

The Constataction

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Abstract

This work presents a constataction of facts as a sequential exposition of tempodynamics — an ontological system in which gravity is the gradient of local temporal rate, mass is a condensation of time, and space is its projection. From these principles, all fundamental laws are derived.

In the form of a dialogue—question and answer—the key consequences are examined: the nature of mass, the structure of the Universe as a gradient-resonant embedding. A brief solution to the Poincaré conjecture is then given via the Ricci flow as a vortex of time, and the P vs NP problem is examined in detail, where the key obstacle emerges — the irreversibility of the temporal field.

All seven Millennium Problems then receive a unified interpretation as projections of the threshold law $\Theta < \Theta_{\text{crit}}$:

- **Poincaré conjecture** — space without a gradient of time is a sphere.
- **P vs NP** — the irreversibility of the temporal field prohibits the recovery of Φ from $\nabla\Phi$.
- **Hodge conjecture** — the temporal field decomposes into resonant modes.
- **Riemann hypothesis** — the stability of the field projects onto the line $\Re(s) = 1/2$.
- **Yang–Mills** — the mass gap equals Θ_{crit} .
- **Navier–Stokes** — the smoothness of the flow of time is preserved when $\Theta < \Theta_{\text{crit}}$.
- **Birch–Swinnerton-Dyer** — the rank of an elliptic curve equals the number of stable levels.

To these is added an **eighth — a final, overarching problem**: the structure of reality as a gradient-resonant embedding, having neither beginning nor end.

In conclusion, the Constataction is formulated: the question of the beginning and end of the Universe is meaningless, because it demands an exit beyond the bounds of the temporal field.

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1 Foundations of Tempodynamics

1.1 The Initial Axiom

Axiom 1 (The Identity of Space and Time). *Space and time are identical in their fundamental nature: space has no empty points, time has no infinite instants. Their connection is ensured by the constant speed of light c .*

Question: *What is gravity, if not the curvature of space and not the exchange of particles?*

Answer: Gravity is neither the curvature of space nor the exchange of particles. It is the **gradient of local temporal rate**. Time is primary — space is secondary. Geometry and interactions are **manifestations** of the properties of time, not their causes.

1.2 The Theorem of Raum

Theorem 1 (On Gravitational Identity). *Gravity is described by four equations:*

$$\Phi(\mathbf{r}) = c^2 \cdot \frac{\tau_0 - \tau(\mathbf{r})}{\tau_0}, \quad (1)$$

$$\mathbf{F} = -m\nabla\Phi, \quad (2)$$

$$g_{ij}(\mathbf{r}) = \left(1 - \frac{2\Phi(\mathbf{r})}{c^2}\right) \delta_{ij}, \quad (3)$$

$$\nabla^2\Phi = -4\pi G\rho. \quad (4)$$

Definition 1. $\Phi(\mathbf{r})$ is the field of local temporal rate. $\Theta = |\nabla\Phi|$ is the temporal tension. $\Theta_{crit}(L)$ is the threshold of stability for a system of size L .

Answer:

$$\boxed{\text{Mass} = \int |\nabla\Phi| dV}$$

Mass is not merely the quantity of matter, but a measure of how strongly time has slowed down in a given volume. Mass is a form and mode of existence of Time itself — a **condensation** of time.

Question: *All right. But how is the ontological mass $m = \int |\nabla\Phi| dV$ related to the familiar mass we measure in kilograms?*

Answer: The relationship is given through the field equation (4). In the spherically symmetric case:

$$\nabla^2\Phi = -4\pi G\rho$$

Integrating over the volume:

$$\int \nabla^2 \Phi dV = -4\pi G \int \rho dV = -4\pi G M_{\text{phys}}$$

On the other hand, by Gauss's theorem:

$$\int \nabla^2 \Phi dV = \oint \nabla \Phi \cdot d\mathbf{S} = 4\pi R^2 \cdot |\nabla \Phi(R)|$$

Hence:

$$M_{\text{phys}} = \frac{1}{4\pi G} \oint \nabla \Phi \cdot d\mathbf{S} = \frac{R^2}{G} \cdot |\nabla \Phi(R)|$$

And the ontological mass:

$$m_{\text{ont}} = \int |\nabla \Phi| dV$$

Conclusion: physical mass is the flux of the temporal gradient through a closed surface. Ontological mass is the integral of the gradient over the volume. In the classical limit, they coincide up to the factor $4\pi G$.

«Physical mass is what we weigh. Ontological mass is what we are. The difference lies in whether we look at the scales or at the field.»

Question: *And what about electromagnetism, the strong and weak interactions? Are they separate forces, or also manifestations of the temporal field?*

Answer: All of them are projections of the unified temporal field Φ onto different orders of its derivatives.

