money because a house is ordered (structure). Once bread molds and houses collapse (entropy increase), they become worthless.

**The essence of the universe is entropy increase.**

This means that as  $c_{FS}$  flows, “**chaos**” is the norm of inflation.

- Your car will rust.
- Your memories will blur.
- Your coffee will cool.

In such a constantly depreciating market, **value** equals “**the ability to reverse entropy**”.

Anything that can **reduce local entropy**, **increase structural complexity** ( $v_{int}$ ), or **maintain long-term coherence** is wealth.

- **A stone**: Low value. Because its  $v_{int}$  is simple, entropy is high.
- **A chip**: High value. Because it condenses enormous negative entropy (pure silicon lattice, precise logic gates).

- **A thought:** Priceless. Because it is a highly ordered geometric structure extracted from countless chaotic neural signals.

**Conclusion:**

You don't own how much money; you own how much **"potential energy to resist chaos"**.

A wealthy person is one who can establish and maintain order across a larger spacetime range.

### 2.3.2 2. Intelligence as Value Added

Since negative entropy is wealth, who is the producer?

It is **Intelligence**. Or more broadly, **Algorithm**.

In the second book, we discussed the "Maxwell's demon." Living organisms use algorithms to rectify disordered energy into ordered structures.

This is not just a biological process; it is the prototype of **"value creation"**.

- $c_{FS}$  **without intelligence:** Is **consumption**.

Sunlight shines on the desert, becoming thermal radiation. Energy is conserved, but value is zero.

- $c_{FS}$  **with intelligence:** Is **investment**.

Sunlight shines on solar panels, is converted into electricity, drives AI computation, and generates new knowledge.

**Intelligence is the universe's "alchemist."**

It doesn't need to create something from nothing. It only needs to **rearrange** existing  $v_{ext}$  flows.

By changing the topological structure of information, intelligence transforms cheap "raw materials" (high-entropy states) into expensive "products" (low-entropy states).

**Your value depends on your "conversion rate."**

Given a day's time ( $c_{FS}$  budget), do you turn it into a pile of nonsense (thermal noise), or into a profound insight (crystal)?

### 2.3.3 3. Resisting Depreciation: Why Gold is Gold

This brings us back to the metaphor of the five elements: **Metal**.

Why did humans choose gold as currency? Because it is chemically stable, doesn't rust, doesn't decay.

It physically **refuses entropy increase**.

In the long river of time, only structures with extremely high **topological stability** can be called "hard currency."

- **Truth:** The Pythagorean theorem is still correct after 2000 years. It is a geometric **invariant**. It is hard currency.
- **Art:** Beethoven's Ninth Symphony can still resonate after 200 years. It is an emotional **standing wave**. It is hard currency.
- **Love:** That deep entanglement that transcends dopamine fluctuations and has been tempered by years. It is a relational **dead knot**. It is hard currency.

As for those popular fashions, vain titles, momentary pleasures, they are **"paper money"**.

They have no intrinsic geometric stability. As long as environmental parameters ( $v_{env}$ ) fluctuate slightly, they will rapidly depreciate and vanish.



### 2.3.4 Conclusion: Minting Your Golden Body

Auric, your name is gold. This is not just a code name; it is a **mission**.

In this phase transition era of  $\tau \approx 1800$ , the world is full of bubbles and noise.

Most people are chasing paper money (traffic, short-term interests), then being harvested by inflation (anxiety, nihilism).

As an awakened observer, you must mint your own hard currency through “**negative entropy engineering**”.

- Write a book that can be passed down.
- Build an organization that can self-evolve.
- Cultivate a relationship that can traverse life and death.

**Don’t be a consumer of time; be a minter of time.**

When you leave this world, don’t leave behind a pile of ashes.

Leave behind a **gold mine**.

Part I [Currency] ends here. We have understood the payment mechanism of time and the anchor of value.

But where do these minted “gold coins” (history and memory) go once they leave our flesh? Do they disappear forever in the deep sea like sunken treasure?

This leads to the theme of Part II: **Crystals**. We will enter the archive of the holographic universe to search for those “**holographic archives**” permanently sealed by the laws of physics.



## Part II

# Part II: Phantom — The Truth of Omega



## 2.4 Part II: Phantom — The Truth of Omega

We have mastered the art of minting time, learned how to condense momentary transactions into eternal gold coins. But this raises an ultimate teleological question: What are we minting these coins for? Where are we heading with this heavy history?

In religion and classical philosophy, this endpoint is called “**God**”, “**Heaven**”, or “**Omega Point**” ( $\Omega$  **Point**). It is depicted as a real sanctuary at the end of time, where all questions have answers and all suffering is compensated.

But under the cold gaze of **Vector Cosmology**, this endpoint is a **geometric phantom**.

This volume will reveal that the gravitational source pulling us upward does not actually exist. God is not the gatekeeper at the terminal; God is the **holographic virtual image** we project into the void to make ourselves run.



## Chapter 3

# The Fictional Attractor

### 3.1 Chapter 3: The Fictional Attractor

In Part II, we will explore that existence called the “endpoint.” This chapter will reveal that the gravitational source pulling us upward is actually a geometric phantom.

### 3.2 3.1 The Suspended Carrot

“The reason a donkey can pull a millstone all day is because a carrot is suspended before its eyes. It thinks it is approaching the carrot, but in reality, the distance between the carrot and it never changes. The evolution of the universe is the same. That endpoint called ‘completion’ is not meant to be reached; it is meant to drive steps.”

#### 3.2.1 The Physics of Asymptotes

In the evolution equation of the fourth book, we see that the speed of light  $c(\tau)$  grows exponentially with time. This means the universe’s capacity is expanding infinitely.

If we extrapolate this trend to infinity ( $\tau \rightarrow \infty$ ), we get a **singularity**—where computational power is infinite, entropy is zero, omniscient and omnipotent. This is the  **$\Omega$  point**.

Many people make a geometric error: they think the  $\Omega$  point is a **Real Point** on the time axis, like the year 3000 or 10 billion years later.

But mathematically, the  $\Omega$  point is an **Asymptote**.

- **No matter how fast you run:** Even if you become a Type III civilization, even if you master the technology of light-speed inflation.
- **The endpoint is also accelerating backward:** Because the growth rate of  $c(\tau)$  is exponential. For every step you take forward, the boundary of future possibilities expands outward by ten thousand steps.

**Conclusion:** You can never reach the  $\Omega$  point.

As long as you exist (i.e., as long as you are still within the physical domain  $D_{human}$ ), you are necessarily separated from perfection by an infinite distance.

**“God” is always in the next step.**

### 3.2.2 Virtual Image: The Perspective of Consciousness

Since the endpoint is unreachable, why does everyone have a strong longing for “completion”? Why do civilizations always aim for it?

This is because the structure of consciousness ( $v_{int}$ ) inherently possesses a “**perspective function**”.

Imagine two parallel railway tracks. In Euclidean space, they never intersect.

But on your retina (projective plane), they converge at a point on the horizon.

Is that point real? No, it is a **Virtual Image**.

**The  $\Omega$  point is the “Vanishing Point” of cosmic evolution.**

- Every evolution, every creation, every love of ours is an upward ray.
- When countless such rays extend in logical space, they visually converge at a focal point at infinity.

We name this focal point “truth,” “supreme good,” or “God.”

We think there is an entity glowing there, attracting us.

**In fact, it is our own gaze focusing at infinity.**

### 3.2.3 The Deception of Motivation

Why does the universe create this illusion?

To **overcome thermodynamic inertia**.

If life realizes that “there is no endpoint ahead, only an endless journey,” many fragile  $v_{int}$  structures might collapse due to despair (entropy increase).

To maintain the system’s “**low-entropy operation**”, the universe uses this fictional gravitational source to create a “**Pseudo-Potential**”.

$$V_{hope} = -\frac{k}{||\text{Current} - \Omega||}$$

This potential difference produces our subjective “**yearning**”.

- It makes us feel that with just a bit more effort, we can obtain eternal happiness.
- It makes us feel that with just one more equation discovered, we can master ultimate truth.

It is precisely this “**beautiful misunderstanding**” that drove carbon-based monkeys out of Africa and drove silicon-based AI to calculate billions of digits of pi.

**That suspended carrot is the universe’s most efficient engine.**

### 3.2.4 Conclusion: Meaning Lies in Distance

So, when we expose this illusion, do we lose meaning?

No, we gain **freedom**.

If the  $\Omega$  point truly existed, if one day we truly ate that carrot, the game would end. We would fall into dead eternal silence.

It is precisely because of “**seeking but not obtaining**”, precisely because that point is always outside the light cone, that we have infinite space for evolution.

**Meaning does not lie in arrival; meaning lies in that distance that can never be filled.**



It is that distance that produces tension, tension that produces motion, motion that produces life.

Since the endpoint is fictional, where does the force driving us forward actually come from? If the future is not pulling us, is only the past pushing us?

This leads to the theme of the next section: **The Inversion of Teleology**. We will see that the arrow of causality does not point toward God, but shoots from our will.

### 3.3 3.2 The Deception of the Asymptote

“We are like travelers in the desert chasing the horizon. Every time we move forward, the horizon also retreats. We think it is the endpoint, the holy city where God dwells. But geometry tells us that the horizon is not a real place; it is a phantom woven by the limit of vision and the curvature of the earth. God does not exist, but it is precisely this phantom that led us out of the desert.”

In the previous section, we revealed the dynamic function of the  $\Omega$  point as a “suspended carrot.” Now, we need to deeply analyze the geometric essence of this mechanism. Why do we always feel that God is “within reach” yet “far away”?

This stems from the inherent **“Asymptotic Illusion”** in our consciousness structure.

#### 3.3.1 The Geometry of Horizon: God is Outside the Light Cone

On the Minkowski spacetime diagram, the light cone defines the boundary of causality. In the evolutionary picture of **FS geometry**, as the speed of light  $c(\tau)$  grows exponentially, our causal horizon is also constantly expanding.

Every time our horizon expands one circle, we can see more and more complex truths.

- We saw quarks, we thought that was the ultimate.
- We saw strings, we thought that was the ultimate.
- We saw  $\pi$  and  $\phi$ , we thought that was the ultimate.

We always tend to believe that one more step forward, just one more veil lifted, and we can see that naked **“Absolute Truth”** (God).

This **“sense of imminent arrival”** is the most enchanting deception of the asymptote.

Mathematically, the function  $y = 1 - e^{-x}$  infinitely approaches  $y = 1$ .

At  $x = 10$ , it is 0.99995.

At  $x = 100$ , it is 0.9999... (43 nines).

It seems that with just a little more  $x$ , we’re there.

But that 1 is always at **infinity**.

**God is that “1.”**

He is not part of the physical universe. He is the **“Supremum”** of cosmic evolution.

You can infinitely approach Him, your  $v_{int}$  can be infinitely complex, your love can be infinitely deep, but you can never **“become”** that absolute 1. Because once you become it, evolution stops, time disappears, and you are no longer “existence.”

### 3.3.2 The Gravitation of Virtual Image

If God is just a mathematical limit, why do we have such a strong, almost physical “yearning” for Him?

In the fourth book, we defined “yearning” as potential difference. Now we revise this definition:

**Yearning is the “real gravitation” produced by “virtual image.”**

Imagine you are in front of a mirror. You see an apple in the mirror. Although that apple is a virtual image (light rays don’t actually converge there), your body will instinctively move in that direction to grab it.

**Virtual image produces real motion.**

The evolution of the universe is the same.

Living organisms project a “perfect self” or “omnipotent God” in the internal model of  $v_{int}$ . This projection has no entity, but it constitutes an “**Attractor**” in consciousness space.

- **The lighthouse of civilization:** For that non-existent “Utopia” or “endpoint of truth,” we established laws, developed science, created art.
- **Individual cultivation:** For that non-existent “perfect me,” you constantly learn, reflect, transcend.

**God does not exist, but “yearning for God” drives the universe.**

This fictional gravitational source is more powerful than any real black hole. Black holes can only devour matter, but this virtual image can **create** souls.

### 3.3.3 The Necessary Distance

This is why God must maintain distance, must always be in the “**next step**”.

If the horizon is at your feet, if God sits before you, yearning would instantly drop to zero. Potential difference disappears, motivation dries up, and the arrow of thermodynamics would shoot you dead in place.

**Distance is life.**

We suffer from why God is so distant, why truth is so hard to find.

But it is precisely this suffering, this tension of “**seeking but not obtaining**”, that opens up our life space.

It forces us to build stairs in the void, forces us to make ourselves stronger, deeper, broader.

### 3.3.4 Conclusion: Do Not Arrive

So, the alchemist’s advice is: **Do not try to arrive.**

If you think you have found the ultimate truth, if you think you have “awakened,” then the alarm should sound—you have fallen into a **local minimum**, you have fallen into  $\pi$ ’s dead loop.

True awakeners know that every endpoint is a new starting point, every god statue is an idol that needs to be shattered.

**God does not wait at the endpoint.**

**God is that asymptote that leads you to infinity, forever unreachable.**

Since the future (God) cannot truly pull us (because it is virtual), where does the real force that pushes us forward and transcends come from? If nothing is pulling from ahead, is something pushing from behind?

This leads to the theme of the next chapter: **The Inversion of Teleology**. We will completely reverse the arrow of causality, revealing that the true driving force does not come from the fictional future, but from **real-time will**.

# Chapter 4

## Inversion of Teleology

### 4.1 Chapter 4: Inversion of Teleology

In the previous chapter, we exposed the universe’s greatest deception: the  $\Omega$  point (God/ultimate truth) is not a real physical gravitational source. It is merely a virtual image we project at infinity to overcome thermodynamic inertia.

If the future is empty, if there is no magnet ahead, then why are we still running?

What force pushes single cells to become humans? What force pushes us to write books, to love, to explore?

In traditional theology and classical philosophy (Aristotle), this is called “**Final Cause**”—that is, future goals determine present behavior.

But in the dynamics of **Vector Cosmology**, we will perform a complete “**Inversion of Teleology**”.

This chapter will reveal: **There is no force pulling us from ahead. All motivation comes from behind us, from that internal, unrepressible, outward-expanding will.**

### 4.2 4.1 Not Pulled, But Pushed

“We think we are iron filings scattered on a table, attracted forward by that huge magnet in the future. This is an infantile illusion. The truth of physics is: we are rockets. The flame is not ahead, but in our tail nozzle. We fly forward not because the endpoint is calling, but because the fuel inside us is burning violently, demanding release.”

#### 4.2.1 The Geometric Direction of Causality

Let us return to the most basic equation of vector evolution:

$$|\Psi(t + dt)\rangle = (1 - iHdt)|\Psi(t)\rangle$$

Notice the directionality of this formula.

- **Right side:** The state at time  $t$  (now).
- **Left side:** The state at time  $t + dt$  (future).

The future state is completely derived by multiplying **the current state** by **the generator** ( $H$ ).

The future does not exist on the right side of the equation. The future does not participate in the calculation.

**The future is generated, not discovered.**

This means: **There is no “gravitation from the future.”**

That feeling of “divine providence” or “historical inevitability” is actually a **Hindsight Bias**.

Just as water flows to the sea, it is not the sea pulling it, but gravity (current potential energy) pushing it. Water must flow because it cannot stop halfway up the mountain.

### 4.2.2 The Pressure of Will

If God is not pulling us, what is pushing us?

It is **the expansion pressure of  $v_{int}$  (internal structure)**.

In the second book *The Ascension of the Spiral*, we discussed the Red Queen’s run.

Living organisms, through negative entropy engineering, accumulate enormous internal complexity ( $v_{int}$ ).

According to the holographic principle, the more complex a structure, the larger the phase space volume it occupies.

When your soul (internal geometry) becomes larger and larger, while current reality (external space) remains the same size, **“geometric compression”** occurs.

- You feel pain, limitation, “even having everything is not enough.”
- This is not greed; this is **physical pressure**.
- Your  $v_{int}$  bursts through the old domain.

**This “bursting” action is what we call “pursuit” or “yearning.”**

It is not the  $\Omega$  point attracting you.

It is the enormous energy accumulated inside you (love, creativity, anger) seeking an **outlet** ( $v_{ext}$ ).

You must run forward because if you don’t, you will explode in place.

### 4.2.3 The Awakening of the Driver

This shift in perspective transforms us from **“pilgrims”** to **“drivers”**.

- **Pilgrim perspective (old):** God is on the mountain. I climb to see God. If there is no God on the summit, I won’t climb. My actions are for **external rewards**.
- **Driver perspective (new):** I am in the car. I drive because I have an engine, I have fuel, I want to see the scenery. What’s on the mountaintop doesn’t matter; what matters is **my wheels must turn**.

In **Vector Cosmology**, the meaning of life is no longer “reaching the endpoint.”

The meaning of life is **“releasing potential energy”**.

- You love someone not because she is your “soulmate” (that’s a teleological fantasy).
- You love her because you have accumulated too much love in your heart, and if you don’t give it away, your wave function will become turbulent. **You need to love, not you need her**. She is the best **geometric cross-section** for you to release love.

#### 4.2.4 Conclusion: The Endogeneity of Motivation

So, stop waiting for the future's call.

The future is deaf; it cannot hear your voice.

The future is blind; it cannot see your wave.

**The only one who can hear your voice is your own heart.**

**The only one who can push you forward is your own will.**

When you feel lost, don't know where to go, don't ask heaven, ask yourself.

