Gravity Is Not a Force: A Lag-Based Reclassification of Gravity, Attraction, and Free Fall

K. E. Itekki

Independent Researcher

Abstract

This paper presents a unified reclassification of gravity, attraction, free fall, zero-gravity, and the constancy of the speed of light, not as forces or interactions, but as relational configurations arising from lag between observer updates (S′) and object responses (O′).

We adopt many-body, non-local, and asynchronously updated relations as the ontological default of physical reality, and reinterpret one-body and two-body systems as exceptional localizations within this ground.

Within this framework, gravity is not an attractive force but a lag-sedimented environmental condition characterized by S (the Earth) $\ll$ O′. Free fall occurs when S′ $\gg$ O′ arises within this gravity-conditioned environment and is understood as a loss of support rather than as gravitational pulling. Attraction appears as an exceptional synchronization S′ $\simeq$ O′ in two-body configurations, while zero-gravity states correspond to balanced lag relations. The constancy of the speed of light is reinterpreted not as a fundamental principle, but as a syntactic assumption required to preserve S'–O' lag relations.

No new forces are introduced. Instead, this work reorganizes foundational physical concepts by repositioning the observer within a lag-based, many-body universe.

1 Introduction

Classical and modern physics have long organized gravity, attraction, inertia, centrifugal effects, and related phenomena as distinct forces. While this taxonomy has proven operationally useful, it has also generated persistent conceptual confusions, most notably the conflation of gravity with falling.

Rather than introducing new forces or refining existing ones, this paper proposes a reclassification based on observational placement. The key object of analysis is the relational lag between observer updates (S′) and object responses (O′).

2 Ontological Premise: Many-Body as the Ground

We take many-body, non-local, asynchronously updated relations to be the ontological default of physical reality. One-body and two-body systems are exceptional localizations carved out for purposes of observation and control.

Lag is not a defect but the minimal unit of relational update through which locality itself is generated.

3 Observational Syntax: The S′–O′ Framework

Physical phenomena are classified not by force type, but by relational placement:

- $S' \gg O'$: observer updates outpace object responses
- $S' \simeq O'$: temporary synchronization
- $S' \ll O'$: object-dominant lag accumulation

These are observational syntaxes rather than dynamical regimes.

On the Status of the Speed of Light In this framework, the constancy of the speed of light is not treated as a fundamental physical law or a dynamical constraint. Rather, it is reinterpreted as a syntactic assumption that stabilizes a particular observational regime, namely the synchronized condition $S' \simeq O'$. Historically, this assumption has been conflated with intrinsic properties of spacetime, resulting in geometric reinterpretations such as curvature. From the present perspective, however, such geometric effects are understood as consequences of lag-processing constraints within the observer–object relation. Accordingly, the speed of light does not appear in this analysis as a force or interaction, but solely as a boundary condition that fixes one observational syntax among multiple possible regimes.

4 Gravity as a Lag-Sedimented Condition

Gravity is defined as:

$$\text{Gravity} = S_{\text{Earth}} \ll O'$$

Gravity is not a pulling force but a persistent lag condition of the supporting environment.

5 Falling, Standing, and Support

Free fall corresponds to $S' \gg O'$ and arises from the loss of support within a gravity-conditioned environment. Standing and support correspond to $S' \ll O'$, requiring continuous absorption of lag.

6 Attraction, Zero-Gravity, and Centrifugal Effects

Attraction arises as exceptional synchronization in two-body systems ($S' \simeq O'$). Zero-gravity corresponds to balanced lag without reference to a sedimented ground. Centrifugal effects are reinterpreted as reversed perceptions of excessive lag in rotating frames.

7 One, Two, and Many Reordered

One-body systems reflect local bodily experience. Two-body systems represent stabilized synchronization. Many-body systems form the non-local ground from which both emerge.

8 Conclusion

This paper replaces force-based explanations with a syntactic framework based on relational lag. No new forces are introduced. Only observational placement is reclassified.

References

[1] A. Einstein, *Relativity: The Special and the General Theory*, Henry Holt and Company (1916).

[2] I. Newton, *Philosophiæ Naturalis Principia Mathematica*, 1687.

A On Quantum Gravity as a Syntactic Aftereffect

Quantum gravity is commonly motivated as a necessary synthesis of general relativity and quantum mechanics. This motivation historically relies on treating gravity either as a force between bodies or as a dynamical geometric property of spacetime, both of which appear to require quantization in order to coexist with quantum theory.

From the perspective of the S'–O' lag framework, this conflict is not physical but syntactic. Quantum theory is inherently update-based, asynchronous, relational, and many-body oriented, whereas general relativity fixes gravity as a continuous, background-defining, and globally geometric structure. The incompatibility arises from attempting to quantize what is not an update process, but a lag-sedimented environmental condition.

In the present framework, gravity is defined as a persistent lag configuration characterizing a supporting environment:

$$\text{Gravity} = S_{\text{Earth}} \ll O'.$$

Gravity is therefore neither an interaction nor a dynamical field, but a stable environmental condition under which update processes occur. As such, it does not undergo quantum fluctuations and does not require quantization.

From this viewpoint, quantum gravity programs do not fail due to technical limitations. Rather, they successfully expose the limits of background-fixed descriptions by attempting to quantize a non-updating condition. Once gravity is repositioned as a lag-sedimented environmental constraint rather than a force or field, the motivation for quantum gravity dissolves. No synthesis is required between gravity and quantum theory, as they no longer occupy competing explanatory roles.

B On Inertial Forces and the Equivalence Principle

Inertial forces, such as centrifugal and Coriolis effects, are traditionally described as fictitious forces arising in non-inertial frames. While operationally useful, this terminology obscures their structural origin.

Within the S'–O' lag framework, inertial forces are not forces in the dynamical sense. They arise when observational frames are rotated or accelerated while underlying lag relations are preserved. In such situations, asymmetric or excess lag is perceptually reinterpreted as a force acting on bodies.

Centrifugal effects, in particular, do not originate from outward interactions. They correspond to sustained configurations in which observer updates dominate object responses: $S' \gg O'$. No additional force is required; the effect results from maintaining this lag configuration within a rotating observational syntax.

The equivalence principle states that gravitational and inertial effects are locally indistinguishable. In the present framework, this indistinguishability does not imply an identity of forces. Rather, gravity and acceleration correspond to structurally equivalent S'–O' lag configurations.

Gravity is defined as a lag-sedimented environmental condition,

$$\text{Gravity} = S_{\text{Earth}} \ll O',$$

whereas acceleration reflects observer-dominant updates. Their equivalence arises only when these configurations overlap locally, producing indistinguishable observational outcomes.

Accordingly, the equivalence principle is reinterpreted as expressing an equivalence of observational placement, not a unification of forces.