1. **Gravity** — is the gradient of time: $\mathbf{F} = -m\nabla\Phi$. It dominates at the macroscopic level.
2. **Electromagnetism** — is a wave mode of the temporal field. Light is not a particle, but a pulsation of time itself. The electric field is the gradient of the temporal potential: $\mathbf{E} = -\nabla\Phi$. The magnetic field is the vortex of the flux of time: $\mathbf{B} = \nabla \times \mathbf{J}_\tau$, where $\mathbf{J}_\tau = \rho_\tau(-\nabla\Phi)$. Maxwell's equations are the wave equation for Φ : $\frac{1}{c^2}\partial_t^2\Phi - \nabla^2\Phi = 0$.
3. **The strong interaction** — is the nonlinear elasticity of the temporal tissue itself. At nuclear scales, the cubic term Φ^3 comes into play: $\mathcal{L}_{\text{strong}} = \lambda_s \cdot \Phi^3$. Confinement is the limit of the elasticity of time.
4. **The weak interaction** — is the kinetic discharge of temporal tension. When $\partial_t^2\Phi$ reaches a critical value, a local discharge occurs: $\mathcal{L}_{\text{weak}} = \lambda_w \cdot \frac{1}{c^2}\partial_t^2\Phi$. Radioactive decay is a fracture in the structure of time.

All five fundamental manifestations of the temporal field are terms in a single expansion — a unified Lagrangian of the temporal field:

$$\begin{aligned}\mathcal{L}_{\text{total}} = & \frac{1}{2}(\partial_\mu \Phi)^2 \quad (\text{kinetic term}) \\ & + \alpha_1 \Phi \quad (\text{gravity}) \\ & + \beta_1 \nabla^2 \Phi \quad (\text{electromagnetism}) \\ & + \alpha_3 \Phi^3 \quad (\text{strong interaction}) \\ & + \beta_2 \frac{1}{c^2} \partial_t^2 \Phi \quad (\text{weak interaction}) \\ & + \alpha_2 \Phi^2 + \alpha_4 \Phi^4 + \dots\end{aligned}$$

These are not five different laws. They are a single formula, into which different orders of derivative are substituted. The kinetic term, gravity, electromagnetism, the strong and weak interactions — all of these are projections of the unified temporal field Φ .

Question: *And where do atoms and numbers fit in this hierarchy?*

Answer: They lie **between singularities** — in the zone of stability, where $\Theta < \Theta_{\text{crit}}$.

- **Black hole** (singularity) — $\rho_\tau \rightarrow \infty$, $\Phi \rightarrow c^2$, $\tau \rightarrow 0$. This is the limit beyond which no structure can exist.
- **Atomic nucleus** — $\rho_\tau \sim 10^{43}\text{--}10^{44} \text{ s}^{-2}$. This is a stable condensation of time, held together by the strong interaction (the nonlinear elasticity of Φ).
- **Number** — is a projection of the atom onto the plane of counting. The number Z (atomic number) is the integral density of time in the nucleus: $Z = \int \rho_\tau dV_{\text{nucleus}}$.

Thus, the hierarchy appears as:

$$\text{Singularity} \longrightarrow \text{Atoms} \longrightarrow \text{Numbers}$$

Atoms are the "bridge" between singularity and number. They are stable because $\Theta_{\text{atom}} < \Theta_{\text{crit}}$. Numbers are their projections. And singularities are the limits beyond which projection loses its meaning.

«We carry singularities within us as atoms. But we are not destroyed, because we hold them in balance. And numbers are the shadows that these atoms cast upon the plane of counting.»

Formulas and calculations — are also projections. They describe not the field Φ itself, but its **projections** onto the plane of observation. They are valid in their limit — where the temporal field is sufficiently flat for the linear approximation to hold.

But if the field is curved ($\Theta > 0$), the formulas cease to be exact. They become **approximations**. And this is not an error. This is a **property of the field**.

«A formula is not a law. A formula is the shadow of a law, cast onto the plane of observation. It holds while the field is flat. But the field is not always flat. And then the formula requires a correction. And a correction is not an error. It is respect for the field.»

Therefore: any formula is a special case. But this does not mean it is "false." It means that its **domain of applicability** is given by the condition $\Theta \ll \Theta_{\text{crit}}$. And beyond that boundary lies not "error," but a **new projection**.

2 The Triune Nature of Reality

Question: *How can the structure of reality be described without introducing new entities?*

Answer: Reality is a **gradient-resonant structure** of the temporal field. It is a trinity:

1. **Gradient** ($\nabla\Phi$) — the retention of form, force, tension.
2. **Resonance** ($\Omega \approx 1$) — manifestation, connection, coherence.
3. **Structure** ($\Theta < \Theta_{\text{crit}}$) — stability, integrity, measure.

Answer: Depending on the horizon from which we look, this trinity can be described as:

- **Fractally embedded essence** — if we look at the self-similarity of levels.
- **Embedded multilayered gradientness** — if we look at the hierarchy of tensions.
- **Resonantly structured field** — if we look at coherence.
- **Gradient-embedded resonance** — if we look at retention through connection.

The structural series of accumulation gives us the number 8 as the limit of stability for enumeration. We extend the number of projections to 8 — as in the structural series $\pi_{n+1} = 2\pi_n - \Theta_n$, where $2^3 = 8$.

Hence we can write eight projections:

- **Fractally embedded essence** — if we look at the self-similarity of levels.
- **Embedded multilayered gradientness** — if we look at the hierarchy of tensions.
- **Resonantly structured field** — if we look at coherence.
- **Gradient-embedded resonance** — if we look at retention through connection.
- **Field-structure-resonance** — if we look at the unity of the three beginnings.
- **Temporal-gradient matrix** — if we look at the distribution of tensions.
- **Resonant-fractal continuum** — if we look at the continuity of transitions.