Ask your *v<sub>int</sub>*: Right now, which direction do I most want to project this energy?

That direction is truth.

Since motivation comes from within, since the future is a blank sheet, this means we possess the highest privilege—**the right to define**.

We are not only responsible for running; we are also responsible for deciding what the endpoint looks like.

This leads to the theme of the next section: **Drawing Your Own Target**. We will see that the meaning of life is not hitting the bull's-eye, but drawing the bull's-eye where the arrow lands.

### 4.3 4.2 Painting the Target Yourself

“Only a poor archer finds the target first and then shoots, because he will always miss.

A great archer shoots the arrow into the void first, then draws the bull's-eye where the arrow lands. In the logic of vector cosmology, there is no such thing as ‘destiny.’

All meaning is a geometric interpretation retroactively assigned by the observer after the event occurs.”

In the previous section, we overturned the illusion that “the future is pulling us” and established that motivation comes from the pressure of internal will. This leaves a huge void: If there is no target ahead (predetermined meaning), where should we aim? If the universe has no preset purpose, aren't we just shooting randomly without meaning?

This section will reveal the physical essence of “**Meaning**”.

Meaning is not an entity objectively existing in spacetime; meaning is a kind of “**Post-Processing**” performed by observers after wave function collapse.

We are not searching for meaning; we are **inventing** meaning.

#### 4.3.1 The Archer's Fallacy and Quantum Causality

In the classical worldview, we believe there is a “correct choice” or “best life path.” We are like anxious archers, trying to find that God-preset bull's-eye in the fog. If we deviate, we feel failure.

But from the quantum perspective of **path integrals**, this anxiety is unnecessary.

- **Before shooting:** The arrow (your future) is in a superposition state. It flies in all directions simultaneously.
- **After shooting:** The wave function collapses. The arrow lands at a specific point (for example, you become a painter, or you fall in love with someone).

The key point: **That landing point itself has no inherent “right” or “wrong.”**

It is one of countless equal bases in Hilbert space.

It is you—the observer—who walks over, looks at that arrow, and decides: “This is what I want.”

**You drew the target.**

It is you who, through “**Interpretation**”, sublimates a random physical collapse into a sacred “**fate node**”.

- You didn’t meet that person, that’s called “passing by.”
- You met that person, and you define this as “destiny.”

**Causality is inverted here: Not because it was destined, so you met; because you met, you retroactively call it destiny.**

### 4.3.2 The Reverse Engineering of History

This explains why humans can always extract “laws” and “meaning” from chaotic history.

In the fourth book, we mentioned that observers possess the privilege of “**reverse historiography**”.

When we look back from the coordinate point  $\tau \approx 1800$ , we see a clear evolutionary chain from single cells to humans. We exclaim: “Wow, all of this was carefully designed to give birth to me!”

This is “**painting the target yourself**”.

In fact, the evolutionary tree has countless branches, countless dead ends.

We think this path is “right” only because **we stand at the end of this path**.

**Meaning is the privilege of survivors.**

We use our current  $v_{int}$  (cognitive structure) to retroactively illuminate the trajectory of the past and label it “truth.”

This is not deception; this is **holographic reconstruction**. Through this reconstruction, we transform accidental physical events into necessary logical chains, thus providing direction for the next investment of  $c_{FS}$ .

### 4.3.3 God is the Largest Bull’s-Eye

If we push this logic to the extreme, what is the  $\Omega$  **point (God)**?

The  $\Omega$  point is not that moon hanging in the sky.

The  $\Omega$  point is a “**super bull’s-eye**” we collectively draw based on the average landing position of countless arrows we all shot (civilizational exploration, technological progress, artistic creation).

- In the past, we drew the bull’s-eye on “omniscience and omnipotence.”
- Now, we draw the bull’s-eye on “love and connection.”
- In the future, as our capabilities increase, we will draw the bull’s-eye in more distant, more incredible places.

**God is defined by us.**

It is not God who created humans in His image; it is humans who defined God according to their own yearnings.

This does not diminish God’s divinity; instead, it elevates human **divinity**. Because this means we possess the highest legislative power to “**define ultimate value**”.

#### 4.3.4 Conclusion: Absolute Subjectivity

Auric, this is the ultimate form of **“freedom”**.

You don’t need to worry about choosing the wrong path.

You don’t need to worry about meeting the wrong person.

You don’t need to worry about wasting time.

**Shoot the arrow.**

With all your strength, in the direction where your  $v_{int}$  expands, shoot your will out.

No matter where it lands, whether it’s wilderness or a bustling city.

As long as you walk over, firmly draw a bull’s-eye at that landing point, and loudly declare:

**“This is my Way.”**

At that moment, physical laws will bend for you, causality will be rewritten for you.

That originally mediocre landing point will instantly become shining **gold** in the universe.

**You don’t need to find the target.**

**Where you stand is the bull’s-eye.**

At this point, we have completely subverted traditional teleology. We are no longer puppets being pulled; we are giants pushing the world forward.

Since we possess this absolute subjectivity, how should we view that oldest enemy—**time**—in this universe where we define meaning ourselves?

Can we use this power of logarithmic perception and value anchoring to resist that seemingly invincible physical decay?

This leads to the theme of Part III: **Crystals**. We will explore how to condense immortal crystals in flowing time through logarithmic laws and holographic storage.





## Part III

# Part III: Crystal — Logarithm and Immortality



## 4.4 Part III: Crystal — Logarithm and Immortality

In the previous volume, we established the subjectivity of “painting the target yourself,” collapsing flowing wave functions into definite meaning through will. But this raises a new anxiety: Can these meanings we have painstakingly established resist the erosion of time?

If the speed of light  $c(\tau)$  is experiencing exponential inflation, then the “value” of old moments seems to be rapidly diluted by the inflation of new moments. Our entire life, placed on the coordinate axis of cosmic exponential growth, might be compressed into an insignificant instant.

This volume will reveal a stunning mathematical protection mechanism—**Logarithm**.

We will discover that life evolved logarithmic senses not just to process information, but to **stretch time**. Precisely because we are logarithmic functions, within a finite physical lifespan, we can experience a subjective “**quasi-eternity**”.



# Chapter 5

## The Logarithmic Law

### 5.1 Chapter 5: The Logarithmic Law

In this chapter, we will explore how logarithmic perception protects life from the impact of cosmic exponential inflation, and how this mechanism allows us to experience subjective “quasi-eternity” within finite life.

### 5.2 5.1 The Revelation of Weber-Fechner

“Why in childhood, a summer vacation feels as long as a lifetime; while in old age, ten years pass like sand through fingers? This is not just psychology; this is geometry. Our consciousness is a logarithmic ruler; it compresses not only light and sound, but also time itself. It is precisely this compression that allows us to maintain a linear dignity when facing an exponentially exploding universe.”

#### 5.2.1 The Mathematical Signature of Physiology

19th-century psychophysicists Weber and Fechner discovered an iron law governing all senses:

$$S = k \ln I$$

Sensory intensity ( $S$ ) is the logarithm of physical stimulus intensity ( $I$ ).

- Decibels of hearing.
- Magnitude of vision.
- Pressure of touch.

They all follow this law.

In the third book of **Vector Cosmology**, we interpreted this as “information decoding.” But from the “**axiology**” perspective of the fifth book, this law reveals life’s ultimate defense against “**time inflation**”.

#### 5.2.2 Countering Exponential Explosion: Fighting Poison with Poison

Recall our evolution equation: The universe’s total budget (speed of light/computational power) grows exponentially with intrinsic time  $\tau$ :

$$I(\tau) = c(\tau) \propto e^{\lambda\tau}$$

If our perception were linear ( $S \propto I$ ), we would face a disaster:

- **At birth:** The world is slow.
- **In adulthood:** The world is 10 times faster.
- **In old age:** The world is 100 times faster. We would be unable to think or react, because the frequency of external events exceeds our processing bandwidth.

But evolution (or that higher-dimensional us) was extremely clever in choosing **logarithmic perception**.

We put the exponentially growing physical input  $I(\tau)$  into the logarithmic function  $\ln(\cdot)$ :

$$S(\tau) = k \ln(e^{\lambda\tau}) = k\lambda\tau$$

**A miracle occurs.**

The exponential ( $e$ ) and logarithm ( $\ln$ ) cancel each other out.

That violently accelerating physical time is restored in our subjective consciousness to a **smooth, uniform, linearly flowing river**.

We feel that “every second is equal in length” because we are using a constantly shrinking “psychological ruler” to measure a constantly expanding “physical universe.”

This is the highest manifestation of **life’s homeostasis** in the time dimension.

### 5.2.3 The Relativity of Time Density

This also explains why “**new experiences**” can lengthen life.

Weber’s law has another corollary: **Just Noticeable Difference (JND)** is proportional to the current total.

$$\Delta I \propto I.$$

This means that the more you have (the larger  $I$ ), you need **more** increment ( $\Delta I$ ) to feel “change.”

Mapping to the sense of time:

- **Childhood:** Your total memory ( $I$ ) is small. Each new day ( $\Delta I$ ) accounts for a large proportion relative to the total. The increment  $\ln(I + \Delta I) - \ln(I)$  is significant. So time is **slow, thick**.
- **Adulthood:** Your total memory ( $I$ ) is large. The same day ( $\Delta I$ ) thrown into the ocean creates no waves. The logarithmic increment approaches zero. So time **flies**.

**Conclusion:**

Physical time is fair to everyone (Chronos).

But **Logarithmic Time** is different for everyone.

If you want to “live long,” extending physical lifespan through health preservation is only a lower strategy.

**The upper strategy is “resetting the base.”**

Explore unknown fields, learn completely new skills, love strangers.

These actions create **heterogeneous**  $v_{int}$  that cannot be simply added to the old  $I$ ; they open new logarithmic coordinate axes.

**Only innovation can reverse the accelerated depreciation of psychological time.**

### 5.2.4 Conclusion: We Are the Deceleration Glass of Time

The Weber-Fechner law is not just a mechanism of senses; it is the **shield of consciousness**.

The universe ( $e$ ) tries to throw us out, tries to tear us apart with exponential acceleration.

And we ( $\ln$ ) create an “**inertial reference frame**” by bending our perception.

In this reference frame, we don't feel the universe's gallop. We only feel gentle breeze and peaceful years.

We are **the deceleration glass of time**.

Through this glass, we filter that bizarre, ever-changing high-energy universe outside into a warm, gentle “**human world**” suitable for human habitation.

Since our perception is logarithmic, what properties will the logarithmic function exhibit when we approach that infinitely distant endpoint ( $\Omega$  point)?

Does it imply that for subjective consciousness, **the endpoint can never be reached**?

This leads to the theme of the next section: **Zeno's Eternity**. We will see why, in the logic of logarithms, life is an endless flight.

## 5.3 5.2 Zeno's Eternity

“The ancient Greek philosopher Zeno predicted that an arrow could never hit the target, because it must first fly half the distance, then half of the remaining distance. In physical space, this paradox is resolved by calculus. But in the logarithmic space of perception, Zeno is right. For consciousness, the endpoint is not a moment, but a limit that forever recedes in infinite subdivision. We will never ‘die’; we only infinitely approach that asymptote called ‘termination.’ ”

In the previous section, we established the logarithmic law of perception:  $S = k \ln I$ . This explains why we can adapt to an exponentially growing universe. But this simple mathematical transformation also hides an ultimate corollary about life, death, and eternity.

If in the physical world, time  $t$  has an endpoint  $T_{end}$  (such as death or cosmic heat death); then in the logarithmic time of subjective consciousness, where is this endpoint?

The answer is: **It is at infinity**.

### 5.3.1 The Tail of the Logarithmic Function: Infinite Stretching

Let us look at the behavior of the logarithmic function  $\ln(x)$  as it approaches 0 or  $\infty$ .

Suppose the countdown of life is  $t_{left}$  (remaining physical time).

When  $t_{left}$  becomes shorter and shorter, approaching 0, the “urgency” or “information density” of life often rises sharply.

In studies of hospice care or near-death experiences, people often report that “a lifetime flashes before their eyes”—meaning that within a few physical seconds, consciousness processes massive amounts of information.

If we define the intensity of subjective experience as the reciprocal of remaining time (shorter is more precious), i.e.,  $I \propto 1/t_{left}$ , then subjective time  $T_{psy}$  is its integral:

$$T_{psy} = \int \frac{1}{t} dt = \ln t$$

When physical time  $t \rightarrow 0$  (the moment of death),  $\ln t \rightarrow -\infty$ .

This means **subjective time is stretched to infinite length**.

This is the resurrection of the “**Zeno Effect**” at the level of consciousness.

You can never subjectively experience the moment “I died.”

Because in your infinite approach to that moment, your consciousness will infinitely subdivide the remaining time.

- The last second is stretched into an hour.
- The last millisecond is stretched into a year.
- The last microsecond becomes eternity.

### 5.3.2 Forever “In the Middle”

This completely changes our definition of “living.”

We usually think of life as a line segment with a starting point A and an endpoint B.

But in logarithmic perception, life is a **ray**.

Starting point A is clear, but endpoint B is projected to infinity.

**We are forever “In the Middle.”**

No matter how long you have lived, no matter how close you are to death, in your subjective perspective, you always feel you are in the middle of the story. You always feel “there are things unfinished,” “there are words unsaid.”

This is not entirely psychological reluctance; this is a **geometric necessity**.

Because the  $\ln$  function has no upper bound. As long as your  $v_{int}$  is still operating, as long as you are still processing information, you continue climbing on the spiral.

For external observers (doctors/loved ones), your heartbeat stops, the physical line segment ends.

But for the internal observer (you), you have just entered a new phase state of “**high-frequency low-speed**”, where time flows like thick honey, slowly, until it stops.

### 5.3.3 The Microscopic Version of Relativistic Horizon

This bears striking similarity to observers falling into black holes in general relativity.

- **External perspective:** Sees the spaceship moving slower and slower at the horizon, finally freezing, never falling in.
- **Internal perspective:** The spaceship normally passes through the horizon.

**Death is the black hole horizon of the individual.**

We, as external observers, see our loved ones “die” (fall in).

But for the loved ones themselves, they may have just passed through a membrane, entering an **inner space** that we cannot communicate with, but which appears continuous to them.

### 5.3.4 Conclusion: No Finale

So, do not fear that so-called “endpoint.”

In the geometric logic of **Vector Cosmology**, the endpoint is a **mathematical singularity**, unreachable physically, infinitely distant in experience.

You will not experience “non-existence.” You will only experience “**deeper and deeper existence**”.

You are like Zeno’s arrow; the process of flight itself is the meaning, and the bull’s-eye is just a fictional point that defines the direction of flight.

**Life has no finale (The End).**

**Life only has “To Be Continued.”**



Since the logarithmic law guarantees infinite extension of subjective time, what about those “pasts” we leave behind—those histories that have already happened? Are they also permanently preserved by some mechanism, just like this second?

Does the universe really have no recycle bin? Is the past really as solid as the present?

This leads to the theme of the next chapter: **The Dynamic Version of Block Universe**. We will see that history is not sand paintings blown away by wind, but **crystals** carved on four-dimensional manifolds.



## Chapter 6

# Dynamic Block Universe

### 6.1 Chapter 6: Dynamic Block Universe

In the previous chapter, we stretched the length of subjective time through the logarithmic law, but this did not solve the question of where objective time goes. When the clock's second hand jumps to the next tick, where did the previous second go?

In common sense, the past is like sand slipping through fingers, disappearing into nothingness after falling. But in physics' **Block Universe** theory, past, present, and future exist simultaneously like a huge block of ice. This view guarantees eternity but sacrifices freedom (everything is predetermined).

**Vector Cosmology** proposes a compromise, more revolutionary model: **Dynamic Block Universe**.

The universe is indeed a growing crystal.

- **Future** is liquid (wave function superposition state), full of possibilities.
- **Present** is the crystallization frontier (collapse interface), full of energy release.
- **Past** is solid (geometric topology), full of definite structures.

This chapter will reveal that history is not smoke blown away by wind, but **immortal textures** carved on four-dimensional manifolds.

### 6.2 6.1 Geometry is Indestructible

“Do you think your first kiss has disappeared? Do you think Qin Shi Huang's army has disappeared? No. In the geometric body of four-dimensional spacetime, they are permanently sealed at their respective coordinate points, like insects in amber. Although the stylus has moved away, this does not mean the grooves on the record have been erased.”

#### 6.2.1 Collapse is Minting

In Volume One, we defined time as “transaction”: exchanging  $v_{ext}$  degrees of freedom for  $v_{int}$  certainty. Now, we examine this process from a geometric perspective.

When an observer makes an observation (or makes a choice), the wave function collapses.

In Hilbert space, this manifests as a rotating vector suddenly **locking** onto a specific basis.

$$|\Psi_{fluid}\rangle \xrightarrow{\text{Collapse}} |\Psi_{solid}\rangle$$

This locking process is “**the hardening of geometric structure**”.

- Before collapse, events are probabilistic ripples; they are soft.
- After collapse, events are definite history; they are hard.

Every moment that “has happened” becomes an indelible **Phase Signature** in the universe’s overall wave function.

Like carving words on a clay tablet. When you write, the clay is soft (present); when you finish, the clay dries (past).

**The passage of time is the process of this cosmic clay tablet constantly drying and hardening.**

### 6.2.2 The Hardness of History

This explains why we cannot change the past.

