RBO-0: The Foundational Principle

Record-Based Ontology can be introduced through one basic principle.

> **RBO-0.** For any finite record-bearing system A, what counts as a definite fact, self, outcome, or observer-world for A is individuated by the stable records accessible to A, persistent across A's relevant integration window, and capable of constraining A's subsequent updates.

This is not a law of physics. It is a rule of ontological individuation.

It does not say how the total physical state evolves. It says when a physical or informational difference becomes definite for a finite system.

1. Why a principle is needed

Ordinary language treats facts, objects, selves, outcomes, and worlds as if they were already individuated.

We say: this happened, this is the same person, this is the same object, this is the outcome, this is the world.

But each of these claims presupposes a criterion of distinction and continuity. What makes one fact one fact? What makes an object persist through change? What makes a later subject a continuation of an earlier one? What makes a quantum outcome definite for an observer? What makes two physical configurations the same world for a finite agent rather than two different ones?

RBO-0 supplies a common answer: definiteness for finite systems depends on stable, accessible, update-constraining records.

2. Finite record-bearing systems

RBO is not written from the standpoint of an omniscient observer.

It concerns finite systems: systems with limited access, finite resolution, bounded memory, and temporally structured integration.

A finite system may be a conscious subject, an organism, an instrument, a detector, a memory register, an archive, an institution, an artificial system, or a scientific apparatus.

The system must be record-bearing. It must be capable of carrying, inheriting, accessing, or updating on stabilized differences.

Consciousness is not required for record-bearing. A detector can bear a record without understanding it. A fossil can preserve a record without representing it. A hard drive can store a record without awareness.

3. Stable records

A record must persist long enough to matter.

Stability does not mean permanence. It means retention across the relevant interval.

A neural trace may last seconds or years. A detector state may last until reset. A scar may last decades. A written archive may persist across generations. A cosmic signal may remain available across billions of years.

The relevant stability window depends on the system and the domain.

A vanishing fluctuation may be physically real, but if it leaves no retained structure, it does not individuate a definite fact, self, outcome, or observer-world for a finite system.

4. Accessibility

A record must be accessible to a system in order to function as a record for that system.

Accessibility is not belief. It is not attention. It is not conscious report.

It is a physical or structural relation: a channel through which a record can affect the system's state, memory, action, inference, measurement, classification, or later update.

A document in a sealed archive may be a record in one sense, but not an accessible record for a given agent. A detector trace outside all possible retrieval channels may exist physically without becoming operative for any finite system. A memory trace that can no longer be reactivated may persist physically while losing its subject-constituting role.

Accessibility is therefore system-relative, but not arbitrary.

5. Integration window

Finite systems do not update from mathematical instants.

They integrate information across windows: neural, bodily, instrumental, archival, environmental, social, or thermodynamic.

For a conscious subject, the relevant window may involve perception, memory, bodily state, attention, and expectation. For an apparatus, it may involve the persistence of a pointer state or stored output. For an archive, it may involve institutional preservation and retrieval.

A record becomes definite for a system only relative to the temporal and structural scale at which that system can retain and integrate it.

6. Update-constraining power

A record matters because it constrains continuation.

Once a record is integrated, the system cannot continue in exactly the same way without inheriting, ignoring, erasing, correcting, suppressing, or contradicting that record.

A memory changes what a subject can recognize or expect. A diagnosis changes treatment. A detector trace changes experimental inference. A contract changes legal status. A scar changes medical history. A measurement outcome changes later measurement contexts.

In the relevant ontological sense, a record is not just stored information. It is a stabilized difference that can constrain what comes next.

7. Equivalence and difference

RBO-0 naturally yields an equivalence schema.

Two physical configurations may differ microscopically, environmentally, or globally while agreeing with respect to all stable, accessible, update-constraining records relevant to a finite system A.

In that case, they are physically distinct but equivalent for A at the level of finite definiteness.

Conversely, when a difference enters A's relevant record-structure, prior equivalence breaks. A new fact, object-state, subject-state, outcome, or observer-world may become definite for A.

In compact form:

> Two configurations belong to the same effective world for A when they agree with respect to A's stable, accessible, update-constraining records. They belong to distinct effective worlds for A when they differ with respect to such records.

This does not deny physical multiplicity. It disciplines ontological counting.

8. What RBO-0 does not claim

RBO-0 does not say that records create physical reality.

It does not say that whatever is recorded becomes true.

It does not say that consciousness collapses the world into existence.

It does not say that finite agents invent their own facts at will.

It does not replace physics with language, psychology, or social convention.

It says something narrower:

> For finite systems, definiteness is individuated by stable, accessible, update-constraining records.

9. Why RBO-0 matters

RBO-0 gives a shared grammar for several problems that are usually treated separately.

In personal identity, it explains why continuity need not depend on a primitive ego-substance.

In objecthood, it explains why objects can persist across microphysical change.

In error, it explains why a false record can be real as a record while false as a representation.

In shared worlds, it explains how local records can become publicly constrained through reconciliation.

In history, it explains why the past is accessed through present records and disciplined reconstruction.

In quantum foundations, it explains why a physical difference becomes an outcome only when it becomes record-defined for a finite system.

10. Relation to BCT

Bit-Collapse Theory is the quantum-foundational development of this principle.

In BCT, collapse is not treated as a physical jump in the global state. It is treated as an observer-relative equivalence-class update induced by stable accessible records.

RBO-0 is therefore broader than BCT.

RBO asks how facts, selves, objects, histories, outcomes, and observer-worlds become definite for finite systems.

BCT applies that record-based logic to quantum measurement, superposition, observer-relative definiteness, and the individuation of outcomes.

11. Compact formulation

The shortest formulation of RBO-0 is this:

> **Finite definiteness is record-mediated.**

Or, more explicitly:

> **Records do not create reality; they individuate what becomes definite for finite systems.**

Status: Site essay / foundational principle.
Project: Record-Based Ontology.
Relation to BCT: General ontological basis for the BCT treatment of observer-relative definiteness.

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