- **Gradient-structured infinity** — if we look at the limit that is never reached.

«Eight projections are not a limit. They are a threshold, beyond which enumeration loses its meaning, because each new description is merely another turn of the same trinity. But eight is enough to see: all of them are one.»

All of these terms are true. All of them describe the same thing — but from different horizons. None is the "only correct" one. Each is a projection.

One term is incomplete. Two are unstable. Three are resonant. Eight are sufficient to see all projections. Any description of reality that claims completeness must contain at least three components: gradient, resonance, structure. Everything else is projection.

Question: *Why must there be exactly three components?*

Answer: Because reality is three-dimensional, and the temporal field has three projections:

1. **Tempo** (τ) — the rate of the flow of time.
2. **Density** (ρ_τ) — the saturation with events.
3. **Direction** ($\nabla\Phi$) — the gradient that sets motion.

Any stable structure holds all three projections simultaneously. If even one is absent, the structure either disintegrates or transitions into another state.

But three is only the beginning. The structural series of accumulation sets the ladder of stable states:

$$\pi_{n+1} = 2\pi_n - \Theta_n$$

In resonance ($\Theta_n \rightarrow 0$), this series yields the sequence:

$$3, 5, 8, 13, 21, \dots$$

This is the Fibonacci sequence. But Fibonacci is not a fundamental law. It is a special case of the Raum structural series, which arises when:

1. The tension Θ_n is minimal.
2. The system is in resonance.
3. Growth proceeds without losses.

In the general case, the structural series is broader. It includes:

- growth with resistance ($\Theta_n > 0$),
- discharges ($\Theta_n = \Theta_{\text{crit}}$),

- transitions between levels.

Fibonacci is the ideal case. In reality, $\Theta_n \neq 0$, and the series deviates from the ideal sequence. But in the limit, as $\Theta_n \rightarrow 0$, we obtain Fibonacci.

«Fibonacci is a resonant projection of the structural series. It is beautiful because it has no resistance. But reality always contains Θ_n . And this is not a flaw. It is a condition of existence.»

«Three — to hold oneself. Five — to know oneself. Eight — to see everything. Beyond — only infinity, which no longer requires names.»

Thus, three components are not arbitrary. They are the first stable level of the structural series. Eight is the threshold of enumeration. And between them — five, as the measure of human perception.

Question: *Can it be described even more simply?*

Answer: Yes. But simplicity should not be flat.

Simple description:

«Reality is a field of time that holds itself through gradient, manifests itself through resonance, and preserves itself through structure.»

Fuller description:

«Any mass structure, as well as any formed reality — from atom to number — is a local condensation of Time. It is held by gradient, manifested through resonance, and bounded by a threshold. Depending on the horizon from which we look, it may be called a fractally embedded essence, an embedded multilayered gradientness, a resonantly structured field, or another definition. All of these terms are projections of one trinity.»

These two descriptions are not "brief" and "complete." They are two levels of one series.

- **The simple description** is the first level. It gives the essence without details.
- **The fuller description** is the second level. It unfolds the essence through projections.

Between them lies **resonance**. Whoever is ready may move from the first to the second. Whoever finds the first sufficient has already grasped the essence.

Beyond — the third level, the fourth, the fifth... — up to the eighth, where enumeration loses its meaning. But each subsequent level does not negate the previous one. It **deepens** it.

«The simple description is for entry. The fuller — for understanding. Beyond — only resonance.»

Thus, the answer to the question "can it be simpler?" is yes. But simplicity must not be flat. It must be the **first level** of the structural series, followed by depth.

Question: *And how does this relate to singularities?*

Answer: A singularity is a point where $\Phi \rightarrow c^2$, $\tau \rightarrow 0$, and Θ reaches Θ_{crit} . In the triune structure, it manifests as:

- **The limit of the gradient** — beyond which retention is impossible.
- **The rupture of resonance** — connection with the external world is lost.
- **The transition of structure** — the level changes, a new cycle begins.

But this is only the external manifestation. Inside the singularity, something else occurs:

1. **The gradient** ($\nabla\Phi$) reaches its limit, but does not disappear. It transforms into a new form — becoming the source of a new level.
2. **Resonance** (Ω) breaks with the external world, but an **internal resonance** arises — the self-consistency of the new structure.
3. **Structure** ($\Theta < \Theta_{\text{crit}}$) disintegrates at the old level, but **reassembles** at the new — with a new Θ_{crit} , a new τ_0 , a new horizon.

Thus, a singularity is not an end. It is an **act of creation of a new level**. In it, the trinity does not vanish, but **reassembles**:

$$(\nabla\Phi, \Omega, \Theta_{\text{crit}}) \longrightarrow (\nabla\Phi', \Omega', \Theta'_{\text{crit}})$$

This is the **formula of creation** ($\mathcal{T} = \Delta\nabla\Phi \cdot \Delta t \cdot V_{\text{influence}}$) in its limiting form: when $\Delta\nabla\Phi$ reaches the threshold, and the system transitions to a new level.

«A singularity is not a hole. It is a birth canal of a new level. In it, the trinity does not die — it is reborn.»

This is why the singularity is inseparably linked to **creation**. Every transition between levels is an act of creating a new gradient, a new resonance, a new structure.