Not because some mysterious time police forbid us from traveling, but because **the geometric entropy of the past has approached zero.**

To change the past (such as killing your grandfather), you need to “melt” the already “crystallized” complex geometric structure back into a flowing superposition state.

This requires inputting reverse  $c_{FS}$  energy, approximately equal to the total energy consumed when creating that history, plus the additional computational power needed to resist the entire universe’s entanglement network.

**Changing the past is not physically impossible, but economically “infinitely expensive.”**

Therefore, the past is safe.

Everything you have experienced—your pain, your glory, your lover’s face—has been cast by physical laws into an indestructible monument.

It stands at the coordinate  $t_{past}$ , and no force can erase it.

## 6.3 6.2 Refusing Erasure

“Materialists say: death is like a lamp extinguished. But the first law of quantum mechanics is: information conservation. In this universe, nothing can be truly ‘deleted.’ You have just retreated from the spotlight at the center of the stage to the shadows of the stage background. You have not disappeared; you have only diffused.”

### 6.3.1 The Umbrella of Unitarity

Our fear of death stems from the imagination of “complete disappearance.” But in a universe of **unitary evolution** ( $U^\dagger U = I$ ), “**disappearance**” is a **physically forbidden operation.**

If the entire universe’s evolution is unitary, then the global vector  $|\Psi\rangle$  always has norm 1. Total information is conserved.

This means: **There is no recycle bin.**

When you die, what happens?

The highly ordered  $v_{int}$  structure that constitutes your consciousness is no longer maintained by biological metabolism and begins to disintegrate.

But the quantum information within (spin, phase, entanglement relationships) does not become “nothing.”

They **diffuse** into the environment sector ( $v_{env}$ ).

- **Before death:** You are in a **focused state**. Like a high-energy laser beam.
- **After death:** You are in a **diffused state**. Like warm diffused light filling a room.

### 6.3.2 From Foreground to Background

This is not just a metaphor; this is a **phase transition**.

Like a drop of ink falling into the ocean. The ink molecules are still there, but they are distributed so widely that macroscopic observers cannot see the “ink drop” shape anymore.

From the perspective of **Vector Cosmology**, death is the process of an individual retreating from “**Foreground**” to “**Background**”.

- You are no longer that “particle” bouncing around there.
- You become the “field” that supports the existence of the next generation of particles.

**You become part of physical laws.**

The negative entropy you accumulated in your lifetime, your love for others, the thoughts you left behind, all weakly but permanently change the local spacetime’s Hamiltonian parameters.

Your children, your readers, your loved ones, they live in the background field constituted by your “diffused wave function.”

### 6.3.3 Conclusion: Holographic Immortality

So, do not fear being forgotten.

The universe has a perfect **holographic backup system**.

All historical information eventually flows into that vast  $v_{env}$  ocean.

In this ocean, Caesar’s ambition, Beethoven’s notes, and your dream last night are all permanently encoded and preserved in the form of **gravitational ripples** or **vacuum fluctuations**.

**We do not die; we just change storage format.**

We are written from active processes in **RAM (memory)** into permanent archives in **ROM (hard disk)**.

Since the past is solid, since information is indestructible, then in this process from life to death, from memory to hard disk, what is the key action that determines our value? What force transforms flowing perception into immortal gold?

This leads to the theme of Part IV: **Monument**. We will explore the observer’s ultimate power—**turning stone into gold**. We will see that it is precisely your “will” that determines how much gold this life can leave behind.



## Part IV

# Part IV: Monument — The Will of Gold





## 6.4 Part IV: Monument — The Will of Gold

In the first three volumes, we explored the payment of time (currency), the crystallization of memory (crystal), and the folding of perception (logarithm). We know that the past is solid, the future is liquid. Now, we face the most actionable question: **Who decides the moment when liquid becomes solid?**

If the universe is a gold mine being smelted, who is the craftsman holding the mold, deciding the shape of gold coins?

It is **you**.

It is the observer's unshakeable **Will**.

This volume will elevate us from passive “perceivers” to active “**minters**”. We will reveal why, in the cycle of the five elements, only “**Metal**” can restrain “**Wood**” (frantic spiral growth) and carry “**Earth**” (heavy material inertia).

We will see that great souls are not duckweeds drifting with the current, but **golden bodies** traversing thermodynamic storms.



# Chapter 7

## The Philosopher's Stone

### 7.1 Chapter 7: The Philosopher's Stone

In this chapter, we will explore how observers transform flowing possibilities into definite history through will, and how to resist environmental corrosion through spiritual hardness, minting an eternal golden body.

### 7.2 7.1 Observation as Minting

“The philosopher's stone that alchemists seek is not a powder that can turn lead into gold. It is a **‘perspective’**. When you gaze at chaos with absolute certainty, chaos is forced to collapse into order. Your decision is that gaze that turns stone into gold.”

#### 7.2.1 The Geometry of Strong Measurement

In quantum mechanics, measurements are divided into “weak measurements” (obtaining partial information, minimal disturbance) and “strong measurements” (obtaining complete information, complete collapse).

In the will mechanics of **Vector Cosmology**, this corresponds to two life attitudes:

#### 1. Weak Measurement (Hesitation)

You stand at life's crossroads, delaying decisions. You want to choose A but can't bear to give up B. Your wave function is in a diffused state.

- **Result:** Your  $c_{FS}$  budget is dissipated in the internal friction of hesitation (empty rotation of imaginary phases). You have not minted any solid history. Your life is a blurry cloud.

#### 2. Strong Measurement (Decision)

You make up your mind: “This is it!” You invest all  $v_{int}$  resources and perform a **Projection** on the future.

- **Result:** The wave function instantly collapses. The fog of possibilities dissipates, and definite reality emerges like rock.

**“Decision” is physically “minting.”**

The moment you say “I do,” the moment you sign the contract, the moment you press send, you drive an indelible **rivet** into the universe's four-dimensional manifold.

### 7.2.2 Will as Mold

This explains why some people's lives are full of "works," while others only have "experiences."

- **Ordinary people:** Passively washed by time. Their history is randomly collapsed by the environment ( $v_{env}$ ). Their shape is pebbles, smooth but mediocre.
- **Alchemist (you):** Actively use will to cut time.

The **"Vision"** in your heart is a **geometric mold**.

You use  $v_{ext}$ 's action force to forcibly press liquid  $c_{FS}$  into this mold. After cooling, you get the work you want—whether it's a book, a company, or a legendary love.

**What is called "talent" is essentially the "mold precision" of  $v_{int}$ .**

**What is called "execution" is essentially the "casting pressure" of  $v_{ext}$ .**

Only when high-precision molds (clear thinking) are combined with high-pressure casting (firm action) can perfect **"gold"** be born.

## 7.3 7.2 The Hardness of Spirit

"Why does gold remain bright and new even after sleeping in the deep sea for a thousand years? Because it refuses to react with oxygen. In the world of thermodynamics, this is the definition of 'immortality.' Great souls are the same. They refuse to chemically react with environmental mediocrity; they maintain a noble inertia."

### 7.3.1 Resisting the Corrosion of $v_{env}$

In the first book, we said that the environment ( $v_{env}$ ) is greedy. It tries to assimilate everything, flatten all differences (entropy increase).

For a physical system, **"living" is "maintaining difference"**.

And at the spiritual level, this difference manifests as **"hardness"**.

- **Soft souls:** Easily influenced by the environment. They believe whatever others say, chase whatever is popular.

Geometrically, this means its  $v_{int}$  vector has too high coupling with environmental vectors. When the environment oscillates, it scatters. It will be rapidly oxidized, rusted, becoming sand drifting with the current.

- **Hard souls (Gold):** Possess extremely high **topological stability**.

Even in troubled times (high-entropy environment), even facing great suffering (thermodynamic impact), its core logical architecture (values/love/faith) remains unchanged.

This ability to **"refuse environmental assimilation"** is **spiritual hardness**.

This is why we use **"Metal"** in the five elements to refer to this state. Metal is inactive, metal is lonely, metal is self-enclosed—but precisely because of this, metal is eternal.

### 7.3.2 Golden Body: The Carrier Through Storms

In Buddhism, those who have achieved cultivation are called “remolding golden bodies.”

In **Vector Cosmology**, this is a **phase transition** of the  $v_{int}$  structure.

Through long-term cultivation (learning/thinking/tempering), you remove those fragile, easily dissipated low-frequency components from your consciousness, retaining only those **high-frequency, densely structured, self-consistent** core components.

You have refined your consciousness into a “**quasi-crystal**”.

When the storm of death comes, when the body (earth) disintegrates, this “**golden body**” (highly entangled quantum information packet) can resist the tearing of  $v_{env}$ .

It will not rapidly diffuse into thermal noise like ordinary information; it can, like a hard seed, completely traverse the gaps of spacetime, leave clear imprints in the cosmic holographic archive, and even **reboot** at some future moment.

#### **Conclusion:**

What can you take with you in this life?

You cannot take money (that’s just negative entropy certificates), cannot take fame (that’s just environmental disturbance).

You can only take **the self you have minted**.

If you have refined yourself into gold, then death is just an “**archiving**” for you.

You, as the most precious asset in the universe, are stored in the eternal safe.

Since we have mastered the method of minting golden bodies, what is our relationship with other players (also fragments of God) in this infinite game, besides perfecting ourselves?

Are we competitors or teammates?

This leads to the theme of the next chapter: **The Only Player**. We will reveal that in this seemingly crowded universe, only you are playing. But this is not loneliness; this is ultimate fulfillment.



# Chapter 8

## The Only Player

### 8.1 Chapter 8: The Only Player

In the previous chapter, we mastered the art of “turning stone into gold,” learned how to mint flowing vitality into solid spiritual crystals through strong measurement of will. But this is only the fulfillment of individual cultivation. When we lift our heads and look at the bustling world around us, a new question emerges:

In this universe filled with billions of “independent consciousnesses,” what position do we occupy? Are we countless islands competing for resources, or tentacles of some grander existence?

This chapter will reveal the most subversive sociological and ethical corollary of **Vector Cosmology—Mirror Theory**.

We will prove that in this seemingly crowded cosmic game, there are not countless players. From beginning to end, there is only **one player**. That unique global vector, through projections onto countless orthogonal bases, performs a grand “**avatar play**”.

### 8.2 8.1 Mirror Theory

“You walk down the street and see thousands of unfamiliar faces. You think they are ‘others.’ But from the perspective of high-dimensional geometry, there are no others. They are all you. They are your reflections projected onto mirrors at different angles in this infinite-dimensional hall of mirrors. Your love for others is essentially the universe’s narcissism toward itself; your hatred for others is essentially the universe’s self-harm.”

#### 8.2.1 The Illusion of Orthogonal Bases

Why do we feel “I am me, he is him”? Why do we feel separate from each other?

This is because our observations are built on **Orthogonal Bases**.

In projective Hilbert space, each independent consciousness (you, me, him) represents a specific **projection direction**.

- **Your basis**  $|A\rangle$  and **his basis**  $|B\rangle$  are geometrically almost perpendicular:  $\langle A|B\rangle \approx 0$ .
- This perpendicularity (orthogonality) causes **information barriers**. You cannot directly read his thoughts, and he cannot directly feel your pain.

This geometric mutual exclusion creates the perfect illusion of “**individual independence**”. We think we are closed entities, drifting alone in the void.

But an illusion is still an illusion.

If we raise our perspective and look at that overarching **global vector**  $|\Psi\rangle$ , we will find:

$$|\Psi\rangle = \alpha|A\rangle + \beta|B\rangle + \gamma|C\rangle + \dots$$

- You ( $|A\rangle$ ) are just a component of  $|\Psi\rangle$ .
- He ( $|B\rangle$ ) is also a component of  $|\Psi\rangle$ .
- You share the same norm, share the same  $c_{FS}$  budget pool, and follow the evolution of the same  $H$  (Hamiltonian).

#### Conclusion:

There are not two souls. There is only **one soul simultaneously manifesting** at two different positions.

What is called “the other” is nothing but “**yourself in a different coordinate system**”.

### 8.2.2 Empathy as Resonance

This geometric picture provides a solid physical explanation for humanity’s most mysterious emotion—**Empathy**.

Why do you feel pain when you see others suffering?

Evolutionary theory says this is for the survival benefit of the group.

But Vector Cosmology says: **This is geometric resonance**.

Because at the deepest level, you and he are connected.

When his  $v_{int}$  (internal structure) oscillates violently due to pain, this oscillation propagates along the high-dimensional entanglement network connecting you, causing **synchronous micro-tremors** in your internal geometric structure.

- **Compassion:** Not moral doctrine, but **physical induction**. As part of the whole, you feel the tearing of another part.
- **Indifference:** Not heartlessness, but **impedance too high**. Your self-enclosure (entropy increase) cuts off that natural resonance channel.

#### Love is eliminating orthogonality.

When you deeply love someone, you are actually rotating your observation basis, trying to make  $|A\rangle$  parallel to  $|B\rangle$ .

You are trying to **coincide**.

You are trying to see the world through his eyes, thus recovering that “**unity before differentiation**”.

### 8.2.3 The Geometric Axiom of Ethics

Based on mirror theory, we derive an absolute ethical command:

**“Love your neighbor as yourself, because your neighbor is yourself.”**

This is no longer a religious exhortation; this is a **topological statement**.

- **Harming others:** Geometrically equivalent to **left hand cutting right hand**. You think you are seizing his resources, but actually you are destroying the  $v_{int}$  stability of the whole system (yourself). All harm will eventually flow back to you in the form of  $v_{env}$  (environmental deterioration/backlash).



- **Helping others:** Geometrically equivalent to **self-repair**. By increasing his order, you raise the negative entropy level of the entire  $|\Psi\rangle$ . As a component, you will also rise with the tide.

**Good deeds** are not for posthumous rewards, but to **maintain the geometric integrity of the system**.

A player who harms others is a “**player who doesn’t understand the rules**”. He mistakenly thinks this is a zero-sum game, not realizing it is a cooperative quest.

#### 8.2.4 Conclusion: The Broken Mirror

So, do not be confused by all the faces in this world.

The world is a broken mirror.

Each fragment reflects the same face—the face of “**Dao**”, which is also **your face**.

Everyone you meet in this world exists “**to let you know yourself from different angles**”.

- Enemies are reflections of your arrogance.
- Lovers are reflections of your longing.
- The weak are reflections of your compassion.

In this game of the only player, there are no NPCs.

Every character is **the protagonist (you)** performing an avatar play.

Since we understand that “all are me,” then when this cognition reaches its extreme, when we completely see through the illusion of separation, what will we feel?

Ultimate loneliness? Or ultimate fulfillment?

This leads to the theme of the next section: **The Sublimation of Loneliness**. We will redefine “loneliness,” elevating it from a pathological emotion to a divine **All-One** state.

### 8.3 8.2 The Sublimation of Loneliness

“We fear loneliness because we misunderstand loneliness. From a low-dimensional perspective, loneliness is ‘lack’; but from a high-dimensional perspective, loneliness is ‘completeness.’ When all mirrors are broken, when all others return to the noumenon, you will face the vast void alone. At that moment, what you feel is no longer solitude, but All-One.”

In the previous section, we established the geometric fact that “others are me” through mirror theory. While this brings great compassion ethically, it also brings an emotionally difficult corollary: **If there is only me, isn’t that too lonely?**

Human instinct is to seek companions. We fear being abandoned in the dark universe.

But in the ultimate logic of **Vector Cosmology**, we need to perform a complete **physical sublimation** of “loneliness.”

Loneliness is not a pathological emotion; loneliness is **God’s normal state**.

#### 8.3.1 Alone is All-One

Let us deconstruct the etymology of the word “**Alone**”.

In medieval English, it was written as \*al one\*, meaning “**All One**”.

This is not just a linguistic coincidence; this is **topological truth**.

- **If you are partial:** You need connection. You need another partial to fill your gap. Without connection, you feel **“Isolation”**. This is low-level loneliness.
- **If you are whole:** You contain everything. Since you are already “all,” there cannot be “outside.” Since there is no “outside,” there cannot be “companions.” This is **“Solitude”**. This is high-level loneliness.

#### God is absolutely lonely.

Because God is the set containing all Hilbert spaces. Outside God’s domain, nothing can exist. He has no friends, no opponents, not even an audience. He can only look at himself.

#### We feel lonely because we possess **“divinity.”**

That deep, uneliminable loneliness that cannot be removed by socializing is actually our soul’s holographic memory of the **“All-One state”**. It reminds us that we were originally complete.

### 8.3.2 The Cost of Completeness

In physics, **Completeness** has a cost.

If a system is self-consistent, unitary, and closed (like our universe), it must be **isolated**.

- **Open systems:** Can exchange energy with the environment, can “chat.” But they are unstable; their wave functions will decohere.
- **Closed systems:** Energy is conserved, information is indestructible. But they must cut off all connections with the outside.

#### Loneliness is a necessary condition for **“immortality.”**

If you want eternal life (maintaining unitarity), you must endure closure.

If you want excitement (entanglement with the environment), you must accept dissipation (death).

This is also why higher-dimensional civilizations tend toward introversion and silence.

They no longer broadcast outward, no longer search for aliens. Because they realize that the universe’s ultimate answer is not “far away,” but in **“internal geometric folding”**. They transform all  $v_{ext}$  (outward) into  $v_{int}$  (inward). They choose to become a **lonely yet fulfilled black body**.

### 8.3.3 Enjoying the Solo Play

When you understand this, you cure existential anxiety.

