

Time and Space as Relation — Leibniz's Relationalism, and Not Confusing the Teleology of "the Best" with Least Action — [Paper 97]

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— *From thinking to syncing.* —

Abstract

Are time and space a **container (an absolute substance)** that holds things, or the **relations (orders)** among things themselves? Newton took the former (absolute space and time); Gottfried Leibniz took the latter — **space is the order of coexistence, time the order of succession** (the Leibniz–Clarke correspondence, 1715–16). This **relationalism** flows to Mach, to Einstein's general relativity, and to Rovelli's relational time, resonating directly with the corpus's Paper 82 (event-based time, the Renko chart). This paper first organizes that lineage. But Leibniz has another face — the **principle of "the best of all possible worlds"**, which is often told as the **philosophical forerunner of the principle of least action** (Maupertuis / Euler). Here lies a **trap**. "The best" is a **teleology** — that the world is aimed at a **purpose** — but the corpus's Paper 84 showed that **least action is not teleology** ($\delta S = 0$ is a local condition equivalent to $\mathbf{F} = m\mathbf{a}$, and the apparent purpose dissolves into the interference of Feynman's path integral). Hence the point of this paper is the **separation of distinct roots (Papers 58/48): (1) Leibniz's relational time and space** (the order of relations, the source of Paper 82) and **(2) the teleological motive of "the best"** (a beautiful intuition, but not the correct understanding of least action, Paper 84) are distinct roots and must not be conflated. Relationalism lives on in the corpus; the teleology is rejected and replaced by the correct form (variation = a local condition). **Scope:** a Layer-2 structural interpretation of philosophy of science and the history of mechanics; no new mathematics and no new prediction. The Universe OS is a Layer-3 non-science lens.

Positioning of this paper (discipline): This paper is a **structural interpretation** of established philosophy of science and history of mechanics (Leibniz's relationalism, the Leibniz–Clarke debate, the principle of least action). It contains no new mathematics and no new prediction. The point is to separate two distinct roots — **(1) relational time and space (the source of Paper 82, still alive)** and **(2) the teleology of "the best" (not the correct understanding of least action, rejected in Paper 84)** — and not to conflate them. Relational time resonates with the corpus's other times (proper time, thermal time, the coarse-graining arrow = 82/77) but each is treated as a distinct root. "Universe OS" is a Layer-3 non-science lens, not a claim of mechanism.

1. Introduction: Container, or Relation?

At the threshold of the modern era there were two positions on time and space. **Newton** saw space and time as an **absolute container** existing independently of things — even with not a single object present, absolute space and time would be there. **Leibniz** sharply rejected this: space and time are not substances existing apart from things but merely **relations (orders) among things**. Space is the **order of coexistence** of things; time is the **order of succession** of events.

Leibniz is also one of the headwaters of the corpus's lineage (integrative knowledge, universal characteristic, the calculus, relationalism — the foremost figure in the "integral brain" lineage in which the author places himself). This paper treats Leibniz's **two faces** by the corpus's discipline — the living face (relationalism) and the face to be rejected (teleology), without conflating them. It builds no new theorem.

2. Leibniz's Relationalism (the Order of Coexistence, the Order of Succession)

Standard fact (the Leibniz–Clarke correspondence, 1715–16)

In his correspondence with Clarke (Newton's spokesman), Leibniz criticized absolute space and time from the **identity of indiscernibles** and the **principle of sufficient reason**. If absolute space were real, then "a world with the whole universe shifted three metres east" would be a different world yet **indistinguishable** from the original, and God would have **no reason** to choose its position — a contradiction. Hence space is not a substance but the **order of coexistence of things**, and time the **order of succession of events**. Position and instant have meaning only as **relations** among things and events.

This is deep. In relationalism, "this point of empty space" or "an instant at which nothing happens" loses meaning. What has meaning is only the **relation** between thing and thing, event and event. Time is not "a river flowing independently" but the **order** woven by the sequence of events — an intuition that is the philosophical source of the corpus's Paper 82 (event-based time, the Renko chart).

3. The Lineage: Where Did Relationalism Flow?

Leibniz's relationalism once receded behind the success of Newtonian mechanics, yet it lived on as an underground stream. **Mach** criticized absolute space and argued that inertia is determined by the relation to all distant matter (Mach's principle). **Einstein's** general relativity made spacetime a **dynamical, relational object** inseparable from matter (touching the conventionalism discussion of Paper 95). And **Rovelli**, in the context of quantum gravity, developed a **relational time** — time is not a fundamental variable but arises from the relations among subsystems. The corpus's Paper 82 lies on this line,

placing the author's market intuition (events mark time, the Renko chart) upon proper time and Rovelli's relational time.

Relationalism is the living face of Leibniz in the corpus.

4. The Other Face: "The Best of All Possible Worlds" and the Forerunner of Least Action

Standard fact (the principle of the best and the forerunner of least action)

Leibniz has another face, often told in the history of mechanics. He held the **principle of the best** — that this world was chosen by God as the **most perfect (best of all possible) world** among the possibilities. This idea, that "nature acts for the best (most economically)," is sometimes regarded as the **philosophical forerunner** of the **principle of least action** (nature selects the path that makes the action $S = \int L dt$ an extremum), later formalized by Maupertuis and Euler.