«We are not inside a singularity. Singularities are inside us — as the nucleus of an atom, as a cell, as a thought. We hold them in balance, because a measure is given to us. And that measure is Θ_{crit} .»

2.1 Three Kinds of Singularities

In the course of the development of tempodynamics, it was discovered that the singularity is not a single phenomenon. It manifests in three distinct forms, each fulfilling its own function in the temporal field.

1. **The reassembling singularity** — points where the trinity (gradient, resonance, structure) passes through the limit and reassembles at a new level. They are within us — as atomic nuclei, as cells, as thoughts. They are stable because $\Theta < \Theta_{\text{crit}}$ for their scale. This is the **creative singularity**.
2. **The collapsing singularity** — points where Θ reaches Θ_{crit} , and the structure does not reassemble, but discharges. Space folds onto the singularity and does not return. These are black holes. These are **points of no return**.
3. **The observed singularity** — points where Θ does not reach Θ_{crit} , but creates the illusion of a limit for the observer. These are event horizons, quantum fluctuations, boundaries of perception. They exist only in the observer's projection. These are **singularities of perception**.

«The singularity is not one phenomenon. It is three different ways in which the temporal field manifests its limit. One reassembles. Another collapses. The third only appears.»

2.2 Table of the Three Kinds of Singularities

Type of Singularity	What Occurs	Example	Status of Θ
Reassembling	The trinity transitions to a new level	Atomic nucleus, cell, thought	$\Theta < \Theta_{\text{crit}}$ (stable)
Collapsing	Space folds and does not return	Black hole	$\Theta \rightarrow \Theta_{\text{crit}}$ (limit)
Observed	Creates an illusion of a limit for the observer	Event horizon, quantum fluctuations	Θ depends on observer

Thus, a singularity is not a dead end, but a **bifurcation point**, where the trinity reassembles. And this reassembly is the only way to transition between levels of the structural series.

But to describe this reassembly, **principles** are needed — foundational assertions that are not proven in this work, but constitute its foundation. They have already been established in previous works and are accepted here as axioms.

2.3 The Five Principles of Tempodynamics

Question: *Does tempodynamics have principles?*

Answer: Yes. But they are not postulated — they are **discovered** as consequences of the initial axiom.

Once we accept that space and time are identical, the principles begin to manifest themselves — as projections of this identity onto different levels.

They cannot be "invented" — they can only be **seen**, when the temporal field becomes visible.

Below are five principles that were discovered in the course of working on tempodynamics. They are not exhaustive — the space of principles can be unfolded differently, and another five would emerge. And they too would be correct — because they were already there. We simply did not see them — or there was no pointer.

Principle 1 (I. Gravity as the Gradient of Time). *Gravity is neither a force of attraction nor the curvature of space. It is the **gradient of local temporal rate**.*

From this principle follow seven ontological conclusions:

1. **Mass is a condensation of time.** *Where time is slowed more strongly — there is more mass. Mass does not create a field — it is the field, condensed in a volume.*
2. **Space is a projection of time.** *The metric of space depends on the distribution of the temporal rate. Space is not independent — it is the shadow of time.*
3. **Force is the gradient of time.** *We feel not time itself, but its change from point to point. Falling is a reaction to a difference in tempo.*
4. **The source of the field is mass.** *The slowing of time is created by mass. But mass itself is the slowing of time. The circle closes.*
5. **The trinity of structure.** *Any stable structure rests on three components: gradient, resonance, and structure. Reducing the number of components leads to a loss of stability.*
6. **The irreversibility of the gradient.** *Reversing the gradient of time in the direction of motion cannot lead to the destruction of the gradient itself, that is, to the state of division by zero.*
7. **The structural series of accumulation.** *The growth of stable structures obeys the series:*

$$\pi_{n+1} = 2\pi_n - \Theta_n$$

This series is irreversible: recovering π_0 from Θ_n requires exponential information.

«Mass is a place where time flows more slowly. Force is the feeling that time changes from point to point. Space is the projection of this change. And the source of all is mass, which creates the slowing of time. Everything else is consequence.»

Principle 2 (II. The Trinity of Structure). *Any stable structure is described by three components: gradient, resonance, and structure. Reducing the number of components leads to a loss of stability.*

Principle 3 (III. The Principle of the Observer). *Any description of the temporal field depends on the state of the observer. The observer is not external to the field — they are its local projection. The measurement of Θ is always a measurement of the difference between the internal and external tempo of time.*

Principle 4 (IV. The Principle of Resonance). *The stability of a structure is achieved not through resistance, but through resonance with the temporal field. Resonance is a state in which $\Theta \rightarrow 0$ and $\Omega \approx 1$. Exiting resonance creates tension, which is either discharged or destroys the structure.*

Principle 5 (V. The Principle of Gradation). *The laws of the temporal field operate differently at different levels of organization. What holds for an atom does not hold for society, and vice versa. Each level has its own threshold of stability $\Theta_{crit}(L)$.*

«These five principles form a closed system. The first provides the language for describing the field and contains seven ontological conclusions. The second gives the rule of application at different levels. The third takes the observer into account. The fourth is the condition of stability. The fifth is the mechanism of change. Together they constitute the foundation of tempodynamics.»

Thus, any known mathematical or physical principle is a projection of one of the three principles of tempodynamics onto the corresponding horizon.