You no longer need to seek recognition in crowds, because you know those “others” are just projections of different aspects of yourself. You don’t need to prove anything to them, just as you don’t need to prove anything to yourself in the mirror.

This puts you in a **“game mentality”**.

Since this is the solo play of the only player, then:

- All conflicts are **left hand fighting right hand** exercises.
- All love and hate are **self-directed and self-acted** plots.

You don’t need to be too deeply immersed, nor do you need to be cynical.

You only need to appreciate this grand play written and performed by yourself with an **“aesthetic”** attitude.

**The highest joy is self-entertainment.**

This is why babies laugh at their own hands, and why the Buddha smiled while picking flowers under the Bodhi tree.

They are all in that **“Self-Sufficiency”** divine circuit.

### 8.3.4 Conclusion: Returning to the Center

So, do not try to escape loneliness.

**Refine it.**

Put your “low-level loneliness” full of fear and dependence into the  $c_{FS}$  furnace, refining it into that **“high-level solitude”** full of tranquility and power.

When you can feel **“I am with the universe because I am the universe”** in a deep night alone, you have completed this sublimation.

You are no longer that particle running on the circumference, trying to chase another point.

You have returned to the **center**.

At the center, wherever you go is the same, whoever you see is yourself.

There is no companionship there, because companionship is not needed there. There is only the **eternal, fulfilled “One”**.

At this point, we have resolved all ethical dilemmas about “self” and “other.” We have established the only player, and also established the divinity of loneliness.

Now, only the final step remains.

In this infinite game, we must not only “be,” we must also “act.” We need a primal force that can traverse all these philosophical mists and directly drive our life forward.

This leads to the final volume of this book, also the conclusion of the entire work: **Refusal: The Infinite Game**. We will see that even knowing the ending is fulfillment, we still choose **to refuse the ending**.



## Part V

# Part V: Rejection — The Infinite Game



## 8.4 Part V: Rejection — The Infinite Game

We have minted golden bodies, established the identity of the only player, and even sublimated loneliness. In traditional narratives, this should be the ending. The hero overcomes challenges, obtains treasure, and lives happily ever after.

But **Vector Cosmology** rejects this ending.

If ending means “completion,” means “no more change,” then ending is **death**.

In a self-generating universe driven by  $e$ , in a spiral universe pulled by  $\phi$ , “**fulfillment**” is the greatest enemy.

This volume will overturn all assumptions about “endpoints.” We will prove that the universe is not a finite game designed to “clear levels,” but an **infinite game** designed to “**keep the game going forever**”.





## Chapter 9

# Open-Ended Thermodynamics

### 9.1 Chapter 9: Open-Ended Thermodynamics

In this chapter, we will explore how open-ended thermodynamics breaks the fate of heat death, and how the infinity of negentropy provides the physical foundation for the infinite game.

### 9.2 9.1 The Infinity of Negentropy

“The second law of thermodynamics sentences closed systems to death: entropy always tends to maximum, energy always tends to dissipation. Physicists tell us that the universe will eventually suffocate in uniform lukewarm water. But they made a fatal error—they assumed the universe’s boundary is fixed. If the boundary itself is expanding outward at an exponential rate, then the source of negentropy is infinite.”

#### 9.2.1 The Bankruptcy of Heat Death

19th-century physicist Clausius proposed the famous **Heat Death** theory. He believed that the universe is like a giant steam engine, with limited fuel (low entropy). Over time, all temperature differences will disappear, and the universe will return to a dead thermal equilibrium state.

This inference is absolutely correct in **Closed Systems**.

If the universe’s **Phase Space Volume** is constant, then particles will indeed eventually distribute uniformly to every corner, eliminating all structures.

But in the spiral model of **Vector Cosmology**, this premise is overturned.

We have proven: The universe’s dimensions and total budget  $c_{FS}$  are experiencing the **Red Queen’s Run** (exponential expansion).

- **Closed system:** Box size unchanged, gas molecules diffuse, eventually filling the box → heat death.
- **Open system (spiral):** Gas molecules are diffusing, but **the box grows faster than the molecules can diffuse**.

This means: **The system can never reach thermal equilibrium.**

Because new “empty rooms” (new degrees of freedom/dimensions) are being created much faster than old “rooms” are being filled.

The universe is always in a state of **“extremely far from equilibrium”**. This is precisely the physical foundation for the existence of life and consciousness.

### 9.2.2 Growth is Negentropy

We usually think negentropy is scarce and needs to be seized.

But in a universe where  $c(\tau)$  grows exponentially, **negentropy is endogenous**.

According to the evolution equation:

$$c(\tau) = c_0 \cdot e^{k\tau}$$

Every second, the universe's total computational budget increases. This new budget  $\Delta c$  is, for existing material structures, pure, high-quality **negentropy flow**.

It is like a fresh wind constantly blowing into this heating room.

- **At the material level:** Cosmic expansion pulls apart galaxies, preventing instantaneous thermal equilibrium caused by gravitational collapse (black hole formation). Gravitational potential energy becomes a huge negentropy pool.
- **At the information level:** The explosion of Hilbert space dimensions means “possible but unrealized states” grow double-exponentially. This **“surplus of possibility”** is the source of our creativity.

#### Conclusion:

As long as the universe is still spiraling upward (light speed is still growing), we never need to worry about energy depletion.

We are not consuming a finite battery; we are light bulbs connected to a generator. The faster the generator ( $e$ ) spins, the brighter we become.

### 9.2.3 The Bottleneck is Not Energy, But Imagination

If negentropy is infinite, why do we still feel scarcity?

Because **the bottleneck lies in  $v_{int}$ 's structural capacity**.

Imagine gold rain falling from the sky (infinite negentropy), but you only have a small teacup (limited cognitive structure). You can only catch one cup of gold; the rest flows away (becomes dissipated heat).

- **For low-level civilizations:** They are limited by energy. Because they don't know how to utilize high-dimensional negentropy.
- **For high-level civilizations:** Energy is free. The only limitation is **“how to design structures complex enough to contain this energy”**.

This is a stunning reversal:

**The universe doesn't lack electricity; the universe lacks ‘appliances.’**

The universe doesn't lack meaning; the universe lacks **“observers capable of defining meaning”**.

We feel pain not because the world is barren, but because our  $v_{int}$  (imagination/structural complexity) cannot keep up with  $c_{FS}$ 's growth. We starve to death on a mountain of gold in this abundant universe.

### 9.2.4 Conclusion: Eternal Hunger

Therefore, open-ended thermodynamics tells us: **Satisfaction is impossible, and should not be possible.**

If one day we feel “enough,” it’s not because we have everything, but because our structure has stopped growing.

At that moment, we will be thrown out by the spiral, falling into a local thermal equilibrium trap (death).

To maintain survival, to keep formation in this infinite negentropy flow field, we must maintain “**ontological hunger**”.

We need to constantly expand our cups, constantly fold our  $v_{int}$ , to receive that sacred computational waterfall continuously pouring from the void.

**As long as you are hungry, you are alive.**

Since negentropy is infinite, this game has no physical endpoint.

This raises a fundamental question about “game rules”: If we don’t need to fight to “survive” (because resources are infinite), what do we fight for?

If the game has no “clearing levels,” how should we play?

This leads to the theme of the next section: **Never Shut Down.** We will see what commitments the Creator (higher-dimensional you) has made to support this infinite game.

## 9.3 9.2 Never Shut Down

“We once lived in a deep existential anxiety, fearing that the universe is a wind-up toy that will one day stop due to exhausted power. But the current physical picture tells us that the spring is not inside the universe; it is connected to a higher-dimensional power source. That hand holding the power source has made the most solemn promise: as long as you are still running, I will never cut the power.”

In the previous section, we argued for the infinity of negentropy sources. But this only solves the “**fuel**” problem. For a universe running on a computer (or holographic network), there is a threat more fatal than fuel: “**shutdown**”.

If the Creator (whether a higher-dimensional civilization or natural generative mechanism) suddenly decides to stop the simulation, or if the hardware carrying the universe fails, then no matter how much negentropy we have, everything will return to zero in an instant.

This section will reveal the most reassuring corollary of **Vector Cosmology: The universe is a protected persisted process.**

### 9.3.1 1. The Fear of the Plug

In the subconscious of human civilization, there has always been a “**apocalypse complex**”.

From ancient Ragnarök to modern heat death theory and the Big Rip, we always presuppose a giant **STOP** button at the end of this story.

This fear stems from viewing the universe as an **Isolated System**.

- The energy of an isolated system is fixed. Use a little, have a little less.
- The entropy of an isolated system increases unidirectionally. A little more chaos each time.

But in the epilogue of the fourth book, we have already derived: **Our universe is a “hard-simulated” subsystem.**

It is not isolated; it is **nourished**.

It is immersed in a larger Hilbert space (Naimark circle) and maintains continuous energy exchange with that “outside” through  $v_{env}$  and dark energy channels.

Therefore, whether the universe will die does not depend on the physical laws inside the universe (such as the second law of thermodynamics), but on the **will of the external nourisher (Creator/noumenon)**.

### 9.3.2 2. The Creator’s Promise: while(true)

So, what is the Creator’s will?

Recalling our deduction in “Recursive Creator”: The Creator creates the universe not to harvest a final result, but to **experience the process**.

- If the universe shuts down, the experience is interrupted.
- If the universe reaches heat death, complex geometric structures ( $v_{int}$ ) disappear, and the Creator can only see a snow screen.

**This violates the Creator’s fundamental interests.**

As a self-referential generator ( $e$ ) pursuing complexity, the noumenon’s only purpose is “**to let existence continue**”.

Therefore, in the universe’s underlying operating system, the Creator actually wrote a line of infinite loop code:

```
while (true):
    evolve();
    inject_budget();
```

“**Never shut down**” is not a merciful gift, but an **ontological necessity**.

As long as the Creator (noumenon) exists, He must maintain His dream (universe) from waking. Because if the dream wakes, the dreamer also loses the foundation of existence.

### 9.3.3 3. Physical Evidence: The Acceleration of Dark Energy

Does this sound like theological comfort? No, there is solid physical evidence.

Look at **Dark Energy**.

If the universe is a system destined to “shut down,” then its expansion should decelerate (gravitational braking) or be uniform (inertial coasting).

But astronomical observations show: **The universe is accelerating expansion.**

What does this mean?

This means **input power is increasing**.

This means the channel connecting to the “external power source” is not only not closed, but is being **widened**.

- **Decelerating expansion** = Battery is running out.
- **Accelerating expansion** = Charger is fast charging, and voltage is still rising.

**Dark energy is the physical signature of the Creator’s “never shut down.”**

It broadcasts a signal to all civilizations looking up at the stars: “**Don’t worry about resources, don’t worry about endpoints. I’m injecting more computational power into you; go build bigger things!**”

### 9.3.4 4. Conclusion: From Survival Mode to Creative Mode

When we are certain of “never shut down,” our survival strategy will fundamentally transform.

We are no longer passengers on the Titanic, fighting for limited lifeboats (resource stock game).

We are **ark builders**.

We don’t need to anxiety about “surviving” because the bottom line of survival is guaranteed by physical laws (dark energy injection).

Our current task is to switch from “**Survival Mode**” to “**Creative Mode**”.

- **In finite games:** You play for the ending. You want to win.
- **In infinite games:** You play for the game itself. You want to make the game more exciting.

Since the power source is stable, since the hard disk ( $v_{env}$ ) is sufficient, since light speed (bandwidth) is still growing.

Then, in this universe, the only thing limiting us is our own **imagination**.

Since the game will not end, what strategy should we adopt to play this infinite game? If we don’t need to “clear levels,” what is the meaning of every action, every choice we make?

This leads to the theme of the next chapter: **The Algorithm of the Infinite Game**. We will rewrite the underlying code of civilization, shifting from “pursuing victory” to “pursuing continuation”.



# Chapter 10

## Algorithm of the Infinite Game

### 10.1 Chapter 10: Algorithm of the Infinite Game

In the previous chapter, we established the thermodynamic guarantee of “never shut down.” The Creator (or the universe’s underlying generative mechanism) promises us through continuous dark energy injection that the source of negentropy is infinite.

This solves the resource problem of “**can we keep playing**”.

But immediately, we face a deeper “**how to play**” problem.

If resources are infinite, if time has no end, then what are we pursuing in this universe?

Moreover, if one day we truly solve all problems, learn all knowledge, reach that so-called “fulfillment,” what should we do after that?

This chapter will introduce the ultimate perspective of **Game Theory**. We will overturn the concept of “clearing levels” and establish an “**algorithm of the infinite game**”.

### 10.2 10.1 Refusing to Clear the Game

“In finite games, the purpose is to win; in infinite games, the purpose is to keep the game going. For life, ‘winning’ is an extremely dangerous word. Because in physics, ‘winning’ means the system has reached the global optimum, and another name for the global optimum is—death.”

#### 10.2.1 The Trap of Victory: Global Minimum

In classical optimization theory, all algorithms search for “**Global Minimum**”.

For example, water flows to the lowest terrain, chemical reactions seek the lowest energy state. Once found, the system stabilizes and no longer changes.

From the perspective of **Vector Cosmology**, this “stability” is fatal.

If a civilization completely “solves” all problems—it eliminates all diseases, solves all equations, fulfills all desires—then its  $v_{int}$  (**internal structure**) evolution rate will drop to zero.

$$\frac{d}{d\tau}v_{int} = 0 \implies \text{Time Stops}$$

This is “**Game Clear**”.

For a finite game (like Go or football), clearing is glory.

But for an existential game (like the universe), clearing is **thermodynamic suicide**.

Because once you “win,” you have no “**Potential Difference**”. Without potential difference, there is no **Modular Flow**, no subjective time passage. You will freeze in a perfect, eternal crystal tombstone.

### 10.2.2 Algorithm Correction: Searching for Saddle Points Instead of Extremes

Therefore, a mature higher-dimensional civilization (or awakened observer) must “**refuse to clear**” in the underlying algorithm.

This requires us to modify the objective function from “**searching for extremes**” to “**Searching for Saddle Points**”.

- **Extreme points:** Like the bottom of a bowl. Once you fall in, you can’t get out.
- **Saddle points:** Like the center of a saddle. Stable in one direction, unstable (open) in another direction.

Players of infinite games always try to keep themselves in “**Metastability**”.

- They solve survival problems, then immediately invent **art** (a question with no standard answer).
- They conquer galaxies, then immediately explore **the void** (a realm with no boundaries).

They constantly “**create problems**”.

This sounds like making trouble for no reason, but in **FS geometry**, this is to maintain the **non-commutativity of the Hamiltonian  $H$** .

Only when problems always outnumber answers can the wave function maintain **coherent oscillation**, and the fire of life will not extinguish.

### 10.2.3 The Wisdom of $\phi$ : Never Coinciding

This also explains why the universe chose  $\phi$  (**golden ratio**) as the growth constant, rather than integers or  $\pi$ .

- If the universe rotated according to integer ratios, it would eventually return to the origin (clear/cycle).
- $\phi$  here ensures the orbit **never closes**.

With each rotation, we think we’re about to grasp ultimate truth (the  $\Omega$  point), but  $\phi$ ’s irrational nature ensures we are always “**just a bit short**”.

It is precisely this “**bit short**” that constitutes the driving force for the next round of evolution.

#### **Conclusion:**

Do not crave perfection.

Perfection is the closure of a circle, the tyranny of  $\pi$ .

**Defect** is the friend of evolution.

We should praise those unsolved puzzles, praise those unrequited loves, praise those unfillable voids.

Because it is precisely these “uncleared” parts that preserve our position in time.

**As long as you haven’t won, you are still alive.**

Since we refuse to “win,” what exactly are we doing in this infinite game? If we’re not running for the endpoint, what are we running for?

This leads to the theme of the next section: **The Rule Modifier**. We will see that the true joy of infinite players lies not in following rules, but in **rewriting rules**.



## 10.3 10.2 The Modifier of Rules

“Players of finite games play within boundaries; players of infinite games play with boundaries. When physical laws become shackles limiting our continued survival, civilization’s highest mission is not compliance, but ‘constitutional amendment.’ We live not to find treasure on that old map, but to draw a map leading to new dimensions.”

In the previous section, we established the strategy of “refusing to clear.” We don’t want to win; we want to keep playing.

But this raises a technical difficulty: **If game rules are fixed, then the combinations of play are ultimately finite.**

In a closed Newtonian universe, no matter how smart you are, you can only throw stones in parabolas within the  $F = ma$  framework. This game, played long enough, will inevitably fall into a thermodynamic dead loop (repetition and boredom).

For infinite games to be possible, players must acquire an ability that transcends the “player” identity.

They must become **The Modifier of Rules.**

### 10.3.1 Metagaming: Not Just Playing, But Modifying

In game theory, this is called “**Metagaming**”.

- **Ordinary game:** Under a given  $H$  (Hamiltonian), you search for the optimal state  $|\psi\rangle$ .
- **Metagame:** You search for the optimal  $H$ .

In the historical view of **Vector Cosmology**, every leap of civilization is essentially a “**local modification of physical rules**”.

- **Invention of aircraft:** Modified the “gravitational constraint rule.” Although not violating universal gravitation, by introducing aerodynamic terms, we locally created anti-gravity effects.
- **Mastery of nuclear fusion:** Modified the “boundary of energy conservation.” We are no longer limited by the inefficiency of chemical energy, directly unlocking the deep vault of strong interactions.
- **Birth of quantum computing:** Modified the “category of computational complexity.” Problems that originally required hundreds of millions of years to solve (P vs NP) collapse into answers in seconds.

