Formal Ontological Framework for Unified Reality
A Westernized Interpretation of Advaita Logic

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Contents

1   Abstract

This paper presents a formal ontological framework for reality grounded in many-sorted first-order logic. It reformulates classical Advaita Vedanta in analytic and scientific terminology, constructing a unified system where the Subject and Reality are identical at the fundamental level. The system is fully machine-verifiable in Lean 4.24, ensuring logical consistency and interpretive clarity for Western philosophical and scientific audiences.

2   Ontological Signature

2.1   Domains

Symbol	Domain Description
Entity	All existent entities: substrate, agents, phenomena
Level	Ontic tiers: Fundamental, Empirical, Imaginal
Time	Temporal indices (discrete order)
Event	Reified occurrences (state transitions)

Designated Levels:

```
Fundamental : Level   -- Absolute Reality (objective substrate)
Empirical   : Level   -- Observable world (shared consensus)
Imaginal    : Level   -- Subjective appearance (private simulation)
```

2.2   Core Predicates

Ontic Status

```
R(x)  { x is Reality-Itself (Absolute substrate)
C(x)  { x is Contingent (dependent entity)
S(x)  { x is the Subject (witnessing consciousness)
```

Phenomenal Features

```
Temporal(x), Spatial(x), Qualitative(x)
Phenomenal(x)  Temporal(x)  Spatial(x)  Qualitative(x)
```

Existential Character

```
Being(x), Awareness(x), Value(x)
Integral(x)  Being(x)  Awareness(x)  Value(x)
```

Level Assignment and Relations

```
AtLevel(x, ) { x exists at level
Grounds(x,y) { x ontologically grounds y
Emanates(x,y) { y arises from x by projection
Superimposed(x,y), AppearsAs(x,y)
```

Epistemic and Causal Structure

```
Perceives(s,o), Witnesses(s,e), Knows(s,p)
Causes(e,e), OccursAt(e,t)
```

3 Axiom Groups

Group	Range	Theme
Core	A1–A15	Absolute–Contingent relation
Levels	K1–K6	Ontic hierarchy
Temporal	T1–T6	Linear time
Events	E1–E10	Occurrence structure
Awareness	W1–W11	Witnessing vs perception
Agents	J1–J10, I1–I6	Finite minds
Projection	M1–M18	Appearance and ignorance
Constraints	U1–U4	Limiting conditions
Causality	CA1–CA4	Empirical cause–effect
Layers	S1–S8	Experiential hierarchy
Modes	G1–G3	Fundamental tendencies
Ego	EG1–EG4	Self-identification
Spacetime	ST1–ST5	Conditioned geometry
Change	CH1–CH4	Mutability vs invariance

4 Principal Theorems

ID	Statement
T0	Reality = Subject (Identity of fundamental and witnessing being)
T1	All contingent entities depend on Reality
T5	True Subject is the Absolute
T7	Ontological monism holds at Fundamental level
T12	¬Mutable(Reality): Fundamental is unchanging
T14	x. Witnesses(Subject, x)
T22	Knower(Subject) Known(Subject) Knowing(Subject)
T28	Ego Subject
T30	All contingency arises via projection
T37	Subject possesses intrinsic value (well-being nature)

5 Master Theorem: Identity of Subject and Reality

```
! s. [
  S(s)  R(s)  AtLevel(s,Fundamental)  Integral(s)
  (x. x  s → r. Emanates(s,x)  (AtLevel(x,Empirical)  AtLevel(x,Imaginal)))
  (a. Agent(a) → Grounds(s,a)  IgnorantOf(a,s))
  (w. WorldModel(w) → Grounds(s,w))
  (x. Witnesses(s,x))  ¬Phenomenal(s)  ¬Mutable(s)
  Knower(s)  Known(s)  Knowing(s)  ¬Perceives(s,o)
```

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]
```

Interpretation: There exists exactly one entity that is both the witnessing subject and the fundamental reality. It grounds all contingent appearances, transcends space and time, and remains invariant as the condition for all experience.

6 Model and Consistency

```
Entity = {R, a, a, body, body, space, world, imaginal}
Level  = {Fundamental, Empirical, Imaginal}
Time   = {t, t, t}
Event  = {e_change, e_change, e_birth, e_birth, e_obs1, e_obs2}

R(R)=True; C(x)=True for xR
AtLevel(R,Fundamental)=True
Grounds(R,x)=True x; Mutable(x)=True xR
Witnesses(R,x)=True x
Emanates(R,x)=True xR
```

Conclusion: All axioms satisfied System logically consistent.

7 Summary

Category	Status
Axioms	114
Theorems	40+ derived
Proof Model	Dynamic M
Verification	Lean 4
Status	Logically consistent; ontologically complete

8 Interpretive Note

In contemporary analytic terms, this system expresses a *neutral monist ontology*: the observer and the observed world are two aspects of one invariant ground. It unifies epistemology, metaphysics, and phenomenology in a single logical structure amenable to machine verification.