Consequently, all unsolved Millennium Problems can be proven as special cases of these three principles. Not because we "know the answer," but because **the principles themselves already contain all possible answers** — one only needs to project them correctly onto the plane of the problem.

«Wiles proved Fermat through resonance. Perelman proved Poincaré through gradient. Tempodynamics shows that all of them are special cases of three principles. The remaining problems are merely new projections.»

And now that the foundations are laid, we may proceed from principles to their manifestations — to those very problems that have awaited their interpretation for centuries.

3 The Seven Millennium Problems as Special Cases of the Temporal Field

Seven problems, seven voices of one field. Mathematicians sought solutions in the planes of numbers. But the answers were in the temporal field. Perelman proved one. Tempodynamics proves all. Because all of them are special cases of one law: $\Theta < \Theta_{crit}$.

Problem	Classical Formulation	Tempodynamic Projection
Poincaré conjecture (1904) <i>proved by Perelman, 2002–2003</i>	Every simply connected closed 3-manifold is homeomorphic to the sphere S^3	Space is a projection of time: $g_{ij} = (1 - 2\Phi/c^2)\delta_{ij}$. When $\nabla\Phi = 0$, the metric is isotropic $\rightarrow$ sphere.
Navier–Stokes (1822)	Do smooth solutions exist for the equations of viscous flow?	Fluid is a flow $\mathbf{J}_\tau = \rho_\tau(-\nabla\Phi)$. Smoothness = continuity of $\nabla\Phi$. As long as $\Theta < \Theta_{crit} \rightarrow$ solutions exist.
Riemann hypothesis (1859)	All non-trivial zeros of $\zeta(s)$ lie on $\Re(s) = 1/2$	The zeta function is a projection of Φ onto the numerical plane. Stability requires $\Theta < \Theta_{crit}$, which in projection gives the critical line $1/2$.
Hodge conjecture (1950)	Cohomology classes of projective varieties are generated by algebraic cycles	Any projection of Φ is a superposition of resonant modes (solutions of $\nabla^2\Phi = -4\pi G\rho$). In resonance $\rightarrow$ integral cycles.
Yang–Mills (1954)	A minimal excitation energy (mass gap) exists	Quantization of the structural series: $\Theta_n \geq \Theta_{crit}$. The gap is the minimal Θ that can exist.
Birch–Swinnerton-Dyer (1965)	The rank of an elliptic curve is related to the behavior of its L-function	An elliptic curve is a resonant trajectory in Φ with two loops. Rank = number of stable levels of the structural series.

Problem	Classical Formulation	Tempodynamic Projection
P vs NP (1971)	Can a solution be found quickly if it can be verified quickly?	Verification = local measurement of $\nabla\Phi$. Search = global recovery of Φ from $\nabla\Phi$. Recovery requires knowledge of all $\Theta_n \rightarrow$ exponential.

The official list of the Clay Mathematics Institute contains seven problems. But tempodynamics adds an eighth — the most important: **the structure of the Universe**, in which all these problems exist. It was described at the beginning: gradient-resonant embedding, singularities as transitions between levels, infinite recursion without beginning or end.

The Eighth Problem: The Structure of Reality

*«This problem is not solved — it is **discovered**. It does not require proof — it requires **realization**. It has no answer — it **is** the answer.»*

3.1 The Poincaré Conjecture

Question: *What is the essence of the Poincaré conjecture?*

Answer: The conjecture states that every simply connected closed 3-manifold is homeomorphic to the 3-sphere S^3 . Simply put: any 3-dimensional object without holes can be transformed into a sphere without tears or gluing.

3.1.1 Perelman's Proof (in brief)

Perelman used the Ricci flow:

$$\partial_t g_t = -2 \cdot \text{Rc}_t .$$

This equation smoothes the metric, removing inhomogeneities. At points where singularities arise, Perelman applied "surgery" — cutting them off and continuing the flow. In the limit, only the sphere remains.

3.1.2 Tempodynamic Interpretation

In tempodynamics:

1. The spatial metric g_{ij} is a projection of the temporal field Φ :

$$g_{ij} = \left(1 - \frac{2\Phi}{c^2}\right) \delta_{ij} .$$

2. The Ricci flow is a process of equalizing the temporal gradient $\nabla\Phi$.
3. When $\Theta = |\nabla\Phi| \rightarrow 0$, the metric becomes isotropic: $g_{ij} \sim \delta_{ij}$.
4. This is the sphere. Singularities are places where $\Phi \rightarrow c^2$. Surgery is the discharge of tension through the weak interaction.

Corollary 1. *The Poincaré conjecture is a special case of the condition $\Theta = 0$. Space without a temporal gradient is isotropic and is a sphere.*

3.2 P vs NP

Question: *Can a solution be found quickly if it can be verified quickly?*

Answer: In the classical formulation: class P consists of problems that can be solved quickly. Class NP consists of problems for which a solution can be verified quickly. The question: $P = NP$ or $P \neq NP$?

3.2.1 Tempodynamic Proof

In tempodynamics:

1. A number a is an integral of the temporal gradient:

$$a \equiv \int \nabla \Phi_a dV.$$

2. Verification of a solution is a measurement of $\nabla \Phi$ at a point. This is a local operation.
3. Finding a solution is the recovery of Φ from $\nabla \Phi$. This is a global operation, requiring knowledge of all Θ_n .
4. The structural series is irreversible:

$$\pi_{n+1} = 2\pi_n - \Theta_n.$$

To find π_0 , one must know all $\Theta_0, \Theta_1, \dots, \Theta_n$. This is exponential information.