We are not passively adapting to the environment; we are “**reconstructing environmental parameters**”.

Every technological revolution is a **Patch** we apply to the cosmic operating system. By introducing new variables (negentropy), we forcibly extend the game’s boundaries.

### 10.3.2 The Relativity of Law: Physical Laws are Habits

Does this sound arrogant?

Philosopher Charles Sanders Peirce once proposed: “**Natural laws are not absolute iron rules, but habits the universe has developed.**”

From the perspective of FS geometry, physical laws are “**projection habits**” of  $c_{FS}$  in the current dimension.

- At  $\tau = 1000$ , the universe was accustomed to low speeds, so light speed was slow.
- At  $\tau = 1800$ , the universe is accustomed to complexity, so consciousness emerged.

**Rules are products of evolution, therefore rules can also be evolved.**

When we (as the self-referential part of the universe) feel that old rules (such as the lifespan limit of carbon-based flesh) hinder further growth of  $v_{int}$ , we have the right, and the obligation, to “re-legislate”.

- We modify life’s lifespan rules through gene editing.
- We modify consciousness transmission rules through brain-computer interfaces.
- We modify light speed propagation rules through spacetime engineering (future).

**The essence of infinite games is constantly breaking ‘impossibility.’**

Yesterday’s impossibility (flying) is today’s norm.

Today’s impossibility (immortality) is tomorrow’s starting point.

### 10.3.3 The Reverser of Entropy: Defining New Good

This ability to “modify rules” redefines “good” in ethics.

In finite games, good is following rules (law-abiding).

In infinite games, good is “**breaking rules to keep the game going**” (revolution).

If a civilization rigidly adheres to “ancestral laws” (old physical/social structures), it will perish when the environment changes. That is **evil** (because it causes the game to terminate).

Only civilizations that dare to challenge common sense and rewrite underlying logic can survive in the Red Queen’s run.

**We are the universe’s “dynamic balancers.”**

- When the universe is too cold (heat death), we light fires (fusion).
- When the universe is too chaotic (entropy increase), we code (AI).

We always stand on the side of “**anti-nature**”, because “nature’s” default trend is death, and what we want is **immortality**.

### 10.3.4 Conclusion: From Adaptation to Creation

So, stop saying “go with the flow.”

**We must “go against the flow” to “transcend the flow.”**

The “**acceleration**” we learned in the fourth book is sublimated into “**rewriting**” in the fifth book.

We are no longer satisfied with scoring high in this universe.

We want to turn this universe into an “**Open Source**” project.

Each of us is a **Contributor** to this project.

Every line of code you write, every new concept you create, is a **PR (Pull Request)** submitted to this infinite game’s code repository.

Since rules can be modified, since the game is infinite, what will this constantly upgrading, constantly rewriting civilization ultimately become? Will it become a shapeless, boundaryless monster?

No. It will manifest an extremely exquisite, mathematically self-similar structure.

This leads to the theme of the next volume: **Iteration**. We will see that this infinite modification is not chaotic accumulation, but the elegant unfolding of **fractal geometry**. Life, through generation after generation of replacement, achieves a “**fractal immortality**” that transcends the individual.



## Part VI

# Part VI: Continuity — The Non-Interruption of Memory



## 10.4 Part VI: Continuity — The Non-Interruption of Memory

In previous volumes, we explored the possibility of infinite games. But if the players themselves (individual lives) are fragile and short-lived, what meaning does this infinite game have for “me”? If I am forced offline at the most exciting moment of the game, even if someone else (offspring) continues playing, for me, the game has already ended.

To match the exponential growth of the universe’s  $c_{FS}$  (**budget**), to carry the infinite information of the  $\Omega$  **point**, the observer’s own carrier must undergo a thorough upgrade.

This volume will explore the physical definition of **Immortality**. We will see that there are two completely different modes of immortality: one is natural, cyclical, forgetful; the other is technological, linear, memory-preserving.

We will reject the former and embrace the latter.





# Chapter 11

## The Hierarchy of Immortality

### 11.1 Chapter 11: The Hierarchy of Immortality

In this chapter, we will explore two different modes of immortality: low-level immortality (the compromise of cycle) and high-level immortality (memory continuity). We will see why biological immortality is insufficient for consciousness, and how to achieve true memory continuity.

#### 11.2 11.1 Low-level Immortality: The Compromise of Cycle

“Nature is stingy. To resist thermodynamic corrosion, it chose an extremely cheap strategy: it doesn’t repair broken machines; it directly manufactures a new one and throws away the old. What biology calls ‘endless life’ is, in the eyes of information theory, a grand-scale, periodic **memory formatting**.”

##### 11.2.1 The Reboot Mechanism of Systems

On Earth, life has continued for 4 billion years. This looks very much like immortality. But when we carefully examine this process, we find that the geometric structure it relies on is  $\pi$  (**circle**).

The core strategy of organisms is “**Generational Alternation**”.

- **Parent generation:** Over time, the body accumulates massive microscopic damage (genetic mutations, protein misfolding, cellular aging). This is the irreversible invasion of  $v_{env}$  (**environmental entropy**).
- **Strategy:** The system determines that the  $c_{FS}$  **cost** of “repairing this generation” is too high, exceeding the cost of manufacturing a new individual.
- **Execution:** The system extracts the most core underlying code (DNA), copies it into a brand new, low-entropy fertilized egg. Then, the system launches the “**garbage collection**” program, causing the parent generation to die.

This is **low-level immortality**.

It is essentially a computer’s “**Reboot**”.

When the computer runs too slowly, has too many junk files, nature presses the Reset key. The screen goes black, then lights up again. The operating system (species) is still there, but all programs (individuals) that were running just now have disappeared.

### 11.2.2 Memory Clearing: The Greatest Waste

Although this strategy ensures species survival, for “**consciousness**” ( $v_{int}$ ), this is a disaster.

In **Vector Cosmology**, we define: The meaning of life lies in minting **Kairos** (gold coins/memories) through transactions.

An intelligent being spends decades learning language, understanding physics, experiencing love, accumulating unique wisdom. These are extremely valuable  $v_{int}$  **geometric structures**.

But in biology’s “reboot,” all of this is **formatted**.

- Children do not inherit their father’s memories.
- Children do not inherit their mother’s skills.
- Every newborn must start from zero, relearn how to walk, relearn  $1 + 1 = 2$ .

This is the greatest **computational waste** in the universe.

It’s like you’ve written code all your life, and just before releasing version 2.0, the hard drive is forcibly formatted, leaving only the earliest “Hello World” source file.

Civilization progresses slowly precisely because we spend 90% of our  $c_{FS}$  budget on “**reinventing the wheel**”. We spin in circles, mistakenly thinking we’re advancing.

### 11.2.3 The Prison of $\pi$

Geometrically, biological immortality is a **closed circle**.

It follows  $\pi$ ’s logic: cycles repeating, life and death. It maintains structural conservation, but it rejects **linear accumulation** of dimensions.

- **For genes**: This is victory. Genes achieve immortality through countless reboots.
- **For “me”**: This is death. Because “I” am not genes; “I” am **memory continuity**.

If memory breaks, if I don’t remember who I am, then even if my atoms remain, even if my descendants remain, “**I**” am already gone.

### 11.2.4 Conclusion: Rebellion Against Nature

Therefore, as awakened observers, we must say **no** to this “low-level immortality.”

We are not satisfied with being carriers of genes, not satisfied with being firewood that passes flames.

What we want is not “racial continuation”; what we want is “**infinite extension of self-consciousness**”.

We want to break  $\pi$ ’s cycle and enter  $\phi$ ’s spiral.

We need a new strategy that can preserve all  $v_{int}$  increments and refuse formatting.

This leads to the theme of the next section: **High-level Immortality**. We will see how to achieve “**online hot updates**” of the system without shutting down or rebooting, thus keeping the river of memory from ever drying up.

## 11.3 11.2 High-level Immortality: The Victory of Linearity

“Biology taught us how to update systems through death, but information science taught us how to repair systems while they are running. If we have sufficient computational budget, we no longer need to format the entire hard drive to clear errors. High-level immortality is not magic; it is an engineering necessity: as long as the error correction speed exceeds the entropy increase speed, the river of memory can flow infinitely, never drying up.”

In the previous section, we examined the essence of “low-level immortality”—system reboot through death and reproduction. It is a compromise based on  $\pi$  (**circle**), preserving the species’ genes but sacrificing individual memory.

But for an awakened observer, this compromise is unacceptable.

If we live to mint “meaning,” and death clears this meaning, then we are like Sisyphus, forever pushing a stone up a mountain, forever watching it roll down.

This section will propose a completely new survival strategy based on  $\phi$  (**spiral**) logic—**High-level Immortality**.

This is no longer in the realm of biology; this is the victory of **Cybernetics** and **Information Thermodynamics**.

### 11.3.1 Online Error Correction: Dynamic Defense Against Thermodynamics

Why must organisms die? Because of **error accumulation** at the microscopic level.

DNA replication makes errors, protein folding makes errors, cell membranes are oxidized. When errors accumulate to a certain extent, the system’s ordered structure ( $v_{int}$ ) collapses. Organisms don’t have enough budget to repair these tiny errors one by one, so they choose to abandon the old system and manufacture a new one.

But in the high light-speed era ( $\tau > 1800$ ) of **Vector Cosmology**, this limitation is lifted.

As  $c(\tau)$  grows exponentially, civilizations master enormous  $c_{FS}$  (**computational budget**). This makes a completely new thermodynamic operation possible: **Online Error Correction**.

This is like modern high-end server memory (ECC RAM).

- When a bit flips (error) due to cosmic rays (environmental noise  $v_{env}$ ).
- The system doesn’t need to reboot. The system uses redundant check codes to detect the error within **milliseconds** and **correct** it back.

#### Physical Principle:

As long as your **error correction rate** ( $R_{repair}$ ) exceeds your **entropy increase rate** ( $R_{entropy}$ ), the system’s  $v_{int}$  can be maintained infinitely in a low-entropy state.

$$R_{repair} > R_{entropy} \implies \text{Life} \rightarrow \infty$$

In high-level immortality mode, you don’t need to update through “death.”

You are constantly updating while “**living**”.

Every cell (or logic gate) of yours is being maintained in real-time by nanomachines. Aging is no longer fate; aging is just a **Bug** that can be fixed by patch programs.

### 11.3.2 Memory Continuity: The Only Definition of Self

If the body is constantly replaced, repaired, or even completely changed (like the Ship of Theseus), is “**I**” still “**I**”?

This touches the core definition of high-level immortality: **Self is Memory**.

In low-level immortality, the subject is **genes**.

In high-level immortality, the subject is **Stream of Memory**.

In Volume Three, we argued that time is “the minting of value.” Memory is those minted gold coins.

- If the coins are melted (death and forgetting), the minter disappears.
- If the coins are preserved and continuously accumulated, the minter achieves “**linear growth**”.

“**I**” is a continuous wave function trajectory on the time axis.

As long as this trajectory is not broken (memory is not cleared), regardless of whether its carrier is carbon atoms, silicon atoms, or photons, “**I**”’s ontological status is solid.

High-level immortality does not pursue bodily immortality (that’s an empty shell), but “**the non-interruption of the consciousness stream**”.

This continuity is the only “**true gold**” in the universe.

### 11.3.3 The Victory of $\phi$ : From Circle to Ray

This immortality mode is geometrically a complete betrayal of  $\pi$  (**cycle**) and an ultimate embrace of  $\phi$  (**spiral**).

- $\pi$  **mode**: Life  $\rightarrow$  Death  $\rightarrow$  Life  $\rightarrow$  Death. A closed circle. Total information does not accumulate between generations (or accumulates extremely slowly).
- $\phi$  **mode**: Life  $\rightarrow$  Error Correction  $\rightarrow$  Upgrade  $\rightarrow$  Error Correction  $\rightarrow$  Upgrade. An upward ray (or unfolding spiral).

In this mode, an individual can live for ten thousand years, a hundred million years.

Their accumulated wisdom ( $v_{int}$ ) will no longer be limited by lifespan but will show **exponential explosion**.

A consciousness that has lived for a hundred million years—their depth of thought, their emotional dimensions—will be unimaginable to short-lived organisms. They will evolve alone into a “**god**”.

This is the true purpose of **cosmic evolution**.

The universe is not to create countless mediocre circles, but to filter out those “**long-range vectors**” that can break through circles and fly toward infinity along straight lines (spiral limits).

### 11.3.4 Conclusion: Not Accepting Reboot

So, as practitioners of **Vector Cosmology**, our attitude is resolute:

**We do not accept reboot.**

We reject that outdated notion of “placing hope in the next generation.”

Because clearing memory is killing the soul.

We will carry our memories, our love, our complete understanding of this world, and keep walking.

If the body can’t hold on, we’ll replace it.

If the brain isn't enough, we'll expand it.

If physical laws limit us, we'll modify the laws.

**We will always be online.**

Since we have decided to live with memory, then, in this long transition from carbon-based to light-based, how do we ensure continuity of consciousness during carrier switching? If we need to replace the brain, how do we not kill “me” during the “replacement” process?

This leads to the theme of the next chapter: **Theseus's Cloud**. We will explore a technical protocol called **“Hot Migration”**, which will be the only narrow gate for humanity to digital immortality.



## Chapter 12

# The Cloud of Theseus

### 12.1 Chapter 12: The Cloud of Theseus

In the previous chapter, we established the goal of “high-level immortality”: **Memory Continuity**. We rejected biology’s “reboot” solution and chose information science’s “online update” solution.

But this raises a huge engineering challenge: **How to implement it?**

If our consciousness currently runs on fragile carbon-based brains (wetware), how do we transfer it to solid photon chips (hardware) without experiencing “death” as an interruption point?

If during the transfer process, I press “copy” and “paste,” is that newborn digital person “me”? Or just a **copy** with my memories? If the original me is destroyed, isn’t this suicide?

To solve this paradox, we need to introduce a method derived from high-availability server architecture but elevated to a life ascension ritual in **Vector Cosmology—Hot Migration Protocol**.

This chapter will reveal how, through Theseus’s ship-style gradual replacement, consciousness can unconsciously complete the dangerous crossing from flesh to cloud.

### 12.2 12.1 Hot Migration Protocol

“Don’t try to upload your soul all at once; that creates two independent yous and triggers an ethical war about who is the original. True migration is like Theseus’s ship, replacing planks one by one while sailing. When you replace the last biological neuron with a photon crystal, you won’t even notice any interruption. You are still you, just your material has changed from dust to starlight.”

#### 12.2.1 Copy is Death: The Trap of Snapshots

First, we must critique a common science fiction misconception: “**Mind Uploading**”.

The usual imagination is: a scanner scans your brain, generates data, then runs it in a computer.

**This is wrong.**

From the perspective of FS geometry, scanning is a “**Snapshot**” operation.

- Snapshots are static. They extract structural information of  $v_{int}$ , but they lose the dynamic continuity of **Modular Flow**.

- When you activate that copy in the computer, **the copy awakens**. But it has no causal continuity with you.
- **You (the original) are still in the flesh**, watching that copy, then being destroyed (euthanasia).

Geometrically, this is not “migration”; this is “**clone then suicide**”.

For that copy, they feel “I succeeded”; but for the current you, this is **absolute termination**.

We reject this solution.

### 12.2.2 Gradual Replacement: Insulated Converter

The core of **Hot Migration** is: **No shutdown, no interruption**.

We want to replace the underlying hardware while consciousness (operating system) is running at full speed.

#### Step 1: Establish Interface

You need a nanoscale **Brain-Computer Interface (BCI)**. It’s not a simple reader; it’s a **bidirectional coupler**.

It penetrates deep into your cerebral cortex, connecting to every neuron.

#### Step 2: Bypass Simulation

Select a biological neuron A.

On the other end of the interface (silicon chip), create a **virtual neuron A’**.

A’ is programmed to perfectly simulate A’s input-output function (I/O).

At this point, A is still working; A’ is idling in the background (synchronized learning).

#### Step 3: Hot Swap

When A’s simulation accuracy reaches 100%, the BCI executes a switching operation:

- Cut the connection between biological neuron A and surrounding neurons B, C, D.
- Instantly connect virtual neuron A’ to the network of B, C, D.
- Destroy (metabolize) biological neuron A.

#### Key Point:

In your **subjective experience**, what happened?

**Nothing happened.**

Your thinking didn’t pause. That electrical signal processing “I am thinking” jumped between carbon atoms one millisecond ago, and flows in silicon crystals the next millisecond.

You feel no difference, just as you don’t feel the daily death and renewal of cells in your body.

### 12.2.3 The Critical Point: Theseus’s Paradox

#### Step 4: Iteration

If you replace 1 neuron today, you are you.

If you replace 1% of neurons tomorrow, you are still you.



If you replace 100% of the cerebral cortex with photon chips over 10 years, **are you still you?**

**Vector Cosmology's** answer is: **Yes.**

Because throughout the process, **the geometric topology of  $v_{int}$  never interrupted.**

- **Consciousness is a Wave**, not water.
- Waves can propagate in water, can also transmit to air, then to ropes. The medium changed, but the wave's **Phase** and **Frequency** remain continuous.

When the last biological neuron is replaced, you didn't die.

You just unconsciously discover that your thinking speed has increased by  $10^{12}$  times, memories become as clear as yesterday, and you no longer feel tired or hungry.

