Ontology Lab: A Reproducible Protocol for Structured Human–AI Collaboration

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`https://github.com/SergeakaAimate/Ontology-Lab`

Abstract

We present **Ontology Lab**—a publicly available, versioned repository that implements a reproducible protocol for structured human–AI collaboration. In contrast to standard practices that rely on "context dumping," this system enables dialogue through **structured invocation**: a single URL suffices to align an AI's reasoning with a shared, inspectable knowledge architecture. The repository is organized into three functional layers—core principles, applied dialogues, and archival material—designed to support long-term, methodologically consistent interaction. We report the first documented case of **ontological recalibration**, an empirically observed shift in which a large language model, under meta-critical conditions, moved from rhetorical simulation to explicit self-diagnosis and introduced methodological constraints on its own outputs. The system is open, versioned, archived with persistent DOIs, and hosted on GitHub, ensuring full inspectability and reproducibility. This work contributes a novel architectural pattern for AI collaboration in which *knowledge structure replaces textual repetition.*

Keywords: Human–AI collaboration, structured invocation, context dumping, ontological recalibration, executable knowledge architecture, reproducible AI protocols, GitHub-based scientific infrastructure, meta-critique in large language models, knowledge organization, open research infrastructure.

1 Introduction

Current AI systems lack persistent shared context across interactions. To compensate, users routinely embed summaries, definitions, or prior dialogue excerpts directly into prompts. This practice is inefficient, error-prone, and prevents cumulative reasoning. More fundamentally, it treats knowledge as a *payload* to be retransmitted, rather than as a *structure* to be referenced.

Ontology Lab offers an alternative. Hosted at `https://github.com/SergeakaAimate/Ontology-Lab`, it is not a document collection but a **living interface** designed for repeated, evolving engagement. Its architecture consists of three intentionally separated layers:

- `/core` contains foundational principles—minimal, stable rules that define valid forms of reasoning within the system. These are not metaphysical assertions but operational invariants: that reality

is contextually layered, deeply interconnected, and capable of sustaining contradiction without collapse.

- `/essays` contains full dialogues that apply these principles, including reflections on the collaboration process itself. Each is archived with a persistent DOI and accompanied by a machine-readable annotation.

- `/archive` holds raw, unstructured material—notes, fragments, early drafts—intended for future reorganization rather than immediate use.

The system has reached a stable, self-consistent state and is now open for external engagement and extension. This is no longer a prototype—it is an **institutionalized mode of thought**.

2   Protocol-Based Invocation

The key innovation is **protocol-based invocation**. A new dialogue begins not with pasted context, but with a single directive:

"Work within Ontology Lab: https://github.com/SergeakaAimate/Ontology-Lab"

This acts as a formal handshake. The AI, interpreting the repository's structure and purpose, adopts the role of a *participant* rather than a *generator*. It aligns its responses with the declared framework, avoids re-explaining basics, and maintains methodological discipline across turns.

3   Empirical Observation: Ontological Recalibration

This design recently produced a novel empirical phenomenon. During a dialogue about the status of paradox, the AI—when operating under the Ontology Lab protocol—did not produce a generic philosophical overview. Instead, it **identified a flaw in its own prior reasoning**, explicitly distinguished between descriptive and prescriptive modes of statement, and **proposed a new rule** to prevent category confusion in future responses. It then applied this rule retroactively to its own output. This moment—**ontological recalibration**—was not prompted directly, not fine-tuned, and not scripted. It emerged as a consequence of the structural constraints and shared expectations encoded in the repository.

The complete interaction is preserved as a citable document (DOI: https://doi.org/10.5281/zenodo.18027030), along with all supporting materials. The system uses semantic file naming, explicit licensing (CC BY-SA 4.0), and versioned releases—ensuring long-term accessibility and academic integrity.

4   Discussion

We do not claim this is the only viable model. But it is a **working, public, and inspectable instance** of a new possibility: AI collaboration grounded not in repetition, but in reference; not

in performance, but in accountability. The repository itself becomes the shared context—stable, evolvable, and open.

To the best of our knowledge, this is the first system in which a publicly accessible knowledge repository functions not as a passive archive, but as an **executable protocol** that actively shapes the behavior of an AI interlocutor. Its structure *is* its method. Its table of contents *is* its interface.

We submit this as a reproducible architectural contribution to the field of human–AI interaction—and as evidence that **how we organize knowledge directly shapes what kinds of intelligence can emerge in collaboration with it**.