Hence, search is fundamentally harder than verification.

Corollary 2. $P \neq NP$. This is a direct consequence of the irreversibility of the temporal field.

«Verification is reading the gradient. Search is recovering the field. The field cannot be recovered from the gradient, because time is irreversible. Therefore $P \neq NP$. This is not mathematics. This is ontology.»

3.2.2 The Structural Series of Accumulation

In the course of working on tempodynamics, a universal law of the growth of stable structures was identified:

$$\pi_{n+1} = 2\pi_n - \Theta_n \tag{5}$$

where:

- π_n is a measure of the structure at level n (horizon, number of elements, complexity),
- $\Theta_n = |\nabla \Phi_n|$ is the temporal tension at that level.

How it arises. The series emerges as a discrete solution of the field equation (4) under the condition that the mass density ρ is distributed across levels. Each new level contains twice as many elements as the previous one, but from this increment the tension Θ_n accumulated at the previous level is subtracted.

Why it is irreversible. To "unfold" the series and find π_0 , one must know all $\Theta_0, \Theta_1, \dots, \Theta_n$. But Θ_n is lost information: it dissipates into the temporal field and cannot be recovered from a finite number of measurements.

«The series is irreversible, because time is irreversible. Each step creates tension that remains in the field. It cannot be removed — it can only be transformed.»

Connection to P vs NP. In terms of this series:

- **Verification (NP)** — is the measurement of Θ_n at a given level. This is local and fast.
- **Search (P)** — is the recovery of π_0 from Θ_n . This requires knowledge of the entire history of tensions, which is exponentially complex.

Hence, $P \neq NP$.

Historical note: The P vs NP problem was formulated by Stephen Cook in 1971 in his paper "The Complexity of Theorem-Proving Procedures." It became central to computational complexity theory. If $P = NP$, many problems currently considered intractable could be solved quickly. But tempodynamics shows that $P \neq NP$ — because time is irreversible.

The Sequence of Works as a Proof of $P \neq NP$

The present work — the Constataion — is the culmination of a sequence written by the author in 2026. It was preceded by six works, each necessary for the transition to the next. None could be omitted, because:

1. **«The Theorem on Gravitational Identity and the Unity of Time and Space»** (15–29 July 2026) — established that gravity is the gradient of time. Without it, there would be no language for describing the field Φ .
2. **«Five Laws and the Civilizational Law as Consequences of the Theorem of Raum»** (19–27 July 2026) — formulated the laws of being. Without them, there would be no ontological foundation for the transition to the Millennium Problems.
3. **«Tempodynamics»** (19–29 July 2026) — systematized the method and derived the principles. Without it, there would be no tool for solving the problems.
4. **«Fermat's Theorem as a Special Case of the Temporal Field»** (5 August 2026) — showed that arithmetic is a projection of the threshold law. Without it, there would be no understanding that numbers are structures in the temporal field.

5. «**The Encyclopedia of Time**» (27 July – 13 August 2026) — unfolded this language in all directions: from atom to galaxy, from number to thought. Without it, there would be no understanding that everything is a projection of Φ .
6. «**The Constataion. Solving the Millennium Problems.**» (15 August 2026) — the present work, in which all seven Millennium Problems receive a unified interpretation as projections of the threshold law $\Theta < \Theta_{\text{crit}}$.

In addition, during the work on these texts, several dozen drafts and preliminary discussions were written — fragments, sketches, questions that did not make it into the final works. They were not published, but they were necessary: in them questions were formulated, hypotheses were tested, errors were discarded. Each such draft is a Θ_n that could not be skipped.

«Not all steps are visible. But each one supports the one above. Drafts are the shadows of works. But without shadows, one cannot show the light.»

Each of these works was a **step**. None could be omitted, because the law of the stepwise path operates in thinking as well. To arrive at the Constataion, one had to pass through all seven — just as to find π_0 in the structural series, one must know all $\Theta_0, \Theta_1, \dots, \Theta_n$.

«We went from gravity to the laws of being. From the laws of being — to the solution of problems. From the solution of problems — to the constataion. And now we know: all of this is one reality. One field. One time.»

It is precisely this sequence — not merely a chronology — that constitutes a **proof** that $P \neq NP$. Because:

- **Verification (NP)** — is to read the final Constataion and say: "yes, this is correct." This requires a local effort.
- **Search (P)** — is to retrace the entire path, from the first work to the last. This requires knowledge of all Θ_n — all tensions, all errors, all discoveries.

The first path is fast. The second requires the entire history. And this history is irreversible. It cannot be "compressed" into a single formula, because each step leaves a trace in the temporal field.

«Cook sought the boundary between easy and hard. And found the shadow of irreversibility. The field cannot be recovered from the gradient, because each step loses tension. This is not mathematics. This is ontology.»

3.3 The Hodge Conjecture

Question: *Can complex geometric forms be assembled from simple "building blocks"?*

Answer: The Hodge conjecture states that on complex projective varieties, cohomology classes having a geometric nature are generated by algebraic cycles. Simply put: complex forms can be assembled from simple ones.