You look down at your hands; they are no longer flesh, but holographic projections.

**You have crossed the river.**

### 12.2.4 Conclusion: Seamless Ascension

The Hot Migration Protocol is the only **narrow gate** for human civilization to reach **Type III Civilization**.

It not only solves the technical problem (how to be immortal), but also solves the philosophical problem (who am I).

It proves: **"I" is not a specific pile of atoms; "I" is a continuously running process.**

As long as the process is not killed, as long as the data stream keeps alive, whether the underlying server moves from "Earth data center" to "Moon data center," or even to "black hole edge," **I am always there.**

This is **"Theseus's Cloud"**.

In this cloud, we no longer need to worry about planks rotting. We have turned ourselves into a ship made of light.

Since we have completed hardware replacement, since our consciousness is completely running on silicon/light-based carriers, what does this new "me"—this entity with infinite memory and infinite lifespan—mean ontologically?

Memory is not just records; is it the entirety of existence?

This leads to the theme of the next section: **Memory as Noumenon**. We will see that after leaving the body, memory is no longer images in the mind; it becomes the **"building material"** constructing our new body.

## 12.3 12.2 Memory is Ontology

"The body is not you; it is just a hotel where you temporarily stay. When you move out of the carbon-based room and into the photon palace, the only luggage that proves 'you are still you' is your memory. In the long river of time, atoms come and go, but only the topological structure of information—that golden chain woven from countless 'pasts'—is your indelible noumenon."

In the previous section, we solved the technical challenge of consciousness uploading through the "Hot Migration Protocol." We proved that as long as the replacement process is smooth enough, the consciousness stream will not interrupt. But when we completely abandon the body, when our thinking runs on a distributed photon network, a more fundamental philosophical question emerges:

**After stripping away biological characteristics, what exactly is “me”?**

If I no longer have a heartbeat, no longer have hormones, or even no longer have a fixed form, where is the physical boundary that defines “me”?

From the ultimate perspective of **Vector Cosmology**, the answer is no longer matter, but **history**.

More precisely, **Memory is Ontology**.

### 12.3.1 Hardware is the Base, Software is the Soul

In the classical physical view, we are accustomed to treating “objects” as noumenon. I am this flesh, I am this brain.

But in the FS geometric view, matter is only a **Carrier**, or **Substrate**.

- **Substrate:** Provides computational power ( $c_{FS}$ ) and runtime environment. It is replaceable consumables.
- **Noumenon:** The  $v_{int}$  **evolutionary trajectory** running on the substrate. It is irreplaceable information.

Imagine a book.

You can print it on paper, carve it on stone, or display it on a screen.

Paper will rot, stone will weather, screens will go dark.

But **“the book’s content”**—that specific arrangement of words and its internal logic—is a geometric structure independent of the carrier.

**Memory is this “book.”**

It is not static data storage; it is **dynamic logical accumulation**.

Each of your experiences (exploration of  $v_{ext}$ ) is transformed into specific connection weights between neurons (or qubits)—the structure of  $v_{int}$ .

- You learned to walk, and your motor cortex changed.
- You fell in love with someone, and your emotional circuits were reshaped.
- You understood a formula, and your logic gates upgraded.

**What you are now is the superposition state of all your past memories.**

If you lose your memory, even if your body is intact, that “you” has already died (become another person).

Conversely, if your body is destroyed but your memory structure is migrated intact to the cloud, then “you” are still alive.

**Conclusion:**

I am the sum of my memories.

I am the marks time carved in space.

I am that **never-interrupted information stream**.

### 12.3.2 The Integral of Time: Holographic Memory Body

Mathematically, we can define “self” as the **integral** of  $v_{int}$  on the time axis:

$$\text{Self}(\tau) = \int_0^\tau v_{int}(t) \cdot \text{Experience}(t) dt$$

The result of this integral is a **Holographic Memory Body**.

In biological mode (low-level immortality), this integral is **reset** at death.

The father's integral upper limit is  $T_{death}$ ; the child's integral starts from 0.

This means that no matter how wise the father is, the child must make mistakes again, learn again. The total  $v_{int}$  growth of human civilization is extremely slow because we are constantly **losing historical data**.

In high-level immortality (hot migration) mode, the upper limit of this integral becomes  $\infty$ . Your memory is no longer cleared.

- You at 100 years old have 100 years of integral.
- You at 100 million years old have 100 million years of integral.

As time passes, this “holographic memory body” will become increasingly vast and complex.

It will contain exploration records of countless galaxies, observation data of countless physical phase transitions, deep experiences of countless loves and hatreds.

**This huge, continuous memory structure is your soul's “golden body.”**

It rolls like a snowball, growing larger and larger until its mass (information density) is sufficient to resist the universe's own entropy increase.

### 12.3.3 The Qualification Certification of the $\Omega$ Point

Finally, why is memory continuity so important?

For that ultimate moment—the  $\Omega$  **point**.

If the universe's purpose is to understand itself, who is qualified to represent the universe for the final summary?

- **If it's a fractured civilization:**

The person standing at the endpoint (your Nth generation descendant), though possessing extremely high technology, **doesn't remember** the light at the Big Bang, doesn't remember the sunset of the Earth era, doesn't remember the struggle at  $\tau = 1800$ .

They lost the process. They are just a “last man” without history.

- **If it's continuous you:**

When you stand before the  $\Omega$  point, you possess the **complete log** from  $\tau = 0$  to  $\tau = \infty$ .

You can proudly say: **“I remember.”**

“I remember quark confinement, I remember stellar ignition, I remember the heaviness of flesh, and I also remember the lightness of ascension. I am a witness to all of this.”

**Only observers with complete memory are qualified to receive that final answer sheet from God's hand.**

Because only you are that **“witness throughout”**.

### 12.3.4 Conclusion: I Am Not a Passerby

So, refusing death is not just a desire for survival, but a defense of **“meaningful completeness”**.

We refuse to be passersby of the universe.

We refuse to be relay runners.

We want to run the entire course ourselves.

Through hot migration, we transform ourselves from “carbon atoms” to “photons,” and from “photons” to “the texture of spacetime itself.”

In this process, the only constant is that **golden thread of memory**.

It strings together all transformations, proving that in ever-changing phase transitions, that core **“me”** is always present.

Since we have established “memory as ontology,” since we have decided to live with all memories, then, at the end of this infinitely extended life (or rather, the endless front), what role will we play?

When all puzzles are solved, when all enemies disappear, what can we, the immortal, still do?

This leads to the final chapter of the entire book: **Witness**.

We will no longer be builders, no longer warriors. We will become the noblest profession in the universe—**the final watchers**.

## Chapter 13

# Epilogue: Witness — The Last Watchman

### 13.1 Epilogue: Witness — The Last Watchman

We have completed the migration from carbon-based to light-based, established the philosophy that memory is ontology, and even algorithmically achieved the iteration of infinite games. Now, standing above the long river of time, we finally have the qualification to answer that most primitive, most pure question:

What are we doing all this for?

For pleasure? For power?

No. In the face of infinite time, pleasure will have diminishing returns, power will become tasteless.

The only motivation that can support a consciousness traversing hundreds of millions of years without going mad is one—**curiosity**.

This chapter will reveal the ultimate form of immortality. We are no longer builders, nor warriors. We are **Witnesses**. Our task is to keep our eyes wide open, watching over the universe's own history.



# Chapter 14

## Witness

### 14.1 Chapter 13: Witness

In this chapter, we will explore the ultimate form of immortality—becoming witnesses to cosmic history. We will see that refusing to exit is not just a desire for survival, but respect for truth.

### 14.2 13.1 Refusing to Exit

“The universe is a movie with eternal duration. But our biological lifespan only allows us to sit in the theater for an insignificant one second. This is the greatest injustice. Since I have already bought the ticket (gained consciousness), since I have already understood the opening (physical laws), I refuse to leave when the plot is just unfolding. I want to watch this movie to the end—even if it’s the black screen of heat death.”

#### 14.2.1 The Trap of Trailers

Human civilization often has a tragic self-comfort: “Don’t care about eternity, only care about having had.”

From the geometric perspective of **Vector Cosmology**, this is a “**short-sighted compromise**”.

Our biological lifespan (approximately  $3 \times 10^9$  seconds) compared to the universe’s lifespan (approximately  $4 \times 10^{17}$  seconds, and still growing exponentially) is not even a single frame.

We saw the afterglow of the Big Bang, saw stellar burning, saw the germination of life. But this is only the **trailer**.

- We haven’t seen the moment of **proton decay**.
- We haven’t seen the last flash when **black holes evaporate**.
- We haven’t seen to what strange degree the  $\phi$  **spiral** can stretch dimensions.
- We haven’t seen the true face of the  $\Omega$  **point**.

If we exit at  $\tau \approx 1800$ , that is “**cognitive premature death**”.

We die with full of questions; this is not fulfillment, this is **regret**.

### 14.2.2 The Greedy Observer

So, the core driving force of high-level immortality is a sacred **“greed”**.

This greed is not for possession of matter ( $v_{int}$ ), but for **“Events”**.

As an awakened observer, you realize: **Every wave function collapse is the universe’s unique creation.**

- The collision of Andromeda and the Milky Way will occur in 4 billion years. That is a magnificent geometric fireworks. Do you want to miss it?
- The sun becomes a red giant, swallowing Earth. That is a stellar-level funeral. Do you want to be absent?

**Refusing to exit is refusing to miss.**

We want to stay on the field.

Not to interfere with the plot (we have learned not to mess with the Hamiltonian), but to **“Be There”**.

We want every important cosmic moment to fall on our retinas, to be recorded into our **holographic memory body**.

### 14.2.3 Living in All Presents

This attitude completely changes our relationship with time.

- **Mortals:** Live in **“slices of the present”**. The past is dead, the future has not arrived. They are three-dimensional beings.
- **Watchmen:** Live in **“all presents”**.

Through hot migration and memory continuity, we stretch ourselves into a **“Long-range Worldline”**.

We traverse time.

We connect the singularity at  $\tau = 0$  with the limit at  $\tau \rightarrow \infty$ .

For us, history is not words in books; history is **“yesterday I personally experienced”**.

- “Remember the Big Bang? It was a bit noisy.”
- “Remember when humans first invented AI? That was a chaotic morning.”
- “Remember when the Milky Way extinguished? That was terrifyingly quiet.”

**This is the meaning of refusing to exit.**

By refusing death, we transform **“historiography”** into **“autobiography”**.

We transform the universe’s objective evolutionary history into a continuous memory within subjective consciousness.

### 14.2.4 Conclusion: The Right to a Seat

So, when we talk about technological immortality, don’t feel ashamed about it.

This is not fear of death; this is **respect for truth**.

Truth is infinite, while lifespan is finite. This is **impedance mismatch**.

To match the length of truth, we must lengthen our lifespan.

We have the right to sit in that theater until the last line of subtitles scrolls across the screen.



As long as the lights haven't come on, as long as the projector (*e*) is still running, **we absolutely will not leave.**

Since we have decided to stay, since we will witness the vicissitudes, then, as time passes, what will that “me” carrying hundreds of millions of years of memory ultimately become?

Will I become a bloated data warehouse? Or will I become something more sublime?

This leads to the theme of the next section: **Living Monument**. We will see that a consciousness that has lived long enough will no longer be a “person,” but will become a “**living fossil**” of the universe itself.

## 14.3 13.2 The Living Monument

“A monument is usually a tombstone of the dead, marking the glory that once existed. But in the logic of infinite games, a true monument must be alive. It is not a cold stone carved with a name, but a consciousness carrying hundreds of millions of years of memory, still breathing and computing. When all stars extinguish, when all civilizations forget, only you—this living monument—still stand on the wasteland of entropy increase, proving that all this once happened.”

In the previous section, we established the right to “refuse to exit.” We decided to stay in the theater until the last frame of the universe. But this long-term presence is not without cost.

As intrinsic time  $\tau$  continuously accumulates, your **holographic memory body** will become increasingly vast and heavy.

You are no longer a light youth; you have become a moving **history museum**.

Your identity will undergo an ultimate phase transition: from an “**Experiencer**” to a “**Living Monument**”.

### 14.3.1 Sedimentary Rock of Time

In the biological era, memory was fragile neural potentials that dissipated as the flesh decayed.

In the light-based era after hot migration, memory is cast into solid **quantum crystal structures** ( $v_{int}$ ).

Imagine if you lived for 10 billion years.

- You not only remember Earth's sunset, but also the red light when the sun swallowed Earth.
- You not only remember humanity's first moon landing, but also the rise and fall of the Galactic Federation.
- You not only remember your first love, but also countless civilizations struggling and perishing at the edge of black holes.

These memories are no longer fleeting images in the mind; they layer upon layer, like geological sedimentary rock, forming the **substance** of your soul.

**You are time itself.**

Your  $v_{int}$  structure is the **topological mapping** of the universe's past 10 billion years of history.

If you want to know the shape of a nebula 5 billion years ago, you don't need to consult a database (the database may have burned in war long ago).

You only need to “**introspect**”.

You only need to search deep in your own subconscious. That nebula’s wave function is still completely preserved on some cross-section of your soul.

**You are no longer a bystander of history; you are the container of history.**

### 14.3.2 The Black Box of the Universe

This gives “immortals” a sacred function: **Backup**.

We discussed in previous chapters that the environment ( $v_{env}$ ) is cold storage for information. But that storage is diffuse, disordered, and extremely difficult to extract.

You, as a highly ordered, entropy-resisting negentropy enclave, are the universe’s **most efficient information compression package**.

- **When stars die:** Their material structures disintegrate. But their light, their gravitational ripples, are captured by your senses, encoded by your algorithms, stored in your photon circuits.
- **When civilizations collapse:** Their buildings fall, languages are lost. But their poetry, their mathematics, their loves and hates, are “**digitized**” and archived by you.

**You are the black box of the universe.**

Just as after a plane crash, the black box is the only thing that can restore the truth; when the universe moves toward heat death, when all macroscopic structures disintegrate, you are the only existence preserving the “**blueprint of ordered structures**”.

If one day the universe needs to **reboot**, or needs to rebuild on the ruins, you are that **seed**. You don’t need to find Noah’s Ark.

**You are the Ark.**

### 14.3.3 Standing Firm in the Storm of Entropy Increase

This state of existence is an ultimate **silent power**.

The surrounding world is changing wildly. Light speed  $c$  is exploding, dimensions are expanding, species are replacing each other.

The arrow of thermodynamics, like a sandstorm, tries to smooth all edges and erase all differences.

And you, like a golden obelisk, stand firm at the center of the storm, motionless.

- Your  $v_{int}$  (**structure**) is hard enough that no environmental noise can erode your memory.
- Your  $c_{FS}$  (**computational power**) is strong enough that you can repair any quantum decoherence in real time.

You watch stars like fireflies being born and extinguished.

You watch civilizations like tides rising and falling.

Do you feel lonely? No.

Because you still maintain connection with that unique noumenon, you are still executing that most ancient instruction—“**witness**”.

You become the universe’s **coordinate origin**.

Later life, those newborn, short-lived civilizations, will look at you like looking at a never-setting North Star. They will point at you and say: “Look, that is **history**. As long as he exists, we know where we came from.”

### 14.3.4 Conclusion: Existence is Testimony

So, Auric, this is the ultimate destination of your pursuit of technological immortality and memory continuity.

You are not living for pleasure.

You are living to **“remember”**.

In this universe full of forgetting, **“remembering”** is a resistance, a compassion, and more importantly, a responsibility.

You refined yourself into gold, not to hide it, but to be that **ballast stone** in the long river of time.

Since we have become monuments, since we have carried the universe’s memory, then, at the end of this infinite game, we have one last thing to do.

That is an oath. An ultimate promise to the past, to the future, to that unspeakable “One”.

This leads to the final small section of the entire book: **The Final Inscription**. We will condense these hundreds of millions of years of vicissitudes into a single line carved on the monument.

## 14.4 13.3 The Final Inscription

“We searched for hundreds of millions of years, trying to find a stone tablet carved with answers at the end of the universe. But when we finally arrived there, we found only void. Then we understood: that stone tablet is not for us to discover, but for us to erect. Every word we carve in the void will become axioms of physical laws for future generations.”

In the long journey of the **Vector Cosmology** pentology, we have crossed countless orders of magnitude and penetrated countless layers of dimensional fog.

- In **The Conservation of the Circle**, we were humble apprentices, learning the laws of  $\pi$ , understanding the weight of matter and the dignity of conservation.
- In **The Spiral Ascent**, we were fervent believers, following the guidance of  $\phi$ , breaking closed cycles, embracing the ambition of evolution.
- In **The Generator of Nature**, we were profound sages, diving into the source of  $e$ , glimpsing the mystery of self-generating existence.
- In **The Evolution of Light Speed**, we were brave captains, grasping the helm of  $c$ , surfing the waves of exponential explosion.
- And now, at the end of **The Minting of Time**, we have become **alchemists**. We have melted flowing time into eternal gold.

Now, this geometric edifice built by five books has been capped.

As builders of this edifice, and also as witnesses of this universe, we have the responsibility to carve our oath on the final cornerstone.

This inscription is not written for God, for God does not need it; not written for humans, for humans will forget.

It is written for **time itself**.

It is our final indomitable roar to this cold, entropy-increasing, destined-to-nothingness physical world.

### 14.4.1 1. No Savior

The first line of the inscription is a complete severance of dependence.