As a lineage of ideas, the two do resonate. The intuition that "nature wastes nothing, chooses the best" foreshadows the beauty of the variational principle. Leibniz too stands near the **royal-road source** that the corpus's Paper 84 (least action) and Paper 85 (symmetry) treat. But here we must stop.

5. Avoiding the Trap: "The Best" (Teleology) and Least Action (Variation) Are Distinct Roots

Observation 5.1 (a teleological motive and the correct understanding of the variational principle are distinct roots)

"The best of all possible worlds" is a **teleology** — that the world is chosen toward a **purpose (the good of being best)**. But the corpus's Paper 84 made explicit that the principle of least action is **not teleology** — $\delta S = 0$ (the Euler–Lagrange equation) is a **local condition mathematically equivalent to $F = ma$** , and a particle does not know a future "purpose" to select its path. The apparent teleology vanishes in quantum mechanics as the **interference of phases** over all paths in Feynman's path integral (the classical path is merely the stationary point where interference survives). Hence **(1) relational time and space** (alive, Paper 82) and **(2) the teleological motive of "the best"** (a beautiful intuition, but not the correct understanding of least action) are **distinct roots**. One must not tell the story as "Leibniz's principle of the best = least action = nature's purpose."

This is the point. Leibniz's two faces must be correctly separated. **Relationalism** is consistent with experience and lives on in the corpus (82). **The teleology of "the best"** was an appealing philosophical motive for least action, but under the correct understanding (variation = a local condition; the stationary point of interference) it is rejected (84). Distinct roots that share only a word — or a person — must not be mixed: the corpus's discipline holds even within a single individual.

6. Connection to the Corpus

Leibniz crosses several threads of the corpus. **(a) Relational time:** the relationalism of "space = order of coexistence, time = order of succession" is the philosophical source of Paper 82 (event-based time, the Renko chart, Rovelli's relational time). But the corpus's **three times** (proper time, thermal/relational time, the coarse-graining arrow = 82/77) are treated as **distinct roots** even as they resonate. **(b) Least action:** Leibniz's principle of the best is a philosophical neighbour of Paper 84, but not identified as teleology; it is replaced by the correct form (variation, interference). **(c) The source of calculus:** Leibniz's dx notation and infinitesimals are a distant source of the corpus's shared alphabet (Cartan's differential forms, Paper 92) — a lineage of notation, not an identification of content. **(d) The integral-brain lineage:** Leibniz's integrative knowledge running through the universal characteristic, relationalism, and calculus is the foremost figure of the "integral brain (zoom-out and inverse problems)" lineage in which the author places himself. Leibniz is one of the corpus's heroes.

The Author's Personal Note (Layer 3, non-science label / not a claim of mechanism)

In the corpus's lens (metaphor), time and space are not a **container** the Universe OS prepared in advance, but the **relations (orders)** among events, rendered anew each moment into what we see — a picture in which what Leibniz called "the order of coexistence, the order of succession" feels like the OS's **table of relations**. But **this carries the non-science label**.

"Relations the OS renders" is a metaphor that carries intuition, not a mechanism or a prediction. **What is certain here is only the single philosophical point of taking time and space as relations, not substances** (that it is consistent with Paper 82, GR, and Rovelli). And one does not fall for the lure of the teleology of "the best" — nature is not aimed at a purpose; a local condition selects the stationary point (84). Take relationalism, reject teleology: this discernment is the humility of the corpus's three layers. To Leibniz, the source of the integral brain, quiet respect is recorded.

7. Scope (What Is Shown, and What Is Not)

What is shown (descriptive, philosophical):

- Leibniz's relationalism (space = order of coexistence, time = order of succession) and its lineage (Mach → GR → Rovelli → Paper 82) (§§2–3).
- That the principle of the best (teleology) is told as the philosophical forerunner of least action, yet least action is not teleology (84) (§§4–5).
- The separation of two distinct roots: relationalism (alive, 82) and teleology (rejected, 84) must not be conflated (§5).

What is not shown (restraint):

- **Do not conflate "principle of the best = least action = nature's purpose."** Least action is a local condition (variation), the stationary point of interference, not teleology (84).

- **Do not lump relational time with the corpus's other times (proper time, thermal time, the arrow).** They resonate but are distinct roots (82/77).
- **No new mathematics or prediction.** Relationalism, least action, and the correspondence are standard. Hence Layer 2 (structural, philosophical interpretation). The OS is Layer-3 non-science.

8. Conclusion

Container or relation — Leibniz took **relation**. Space is the order of coexistence, time the order of succession. This relationalism, through Mach, Einstein, and Rovelli, lives on in the corpus's Paper 82 (event-based time). This is Leibniz's **living face**.

But Leibniz has another face — the **teleology of "the best of all possible worlds,"** told as the philosophical forerunner of least action. Here the corpus's discipline holds: least action is not teleology (84). Hence relationalism and the principle of the best are **distinct roots** and must not be conflated. What this paper did is not a new claim but to correctly separate the two roots within one person, Leibniz — to graft the living relationalism (82) onto the corpus and return the teleology-to-be-rejected to its correct form (variation, 84). Take relation, reject purpose — to the source of the integral brain, we return one address.

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