

From Objects to Responses

On the Loss of Ontological Sovereignty in Contemporary Physics

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Abstract

Modern physics increasingly encounters phenomena that are empirically real and dynamically effective, yet resist formulation as objects, fields, or causal mechanisms. Dark energy, dark matter, black holes, and the quantum measurement problem all share this structural feature: they are operationally indispensable but ontologically opaque. This paper argues that these difficulties are not accidental but indicate a deeper conceptual shift. Physics is undergoing a transition from an object-centered ontology toward a response-based framework, in which reality is structured by how systems respond to limits of integration rather than by what entities fundamentally exist. This meta-paper articulates this shift explicitly, framing it as a loss of ontological sovereignty of the material object model and the emergence of response as a primary category of physical intelligibility.

(This paper is an interface text. The author's primary research corpus employs an autistic, non-linear, rhythmically recursive writing mode that cannot be fully preserved in academic English without structural loss of epistemic function.)

Dieses Paper stands in Relation to:

Speed, T. (2025). The Gap as a Condition - Pre-Ontological Operatorics and the Primacy of Response (2 English). Zenodo. <https://doi.org/10.5281/zenodo.18015885>

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1. The Problem: When What Works Cannot Be a Thing

Contemporary physics is saturated with entities that function mathematically and empirically, yet fail to stabilize ontologically. The cosmological constant, dark energy, dark matter, and information-theoretic quantities exert real effects without behaving like classical objects, fields, or substances.

The prevailing strategy has been pragmatic tolerance: if a term works, it is retained; if it lacks ontology, that deficit is postponed. This strategy is successful computationally, but it masks a growing conceptual tension:

Physics increasingly relies on effective structures that cannot be grounded in the ontology it officially presupposes.

This paper proposes that this tension signals not an incomplete ontology, but the exhaustion of the object-centered explanatory monopoly itself.

2. Ontological Sovereignty and Its Limits

By *ontological sovereignty* is meant the implicit assumption that:

- material objects (or fields as object-surrogates)
- are the primary bearers of reality,
- and that all physical efficacy must ultimately be traced back to them.

Historically, this assumption has been extraordinarily productive. However, its scope has narrowed. The more global, boundary-like, or integrative a phenomenon becomes, the less convincingly it can be reduced to an object or mechanism.

Dark energy exemplifies this limit case: it is real, global, homogeneous, dynamically decisive—and yet resists all attempts at objectification.

3. A Structural Diagnosis: Response Without Cause

The common feature of these problematic phenomena is not mystery, but structure. They appear precisely where systems encounter limits:

- limits of local stabilization,
- limits of global integration,
- limits of representability.

At such limits, systems do not generate new objects. They **respond**.

This response is not causal in the classical sense. It is not driven by a new entity or force, but by the impossibility of further integration within existing structures.

Response here denotes a mode of physical intelligibility that is triggered by constraint, not by cause.

Response does not denote feedback or regulation within a stable system. It denotes a structural shift in how physical intelligibility is organized once further integration within the existing framework becomes impossible.

Response here marks the point of structural breakdown; questions of how form re-emerges thereafter belong to a separate problem of recurrence. (MNO)

Response does not presuppose an underlying entity or process. It marks the point at which non-integrable differentiation forces a reorganization of the conditions under which form can appear.

Response should not be confused with phase transitions or critical phenomena, which describe transitions within an integrated theoretical framework, whereas response marks the breakdown of the framework's integrative capacity itself.

4. From Objects to Responses: A Conceptual Shift

This observation motivates a fundamental reordering of explanatory priority:

Classical paradigm	Response-based paradigm
Objects are primary	Limits are primary
Causes generate effects	Integration limits trigger responses
Structure explains dynamics	Dynamics express structural failure
Ontology precedes behavior	Behavior reveals ontological limits

In this view, matter, fields, and forces remain indispensable—but they no longer monopolize physical explanation. They are joined by a different category: **response to non-integrability**.

5. Historical Trajectory: A Loss of Ontological Privilege

Seen in retrospect, modern physics has repeatedly weakened the sovereignty of objects:

1. **Classical mechanics** privileged material bodies.
2. **Field theory** displaced objects with extended structures.
3. **Relativity** dissolved the background stage itself.
4. **Quantum theory** undermined intrinsic properties.
5. **Information theory** introduced non-material efficacy.

The present step is not anomalous. It is the next logical move:

From entities that act, to systems that respond.

What changes is not the content of physics, but its explanatory grammar.

6. Dark Energy as a Paradigmatic Case

Within this framework, dark energy is not a missing object, nor a hidden substance. It is the cosmological expression of a response:

- local structures emerge and stabilize,
- their cumulative differentiation exceeds global integrability,
- spacetime responds through expansion.

Dark energy is thus not an ontological primitive, but a **response signature**—a name for what happens when no further stabilization is possible.

7. Consequences for Physical Explanation

If this response-based reading is taken seriously, several consequences follow:

- Not all real effects require ontological carriers.
- Some physical terms function as boundary indicators rather than causes.
- Explanation can consist in identifying *why a response occurs*, not *what causes it*.

This does not weaken physics. It clarifies its limits.

8. Conclusion: Physics After Sovereignty

The central claim of this paper is not that objects are irrelevant, but that they are no longer sovereign. Physical reality is increasingly structured by how systems answer to their own limits.

The universe is not only something that is, but something that responds.

Recognizing this does not end physics—it makes explicit the conceptual transition already underway.

Canonical 5-Sentence Sequence

1. **Gap** denotes the primary non-identity of reality with itself and is not an entity, but the condition under which integration can become problematic at all.
2. **Difference** arises when reality locally takes form without this form fully coinciding with the totality of its conditions.
3. **Block** occurs when this difference can no longer be integrated and existing structural or explanatory levels lose their capacity to hold it.
4. **Response** does not denote a process or mechanism, but the conversion of non-integrability into a change in the conditions under which form can appear at all.
5. **Recurrence** is the renewed stabilization of form under these altered conditions, through which the world becomes ontologically accessible again.

Optional one-line positioning

This paper articulates a meta-level shift in contemporary physics from object-centered ontology toward response-based intelligibility, framing dark energy and related phenomena as structural responses to limits of integration rather than as missing entities.

This paper does not explain new phenomena—it explains why certain phenomena evade our existing modes of explanation.