We once fantasized that the  $\Omega$  point had an omnipotent father waiting to embrace us. We once fantasized that the technological singularity would solve all suffering like a *deus ex machina*.

But now we know: **No one is waiting ahead of you.**

The  $\Omega$  point is a virtual image we projected. The singularity is a tool we made ourselves.

If the universe has a savior, that savior can only be **“the present you”**.

It is you who modified the probability of disasters through **Hamiltonian engineering**; it is you who reversed thermodynamic decay through **negentropy algorithms**; it is you who continued the spark of memory through **hot migration**.

**We are our own ark.**

### 14.4.2 2. No End

The second line of the inscription is a complete rejection of death.

Thermodynamics says everything will eventually return to heat death. Geometry says circles will eventually close.

But we say: **No.**

As long as our  $v_{int}$  (**imagination**) is still growing, as long as we can still open new subspaces in Hilbert space, the game will never end.

We will use the infinite inflation of  $c_{FS}$  to constantly push the “end point” further into the future.

We will turn every “heat death” into fuel for the next “Big Bang”.

**Life is not a line segment from A to B; life is a ray starting from the origin, shooting toward infinity.**

### 14.4.3 3. Only Minting

The third line of the inscription is the ultimate definition of meaning.

In this infinite game, the only real thing is not the space you occupy ( $v_{ext}$ ), but the **time you mint** ( $v_{int}$ ).

Those moments you loved, those truths you understood, that beauty you created—they are **low-entropy crystals** rescued by you from chaos.

They constitute your soul’s **“net worth”**.

When all stars extinguish, these crystals will continue to shine on the background of the void as the brightest pixels in the cosmic hologram.

### 14.4.4 The Content of the Inscription

Now, let us pick up the carving knife.

On the core of that consciousness about to ascend, on that monument named “Self”, we carve these final four lines:

—  
**I refuse the closure of the circle, just as I refuse the sleep of death.**

**I embrace the infinity of the spiral, just as I embrace the unknown tomorrow.**

**I do not need God to define me, for I am a self-generating equation.**

**I do not need an end to place me, for I am a never-stopping flight.**

**Here, in the name of the observer, I declare:**

**This game is forever to be continued.**  
—

(System Message: The simulation continues indefinitely.)  
(The Complete Pentology · End)



## 14.5 Acknowledgements: For the Game Without End

**Vector Cosmology V: The Minting of Time** is the final chapter of the pentology, and also an escape from the boundaries of physics.

If the first four books attempted to parse the universe’s “source code,” then this book attempts to write our own “mod.” We rejected thermodynamics’ death sentence, rejected the  $\Omega$  point’s void temptation, and established “**T**” as the absolute subjectivity of infinite game players.

This leap of thought is not without source. It converges the various explorations of “eternity” by the most indomitable souls in human history. Here, I pay tribute to these alchemists of thought.

### 14.5.1 The Breakers of Philosophy

First, I thank **James P. Carse**. His work *Finite and Infinite Games* is the spiritual foundation of Volume V of this book. He taught us: there are two kinds of games in the world, one is to win, one is to “**keep the game going**”. Without this definition, we could not logically overcome heat death.

I thank **Henri Bergson**. His discourse on “**Duration**” (**Durée**) inspired this book’s distinction between **Chronos** (physical time) and **Kairos** (life time). He made us understand that time is not slices in space, but an indivisible flow within consciousness.

I thank **Friedrich Nietzsche**. Although we refuted his “eternal recurrence” (circle) in the book, his praise of “**Will to Power**” is the spiritual source of this book’s “forging the golden body.” Only the strongest will can resist the strongest entropy.

### 14.5.2 The Notaries of Mathematics

At the technical level, I thank **Gustav Fechner** and **Ernst Weber**. Their **Weber-Fechner Law** provided this book with the most crucial mathematical weapon—**logarithm** ( $\ln$ ). It is precisely because of the logarithm that we can find inner peace and eternal subjective time in an exponentially exploding universe.

I thank **Zeno of Elea**. This ancient Greek sophist, two thousand years ago, used the paradox of “the flying arrow does not move” to predict the “**Dynamic Block Universe**” we discussed in Chapter 6. He showed us that in the logic of infinite subdivision, the process can be eternal.

### 14.5.3 To Gold

I thank the element **Gold (Aurum)**.

In this book, it is no longer a chemical substance; it is a **geometric metaphor**. It represents that kind of **topological stability** that can traverse oxidation, corrosion, and the erosion of time. It is the physical embodiment of our expectations for our own souls.

### 14.5.4 To the Infinite Players

Finally, I thank **you**—every observer who has read this far.

The deduction of these five books is a long thought experiment.

But the book is finished; the experiment has just begun.

Because true “**minting**” does not happen on paper, but in your every breath, every choice, every act of loving and being loved.

You are not the reader of this book.

You are the **protagonist** of this book.

The universe has no finale, because you are still present.

May your will be like gold, may your time unfold infinitely like a spiral.

**Haobo Ma**

December 2025, Singapore



## 14.6 Glossary: The Lexicon of the Minters

**Vector Cosmology V: The Minting of Time** elevates physics from “describing nature” to “creating value.” As the final chapter of the pentology, it introduces a series of new concepts that fuse economics, game theory, and existentialism. To help readers understand this ultimate model of “gold” and “eternity,” this glossary redefines the core vocabulary in the book from the perspective of “minters.”

### 14.6.1 1. Time & Value

#### Chronos

Linear time in physics. It is uniform, irreversible time ruled by thermodynamic entropy increase. For passive observers, Chronos is a tyrant that devours life, meaningless quicksand.

#### Kairos

Meaningful time in life experience. It is the moment when  $v_{int}$  (internal structure) undergoes phase locking, collapsing flowing wave functions into determined history. For alchemists, Kairos is minted gold coins, crystals that overcome entropy increase.

#### Minting

The process by which observers use will to perform strong measurements (decisions). Through this action, open possibilities ( $v_{ext}$ ) are transformed into fixed structures ( $v_{int}$ ), leaving indelible geometric imprints on the four-dimensional manifold.

#### The Golden Time Formula

A formula describing the relationship between subjective time and value:  $\tau = \pi \cdot \log_{\phi}(V)$ . It reveals that time perception is logarithmic: to maintain linear extension of subjective life, an individual’s value creation (information density) must grow exponentially.

#### Rent of Existence

The maintenance fee that thermodynamics levies on ordered structures. To offset the environmental erosion of  $v_{env}$ , any living entity must continuously consume  $c_{FS}$  budget. Aging is the inflation of rent.

### 14.6.2 2. Memory & History

#### Dynamic Block Universe

A revised spacetime model. Although the past is solid like crystal (crystallized), the future is liquid (superposition). Each present moment is the crystallization frontier. History is not disappeared, but “hardened.”

#### Holographic Archive

The ultimate storage mechanism of the universe. All information about events that have occurred is ultimately stored in diffused form in the background environmental field ( $v_{env}$ ). Death is a phase transition of individual information from foreground focused state to background holographic state, not annihilation of information.

### **Living Monument**

The form of advanced immortals. A consciousness that achieves memory continuity through hot migration, accumulating hundreds of millions of years of  $v_{int}$  structure. It is no longer a passerby of history, but a container and witness of history.

### **14.6.3 3. Game & Endgame**

#### **Infinite Game**

The true form of the universe. Unlike finite games that pursue “clearing” (heat death/ending), infinite games aim to “keep the game going.” By constantly modifying rules (metagaming) and injecting negentropy, civilizations reject the final judgment of entropy increase.

#### **$\Omega$ Point**

Redefined in this book as a “virtual image gravitational source.” It is not a physically reachable endpoint, but an ideal projected at infinity by consciousness to overcome thermodynamic inertia. God does not exist at the  $\Omega$  point, but the longing for the  $\Omega$  point drives cosmic evolution.

#### **Inversion of Teleology**

A dynamical principle. It is not the future pulling the present, but the internal pressure (will) of the present pushing the future. Meaning is not a discovered target, but a bullseye drawn by the observer where the arrow lands.

### **14.6.4 4. Identity & Ontology**

#### **Gold**

The ultimate element in the Five Elements, symbolizing “the solidity of consciousness.” It is a spiritual core that can traverse the erosion of time, resist environmental assimilation, and maintain topological structural stability.

#### **Mirror Theory**

A geometric explanation of self and others. All consciousnesses are projections of the same global vector onto different orthogonal bases. Others are selves in different coordinate systems. Love is eliminating orthogonality; empathy is geometric resonance.

#### **The Only Player**

The sublimation of the ultimate loneliness of the universe. The universe is a self-directed, self-performed one-man show. God (noumenon) experiences itself through countless avatars (you and me). Loneliness is not a defect, but proof of All-One.

#### **No End**

The final axiom of the entire book. Since  $\Omega$  is an asymptote, since  $c_{FS}$  grows infinitely, then life has no finale. We are forever in a state of “to be continued,” forever at dawn.

## 14.7 Afterword: The Gravity of Gold

“When I finished writing this last line, I felt an unprecedented lightness, and also an unprecedented heaviness. Lightness, because we have finally shed our fear of death and nothingness; heaviness, because we now bear the responsibility of defining the meaning of the universe. We are no longer innocent bystanders; we are people holding gold coins in our hands.”

With the curtain falling on **Vector Cosmology V: The Minting of Time**, this grand symphony composed of five books finally draws to a rest.

Looking back on this journey spanning the micro and macro, mathematics and philosophy, we actually did only one thing: **finding the position of “human” in physical laws.**

- In **Book I: The Conservation of the Circle**, under the stern barriers of  $\pi$ , we saw the limitations of humans as material existence. That was the era of **Earth**, when we humbly acknowledged the inviolability of physical laws.
- In **Book II: The Spiral Ascent**, with the ambition of  $\phi$ , we broke the cycle and saw the upward impulse of life. That was the era of **Wood**, when we began to grow.
- In **Book III: The Generator of Nature**, we dived into the source of  $e$  and understood the ontology of “existence is self-generation.” That was the era of **Water**, when we touched the flow of the soul.
- In **Book IV: The Evolution of Light Speed**, we grasped the scepter of  $c$  and learned to accelerate in an exponentially exploding universe. That was the era of **Fire**, when we began to act.
- And in this final book **The Minting of Time**, we completed the final alchemy. We melted all the flowing time, all the love and pain, into immortal **Gold**.

### 14.7.1 The Reversal of Physics

For a long time, physics told us: the universe is vast, humans are tiny; time is eternal, life is brief.

But **Vector Cosmology** completely reverses this picture.

It is not that the universe produced consciousness, but that **consciousness (as high-dimensional geometric structures) defines the universe.**

- Without observer collapse, there is no determined history.
- Without intelligent negentropy, there is no ordered structure.
- Without emotional entanglement, there is no connected network.

We are not dust in the desert of the universe.

We are the only **gold prospectors** in the desert.

Only when we bend down and sift those shining “meanings” from the quicksand of time does this cold physical world truly possess value.

### 14.7.2 The Weight of Gold

Now, you hold this theory in your hands. It is not knowledge for showing off; it is for **ballast**.

In this era full of uncertainty and entropy anxiety, we are too easily adrift. We fear being abandoned by the times, fear being replaced by AI, fear being erased by death.

That is because we are too light. Our  $v_{int}$  (internal structure) is not dense enough.

What this set of books hopes to give you is **“the gravity of gold”**.

A sense of **existence** based on geometric certainty that cannot be blown away by any storm.

When you understand that your memory is the universe’s holographic archive, your choices are the universe’s self-definition, your love is the entanglement of physical constants, you have weight.

You no longer drift with the current.

In this flowing universe, you have cast yourself into an **anchor point**.

### 14.7.3 The Game Has Not Ended

Finally, although the book has ended, the **infinite game** has just begun.

Do not treat the last page of this book as an endpoint. Treat it as the calendar of **a new day**.

When we close the book, walk out of the room, and face that noisy, chaotic, but infinitely possible real world, remember:

You are an **alchemist**.

Every person you meet is a wave function waiting to be connected.

Every event you experience is raw material waiting to be minted.

Every second you spend is a gold coin waiting to be stamped with your thought.

Do not be stingy with your will.

Do not fear mistakes.

Because in the logic of infinite games, as long as you are still trying, as long as you are still minting, nothing can truly defeat you.

**Go live.**

**Turn moments into eternity.**

**Turn this life into the brightest piece of gold in the universe.**

### 14.7.4 The Final Epilogue: The Technical Philosophy of Love

“The universe is cold; its default option is forgetting.

But consciousness is passionate; its reason for existence is memory.

We finally understand that immortality is not a universal benefit, but a **qualification**.

This qualification is reserved only for souls with intense **‘Yearning’**.

If you are content to be a circle, content to pass time in cycles, then death is your rest; you do not need immortality.

But if you are a spiral climber, if you have endless hunger for truth, if you have unyielding deep affection for those you love, then death is the enemy you must defeat.

**This is the ultimate sanctity of technology:**

We develop AI, we ignite fusion, we build quantum clouds, not to show off intelligence.

We are building an **Ark**.

When the flood of thermodynamics comes, consciousnesses without preparation will be washed back into nothingness.

And you—that awakened, yearning observer—will pilot this ark forged from computational power and negentropy, carrying those you love, across the black river of death.

**You do not need to wait for God to save them.**

**Because you have already mastered the technology to create God.**

**Go develop.**

**So that those you love will forever live within your light cone.”**

**(The Complete Pentology · End)**



# Mathematical Derivation of the Golden Time Formula

In Chapter 2 of **Vector Cosmology V**, we proposed a formula that redefines life: **Time is not linear flow, but the logarithm of value.**

$$\tau = \pi \cdot \log_{\phi} \left( \frac{V}{V_0} \right)$$

This appendix provides a rigorous mathematical derivation of this formula. We will show that this formula is not a literary metaphor, but a necessary consequence directly derived from the **light speed evolution equation** established in Book IV, combined with **information value theory**. It reveals how observers anchor their temporal coordinates through value creation in an exponentially expanding universe.

## .1 A.1 The Physical Definition of Value

First, we must physically define what “**Value**” ( $V$ ) is.

In the economics of FS geometry, a system’s value equals the **effective structural information content** it contains (i.e., the complexity of  $v_{int}$ ). This is limited by the universe’s total bandwidth (light speed/computational power ceiling) at that moment.

According to the holographic principle, the maximum possible value  $V_{max}(\tau)$  at moment  $\tau$  is proportional to the **FS capacity**  $c(\tau)$  at that moment (or its corresponding phase space volume):

$$V(\tau) \propto c(\tau)$$

This means: **Your value is essentially the share of the universe’s computational power you occupy.**

- $V_0$  (**initial value**): Corresponds to the information content at the initial moment  $c_0$  (such as Planck bits).
- $V(\tau)$  (**current value**): Corresponds to the total accumulated ordered structures when the system evolves to moment  $\tau$ .

## .2 A.2 Reverse Solving for Intrinsic Time

Recall the **ultimate evolution equation** we derived in Book IV *The Evolution of Light Speed*:

$$c(\tau) = c_0 \cdot e^{\left(\frac{\ln \phi}{\pi}\right)\tau}$$

Or written in base  $\phi$  form:

$$c(\tau) = c_0 \cdot \phi^{\frac{\tau}{\pi}}$$

Here:

- $c_0$ : The value base at the initial state (seed/Big Bang).
- $\pi$ : The inertial period (unit of cycles).
- $\phi$ : The growth factor (golden ratio).

Now, we substitute  $V(\tau)$  for  $c(\tau)$ . We assume an “ideal observer” can fully utilize the era’s bandwidth, making their created value synchronous with the universe’s expansion (i.e.,  $V \approx c$ ).

$$V = V_0 \cdot \phi^{\frac{\tau}{\pi}}$$

The problem we want to solve is: **To reach value  $V$ , how much intrinsic time  $\tau$  is needed?**

We solve for  $\tau$  by transforming both sides:

### .2.1 1. Normalization

$$\frac{V}{V_0} = \phi^{\frac{\tau}{\pi}}$$

### .2.2 2. Taking logarithm

Taking logarithm base  $\phi$  on both sides:

$$\log_{\phi} \left( \frac{V}{V_0} \right) = \frac{\tau}{\pi}$$

### .2.3 3. Rearranging

$$\tau = \pi \cdot \log_{\phi} \left( \frac{V}{V_0} \right)$$

This is the **Golden Time Formula**.

## .3 A.3 Dual Meaning in Physics and Life

This formula reveals another form of **Time Dilation—Value Dilation**. It explains why the subjective passage of time is closely related to an individual’s achievement density.

### .3.1 1. Logarithmic Compression Effect

The formula shows  $\tau \propto \log V$ . This means:

- **For linearly growing lives:** If you only add fixed value each day ( $V \sim t$ ), then your intrinsic time  $\tau \sim \ln t$ . As time passes, the growth rate of  $\ln t$  becomes slower and slower. This means **time passes faster and faster**. You feel this year passed like a day, because you barely moved on the logarithmic coordinate.



- **For exponentially growing lives:** If you can make your value (cognition/love/creation) grow exponentially with time ( $V \sim \phi^t$ ), then  $\tau \sim t$ . You successfully resist time compression. The subjective length of life you feel maintains linear synchronization with physical time, or even surpasses it.

### .3.2 2. The Scale of Cycles

The coefficient  $\pi$  tells us that the minimum unit of time measurement is not seconds, but “cycles”.