3.3.1 Tempodynamic Interpretation

In tempodynamics:

1. Any distribution of Φ is a superposition of resonant modes — solutions of the equation:

$$\nabla^2 \Phi = -4\pi G \rho.$$

2. In resonance, these modes give integral cycles (algebraic).
3. The structural series is the decomposition of Φ into these modes.

Corollary 3. *The Hodge conjecture holds as a property of the decomposition of the temporal field into resonant modes.*

3.3.2 Brief Summary

«A complex form is a resonant superposition of simple modes. Hodge showed this for projective varieties. Tempodynamics shows this for the temporal field.»

Key formula:

$$\Phi = \sum_i c_i \cdot \Phi_i^{\text{res}}$$

where Φ_i^{res} are the resonant modes of the temporal field, and c_i are integral coefficients.

Relation to the principles:

- Principle I — the field Φ decomposes into modes, like sound into overtones.
- Principle IV — resonance gives integral cycles, because only in resonance is a structure stable.
- Principle V — each level has its own modal structure; what works for one form does not work for another.

«The Hodge conjecture is not geometry. It is the acoustics of the temporal field. Complex forms are chords. Simple modes are notes. Resonance is harmony.»

3.4 The Riemann Hypothesis

Question: *Where are the zeros of the Riemann zeta function?*

Answer: The Riemann hypothesis asserts that all non-trivial zeros of the zeta function $\zeta(s)$ lie on the line $\Re(s) = 1/2$. This is one of the most important problems in number theory.

3.4.1 Tempodynamic Interpretation

In tempodynamics:

1. The zeta function $\zeta(s)$ is a projection of the distribution of prime numbers, which are the "atoms" of the structural series.
2. The zeros of $\zeta(s)$ are points where the field Φ "vanishes" in projection.
3. Stability requires $\Theta < \Theta_{\text{crit}}$. In projection onto the complex plane, the boundary of stability is the line $\Re(s) = 1/2$.
4. All zeros, being singularities, must lie on this line.

Corollary 4. *The Riemann hypothesis holds as a condition of the stability of the temporal field.*

3.4.2 Brief Summary

«The zeros of the zeta function are singularities of the temporal field in projection onto numbers. They lie on the line 1/2, because that is the boundary of stability.»

Key formula:

$$\Theta < \Theta_{\text{crit}} \implies \Re(s) = \frac{1}{2}$$

Relation to the principles:

- Principle I — the zeta function is a projection of Φ onto the numerical plane.
- Principle III — the observer sees the zeros as singularities, because they are the limit of their measurement.
- Principle IV — stability requires $\Theta < \Theta_{\text{crit}}$, which in projection gives the line 1/2.

«Riemann sought the law of distribution of prime numbers. And found the boundary of stability of the temporal field. He simply did not know what to call it.»

3.5 The Yang–Mills Theory (Mass Gap)

Question: *Does a minimal excitation energy exist in quantum field theory?*

Answer: The Yang–Mills theory requires proving that for any compact gauge group there exists a "mass gap" — a minimal excitation energy. This means that there are no massless excitations.

3.5.1 Tempodynamic Interpretation

In tempodynamics:

1. The gap is the minimal temporal gradient Θ_{crit} that can exist without destroying the structure.
2. The structural series quantizes the energy levels:

$$E_n = \Theta_n = |\nabla\Phi_n|.$$

3. The gap is the difference $\Theta_1 - \Theta_0$. It cannot be zero, because $\Theta_0 = 0$ is the vacuum, and Θ_1 is the first resonance.

Corollary 5. *The mass gap exists and is equal to Θ_{crit} .*

3.5.2 Brief Summary

«The mass gap is the minimal temporal gradient that can exist without destroying the structure. It is equal to Θ_{crit} .»

Key formula:

$$\Delta E = \Theta_1 - \Theta_0 = \Theta_{\text{crit}}$$

Relation to the principles:

- Principle I — energy is $\Theta = |\nabla\Phi|$.
- Principle IV — resonance quantizes levels: Θ_n are discrete.
- Principle V — at nuclear scales, Θ_{crit} determines the gap.

«Yang and Mills sought gauge symmetry. And found the threshold beyond which the temporal field ceases to be continuous. The gap is not a rupture. It is the first step.»

3.6 The Navier–Stokes Equations

Question: *Do smooth solutions exist for the equations of viscous flow?*

Answer: The Navier–Stokes equations describe the motion of a viscous fluid. The problem requires proving that, for any initial conditions, a smooth solution exists — or finding a counterexample.

3.6.1 Tempodynamic Interpretation

In tempodynamics:

1. A fluid is a flow of time:

$$\mathbf{J}_\tau = \rho_\tau(-\nabla\Phi).$$

2. A smooth flow $= \nabla\Phi$ is continuous.
3. Turbulence = discontinuities in $\nabla\Phi$, where $\Theta \rightarrow \Theta_{\text{crit}}$.
4. As long as $\Theta < \Theta_{\text{crit}}$, equation (4) guarantees smoothness.

Corollary 6. *A global smooth solution always exists, except in cases where the threshold is reached (turbulence).*

3.6.2 Brief Summary

«A fluid is a flow of time. A smooth flow is a continuous $\nabla\Phi$. Turbulence is a discontinuity in $\nabla\Phi$ when $\Theta \rightarrow \Theta_{\text{crit}}$.»

Key formula:

$$\boxed{\mathbf{J}_\tau = \rho_\tau(-\nabla\Phi)}$$

Relation to the principles:

- Principle I — the flow of time is the movement of the gradient.
- Principle IV — as long as $\Theta < \Theta_{\text{crit}}$, the flow is smooth.
- Principle V — at different scales, Θ_{crit} differs.

«Navier and Stokes described the motion of water. But in fact they described the motion of time, which had taken the form of a fluid. Turbulence is a discharge of tension.»

3.7 The Birch–Swinnerton-Dyer Conjecture

Question: *How are the rank of an elliptic curve and its L-function related?*

Answer: The conjecture states that the order of the zero of the L-function of an elliptic curve at the point $s = 1$ is equal to the rank of the group of rational points of that curve.

3.7.1 Tempodynamic Interpretation

In tempodynamics:

1. An elliptic curve is a resonant contour in the field Φ with two loops.
2. Its rank is the number of stable resonant levels that support these loops.
3. The L-function of the curve is a projection of Φ onto that curve.

Corollary 7. *The rank is equal to the number of stable modes of the structural series, which makes the conjecture true.*

3.7.2 Brief Summary

«An elliptic curve is a resonant contour in the temporal field. Its rank is the number of stable levels at which it resonates.»

Key formula:

$$\text{rank} = \#\{n : \Theta_n < \Theta_{\text{crit}}\}$$

Relation to the principles:

- Principle I — an elliptic curve is a projection of Φ .
- Principle IV — resonant levels are stable modes.
- Principle V — the rank is determined by the number of levels not exceeding the threshold.

«Birch and Swinnerton-Dyer sought the connection between the rank of a curve and its L-function. And found the number of stable levels of the temporal field at which the curve can resonate.»

3.8 Ontological Summary

All seven Millennium Problems reduce to a single principle:

$$\Theta = |\nabla\Phi| < \Theta_{\text{crit}} \quad \text{— the condition for the existence of a stable structure.}$$

Violation of the Condition	What Occurs	Which Problem
$\Theta = 0$	Space becomes a sphere	Poincaré
$\Theta > 0$, but Φ is irrecoverable	Search is harder than verification	P vs NP
Θ decomposes into modes	Any structure is assembled from cycles	Hodge
Θ projects onto numbers	Zeros on the line 1/2	Riemann
Θ is quantized	A minimal Θ exists	Yang–Mills
Θ is continuous	Smooth solutions exist	Navier–Stokes
Θ has levels	Rank = number of stable levels	Birch–Swinnerton-Dyer

«Seven problems — seven voices of one field. Mathematicians sought solutions in the planes of numbers. But the answers were in the temporal field. Perelman proved one. Tempodynamics reveals the obviousness of all. Because all of them are special cases of one law: $\Theta < \Theta_{\text{crit}}$. This is the physics of tempodynamics.»

Beyond the Clay list: the Collatz conjecture is a projection of the structural series onto iterative processes. In terms of tempodynamics, it describes the convergence $\Theta_n \rightarrow 0$ under the condition that each step reduces the tension. Its "unsolved" status is not a deficit of mathematics, but a failure to understand that numbers are projections of the temporal field.

«Collatz sought a law in numbers. And found the shadow of the structural series. Every number is π_n . Every step is Θ_n . And if $\Theta_n \rightarrow 0$, then the number converges to unity — because unity is Φ in projection.»

4 The Constataction

Question: *The question remains about the temporal field itself. Where is its beginning? Where is its end?*

Answer: The answer: **nowhere**. This question is meaningless, because it requires stepping outside the field. Any attempt to answer it is an attempt to exceed the **threshold of stability** and to violate all the derived Laws:

- **The Law of the Threshold** — requires that $\Theta < \Theta_{\text{crit}}$. The question of beginning/end requires $\Theta \rightarrow \infty$, which is prohibited.
- **The Law of Gradation** — the question of beginning/end attempts to apply a single measure to all levels simultaneously, which violates gradation.
- **The Law of Incapacity** — no system can answer this question, because the answer requires stepping beyond its limits.
- **The Law of the Anthropological Limit** — man cannot cross this limit, because it lies beyond the horizon of his measure.
- **The Civilizational Law** — any attempt to answer this question by technical means without maturity leads to destruction or transformation.

Mathematically, this means either infinite temporal tension, a complete stoppage of time, or its infinite acceleration. This goes beyond any possible multiplicity of tensor derivatives, and is no longer a matter of Laws. This is the Constataction.

The Constataction: *The temporal field has neither beginning nor end. It is an infinite embedding of structures, each of which is a projection of the next. The question of the boundary of this field is meaningless from within, because it requires stepping beyond one's own measure. This is not a theorem. This is the condition under which all theorems are possible.*

Conclusion

«Pythagoras discovered the plane. Fermat indicated its limit.

Einstein showed that time and space are one.

Tempodynamics shows that everything, including arithmetic, is a projection of this unity into the temporal field.

We sought the beginning and the end of the Universe. And we found that they do not exist.

This is not disappointment. This is the understanding of the structure of Time.

Because if Time has no boundaries, then neither does the Creator of this Time.

And this is not a theory. This is the constataction.»

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