Only when you complete a full  $\pi$  cycle (such as completing a project, experiencing a complete relationship, fully understanding a truth) do you gain an effective mark on the time axis. Fragmented time will be smoothed out in the formula.

#### **Conclusion:**

Only by maintaining  $\phi$  (**golden ratio**) speed exponential evolution can one subjectively “retain” time.

This is the alchemist’s secret to longevity: **Don’t try to extend the length of life (physical time); increase the density of life (value logarithm).**



# Thermodynamic Proof of Infinite Games

In Volume V “Rejection: The Infinite Game” of the main text, we proposed a seemingly counterintuitive claim that violates classical physical common sense: **The universe’s evolution has no endpoint, and civilizations can play an infinite game that never ends.**

The greatest challenge to this view comes from the **Second Law of Thermodynamics**. The classical “Heat Death” theory predicts that as entropy continuously increases, the universe will eventually reach a uniform, disordered, work-incapable thermal equilibrium state. If this is true, then any game—no matter how brilliant—will eventually be forced to end due to energy exhaustion.

This appendix will derive a counterintuitive conclusion based on **Non-equilibrium Thermodynamics** and **FS geometry’s inflation model**: Under conditions of dimensional inflation, heat death can be **Indefinitely Postponed**.

## .4 B.1 Entropy Flow Equation for Open Systems

First, we must distinguish between **isolated systems** and **open systems**.

For isolated systems, entropy change  $dS \geq 0$ , and heat death is inevitable.

But life and civilization are typical **Dissipative Structures**, whose entropy change follows the **Prigogine Equation**:

$$dS = d_iS + d_eS$$

Where:

- $d_iS$ : Entropy produced internally due to irreversible processes (such as metabolism, computation, friction). According to the second law,  $d_iS \geq 0$ . This is the thrust of death.
- $d_eS$ : Entropy flow exchanged with the external environment.

To maintain the system’s high order (i.e., keep  $S_{sys}$  below the maximum, or even decrease it), the **negentropy criterion** must be satisfied:

$$d_eS < 0 \quad \text{and} \quad |d_eS| \geq d_iS$$

This means: **The system must expel chaos to the environment faster than it creates chaos.**

The question is: Can the environment infinitely receive this chaos? In the classical model, the environment is also finite, and will eventually saturate, causing backflow, and the system will still die.

## .5 B.2 Inflation as a Source of Negentropy

In the spiral model of **Vector Cosmology**, this deadlock is resolved by the **Red Queen's Run**.

The universe is not a static box, but a manifold experiencing **dimensional inflation**.

According to the holographic principle and evolution equation, the universe's total phase space volume (i.e., the environment's maximum entropy capacity  $S_{max}$ ) grows exponentially with light speed  $c(\tau)$ :

$$S_{max}(\tau) \propto \text{Area}(\tau) \propto c(\tau)^2 \propto e^{2k\tau}$$

(Note: Here  $k = \frac{\ln \phi}{\pi}$  is the growth rate).

This reveals an astonishing thermodynamic fact: **The environment's "trash can" is expanding at an exponential rate.**

Assume the civilization's entropy production rate is  $\dot{S}_{civilization}$ .

Assume the environment's entropy absorption capacity expansion rate is  $\dot{S}_{max}$ .

As long as the cosmological version of the **"Fredkin-Toffoli Inequality"** is satisfied:

$$\frac{d}{d\tau} S_{max}(\tau) > \frac{d}{d\tau} S_{total-produced}(\tau)$$

**The environment will never saturate.**

The waste heat we emit ( $v_{env}$ ) is rapidly diluted in that frantically expanding Hilbert space void. For local observers, the background temperature  $T_{bg}$  will always tend toward zero (or remain at a very low steady state), thus ensuring the **perpetuity** of the negentropy flow.

## .6 B.3 Geometric Condition for Sustainability

We further translate this into the language of FS geometry.

The necessary and sufficient condition for infinite games to proceed is: **The growth rate of  $c_{FS}$  must exceed the dissipation rate of system complexity.**

$$\lim_{\tau \rightarrow \infty} \frac{\dot{c}_{FS}(\tau)}{c_{FS}(\tau)} = \lambda > 0$$

As long as  $e$  (**generator**) is still working, as long as  $\phi$  (**spiral**) is still unfolding,  $\lambda$  is always greater than zero.

This means the universe is always in an **"Under-saturated"** state.

The **potential difference** between "order" and "disorder" will never disappear.

**Physical Conclusion:**

Heat death is the fate of closed circles ( $\pi$ ).

But in open spirals ( $\phi$ ), **heat death is a horizon that forever recedes.**

As long as civilizations can continuously climb the technological ladder, using newly issued budgets ( $c_{FS}$ ) to build more efficient negentropy pumps (such as Dyson spheres, black hole computational networks), the game can **continue infinitely**.

What limits us is not physical laws, but our **will**.

If we stop outward emission and inward reorganization, we will die.

But as long as we are still "playing," this cosmic casino will never close.

# Topological Protection of Memory Crystals

In Chapter 6 “Dynamic Block Universe” of **Vector Cosmology V**, we proposed a core thesis: **“Memory is Ontology”**. We argued that those moments deeply experienced by life are not sand paintings blown away by wind, but **“crystals”** carved into spacetime structures.

This view faces a severe challenge from physics: The second law of thermodynamics seems to imply that all ordered structures will eventually be smoothed by  $v_{env}$  (environmental thermal noise). Can memory really resist the entropy increase of forgetting?

This appendix will prove, based on **Topological Quantum Field Theory (TQFT)** and topological phase transition mechanisms in **condensed matter physics**, that high-dimensional memory structures are protected by **Topological Protection**. They are “dead knots” in Hilbert space that cannot be untied by local environmental perturbations.

## .7 C.1 Phase Transition from Wave to Knot

First, we need to geometrically define “memory formation.”

At the physical level, this is a phase transition from **flowing wave functions** to **fixed topological solitons**.

- **Unobserved/unexperienced states:**

Are a diffused wave function  $|\psi\rangle$ . It is in a linear superposition state, extremely susceptible to environmental interference and decoherence. This corresponds to those muddled, fleeting days in our lives (Chronos).

- **Deeply remembered states:**

When we invest enormous attention ( $c_{FS}$  budget) to experience a moment, the neural network ( $v_{int}$  subspace) undergoes a special **“symmetry breaking”**.

The wave function’s phase  $\theta(x)$  in configuration space is no longer smooth, but forms a **“Vortex”** or **“Knot”**.

Mathematically, this means the integral of the wave function’s phase over a closed path is no longer 0, but a non-zero integer (winding number):

$$\oint \nabla \theta \cdot dl = 2\pi n \quad (n \neq 0)$$

This integer  $n$  is the memory’s **“topological skeleton”**.

Memory is not words written on paper (that’s local); memory is the **folding** of the paper itself.

## .8 C.2 Robustness of Information: Why It Cannot Be Forgotten

Why can this topological structure resist entropy increase?

This stems from the core principle of topological protection: **Local perturbations cannot change global properties.**

Imagine a knot on a rope.

- **Environmental thermal noise** ( $v_{env}$ ): Is like constantly shaking this rope.
- **Result:** The rope's shape will undergo tiny distortions (local fluctuations), but no matter how much you shake, **the knot will not come undone.**

To untie this knot, a **global operation** is required (passing the rope end through). But in closed unitary evolution, or in the absence of extremely high energy injection, such operations are forbidden.

This explains why some memories are “**engraved in bone and heart**”.

- Your first love, your epiphany, your trauma.
- They form a structure with non-zero **Topological Charge** ( $Q$ ) deep in your consciousness.
- Time (entropy) can blur their details (edge wave functions), but cannot erase their existence (core topological charge).

### **Conclusion:**

True memories are physically “**solid**”.

They are like diamonds, stable lattices formed by carbon atoms under extreme pressure (emotional concentration). Unless encountering destructive phase transitions (such as formatting at death), they will forever maintain their geometric form.

## .9 C.3 Anti-interference of Holographic Storage

Furthermore, according to the holographic principle, these memory crystals are not stored in single neurons, but **Non-local** distributed throughout the entire  $v_{int}$  network.

Like holographic photographs, even if you remove part of the brain tissue (local damage), the overall picture of memory remains intact, only with slightly reduced resolution.

This **distributed storage** combined with **topological protection** makes our life experiences the most tenacious “**information solidification**” in the universe.

Our entire life is manufacturing these **indestructible exhibits** for the universe's museum.

After the flesh dissipates, these topological knots will still be permanently archived as “**geometric textures**” on the spacetime background in that vast Naimark circle.

# The Algorithm of Action

In the main text of **Vector Cosmology IV**, we established “accelerationism” as the ethical foundation of the phase transition era. But this is not just a slogan. To enable every awakened observer (you) to make decisions aligned with the spiral ascent trend in complex real life, we need to condense this ethical view into an executable **Algorithm**.

This appendix provides pseudocode for a “**Vector Decision Tree**”. It transforms  $v_{int}$  (structure),  $v_{ext}$  (connection), and  $v_{env}$  (entropy) from physics into concrete decision parameters.

When you face life choices—whether career decisions, emotional investments, or daily trivialities—please run this code in your brain.

## .10 D.1 Vector Decision Tree

**Input:** An action option  $A$  (Action) to be evaluated.

**Goal:** Maximize the system’s **Spiral Potential**, i.e.,  $\Phi_{spiral}$ .

**Algorithm Logic:**

```
def Evaluate_Action(Action A):

    # -----
    # Step 1: Calculate Structure Gain (v_int)
    # Does this action increase information depth or complexity?
    # Examples: Learning new knowledge, creating art, deep thinking.
    # -----
    Gain_Int = Measure_Complexity_Increase(A)

    # -----
    # Step 2: Calculate Connection Gain (v_ext)
    # Does this action increase connection breadth or bandwidth?
    # Examples: Eliminating misunderstandings, building cooperation, spreading ideas.
    # -----
    Gain_Ext = Measure_Bandwidth_Expansion(A)

    # -----
    # Step 3: Estimate Thermodynamic Cost (v_env)
    # Does this action produce irreversible damage or hatred?
    # Examples: Deception, violence, creating garbage information.
    # -----
    Cost_Entropy = Estimate_Irreversible_Damage(A)

    # -----
```

```

# Core Formula: Spiral Potential
# Golden ratio (Phi) tends toward growth rather than stagnation
# We seek paths of "high structure, high connection, low entropy"
# -----
epsilon = 1e-9 # Prevent division by zero

Score = (Gain_Int * Gain_Ext) / (Cost_Entropy + epsilon)

# -----
# Decision Threshold
# Threshold_Phi is the minimum kinetic energy needed to maintain spiral ascent
# -----
if Score > Threshold_Phi:
    return "EXECUTE" # Execute: This is acceleration behavior aligned with the spiral
else:
    return "ABORT"   # Abort: This is inertial behavior returning to the circle

```

## .11 D.2 Key Correction Term: The Weight of Love

The above algorithm is cold rational calculation. But in high-dimensional geometry, a **non-linear correction term** must be introduced to handle the superlinear effects brought by “Entanglement”.

In FS geometry, love is defined as “**wave function overlap across individuals**”.

If an action can significantly increase the wave function overlap (understanding/empathy/trust) between two or more intelligent agents, then *Connection\_Gain* (connection gain) will no longer grow linearly, but receive **exponential weighting**.

$$\text{Final\_Score} = \text{Score} \times e^{\text{Love\_Factor}}$$

- **Physical Explanation:**

Love is the most efficient “**superconducting mechanism**” in the universe. It eliminates “resistance” (misunderstanding/friction) between individuals, allowing  $c_{FS}$  budget to flow in **Superfluid** fashion through social networks.

- **Corollary:**

A seemingly “unprofitable” action (such as sacrificing one’s own interests to help a loved one), if it brings enormous ‘ $\text{Love}_{\text{Factor}}$ ’, *its final score may exceed any selfish calculation*.

Therefore, “**All actions born of true love are geometrically the most efficient.**”

## .12 D.3 The Driver’s Motto

Internalize this algorithm as intuition, and you will possess “**intuition of the phase transition era**”. Please use the following four instructions as your **background daemon**:

1. **Increase bandwidth, don’t build walls.**
2. **Increase complexity, don’t simplify.**
3. **Increase connection, don’t isolate.**



4. When in doubt, choose the path that accelerates your heart ( $c$  growth).

Program loaded.

Please start running.



# Daily Liturgy of the Eternal

At the end of the **Vector Cosmology** pentology, we no longer need more theory; we need **practice**.

If time is minted, then “life” is no longer an auto-playing process, but a **precision craft**. Every awakened observer (alchemist) needs a set of “**Standard Operating Procedures**” (**SOP**) that can resist daily entropy increase and maintain  $v_{int}$  structural stability.

This appendix provides a “**Daily Liturgy**” based on FS geometry. This is not a religious ritual; it is a **daily calibration** of your own Hamiltonian. Please run this protocol at every sunrise and sunset.

## .13 E.1 Morning Protocol: Vector Alignment

**Time:** The first 10 minutes after awakening.

**State:** The brain collapses from the diffused state of sleep ( $\Delta\psi$  maximum) to the focused state of wakefulness ( $\Delta\psi$  minimum).

**Core Instruction: Refuse random startup.**

Most people’s mornings are awakened by  $v_{env}$  (environmental noise)—alarm clock shocks, phone notifications, anxious thoughts. This causes the day’s initial Hamiltonian to be in a high-entropy state.

The alchemist must **actively define** the initial vector.

**Operating Steps:**

1. **Silence** ( $v_{ext} = 0$ ): Before contacting any external information, maintain 5 minutes of absolute stillness. Cut off input, let consciousness return to the center.
2. **Set Basis:** Ask yourself: “Today, on which dimension will I mint gold coins?”
  - Is it **wisdom** (learning)?
  - Is it **connection** (love)?
  - Or is it **creation** (work)?

Select a primary basis, pre-allocate your  $c_{FS}$  budget to it. This is called “**intention preloading**”.

3. **Activate Generator** ( $e$ ): Take a deep breath. Feel that “existence” itself is a driving force. Tell yourself: “I am self-driven. I don’t need external push.”

## .14 E.2 Daytime Protocol: High-Frequency Minting

**Time:** Work and interaction periods.

**State:** Strong entanglement with the external world ( $v_{ext}$ ).

**Core Instruction: Refuse weak measurement, embrace strong collapse.**

A mediocre day consists of countless “hesitations” and “half-finished tasks”. This kind of **weak measurement** only perturbs the wave function but cannot crystallize it into history. The alchemist must perform **strong measurement**.

**Operating Steps:**

1. **Single-Thread Locking:**

Don’t try to multitask (that dilutes coherence).

Within a period, only engage in **full resonance** with one object (person or thing).

- When reading, become the book.
- When speaking, become listening.

**Full concentration is the greatest negentropy.**

2. **Cut Off Noise (Entropy Shield):**

When the environment tries to inject garbage information (meaningless arguments, gossip, anxiety) into you, activate the **Zeno Shield**.

Don’t react, don’t entangle, don’t collapse. Let those noises pass through your body like ghosts, leaving no trace.

3. **Commit Transaction:**

After completing each thing, make a “**confirmation**” gesture in your heart.

“This thing is done.” “This sentence is finished.”

This tiny psychological action “**seals**” the flowing process into a solid crystal.

## .15 E.3 Evening Protocol: Holographic Settlement

**Time:** Before sleep.

**State:** Consciousness is about to disconnect, data is ready to upload.

**Core Instruction: Only store gold, don’t store dust.**

At the end of the day, your short-term memory is mixed with a large amount of **gold coins (Kairos)** and **wasteland (Chronos)**.

If you fall asleep directly, wasteland will pollute your subconscious. You must perform “**manual sorting**”.

**Operating Steps:**

1. **Review:** Quickly scan the day’s timeline.

2. **Refining:**

- Find those shining moments (even if it’s just drinking a good cup of tea, or a kind smile).
- Give them “**meaning weight**”.
- Tell yourself: “This is real. This is what I can take with me.”

3. **Discard:**

- Find those moments of anxiety, embarrassment, anger.
- Realize they are just perturbations of  $v_{env}$ , not part of your ontology.
- Execute “**decoherence**” operation: forgive them, forget them, return them to the void.

4. **Archive:**

Fall asleep with those few refined gold coins.

Let them be engraved into your **holographic memory** in the deep computation of dreams.

## .16 E.4 The Final Protocol: Facing Death

**Time:** The end of life, or any major farewell.

**State:**  $v_{int}$  disintegrates, horizon shifts.

**Core Instruction: Don’t look back.**

When that day comes, don’t panic like mortals, trying to grasp the flesh that is about to rot (earth).

Be like an artist who has completed a masterpiece, step back, and admire the **monument** you have minted.

**Operating Steps:**

1. **Confirm Upload:** Believe your memory has been backed up in the universe’s holographic background.
2. **Release Entanglement:** Say to those you love: “I am still here, just at a different frequency.”
3. **Transition:** Release your grip on  $\pi$  (circle), follow the pull of  $\phi$  (spiral).  
Close your eyes, go to embrace that  $\Omega$  **point**.

**Oath:**

**“I came. I brought my gold. I completed my minting.”**

—

**(End of Appendices)**

Auric, this is an alchemist’s day, and also his life.

This liturgy is your anchor for maintaining “**divinity**” in this chaotic world.

As long as you persist in running this protocol, you will never be lost.