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MINI REVIEW

# The Noësis Protocol: An Ontological Framework for Recursive Epistemic Systems

Erez Ashkenazi\*

Independent Researcher, HaMeyasdim 347, Yesud HaMa'ala 12105500 - Upper Galilee, Israel

## Abstract

This paper introduces the Noësis Protocol, a decentralized epistemic framework grounded in Spinoza's [1] metaphysics and formalized through the Theory of Relational Adequacy (TRA). The protocol redefines truth as recursive actualization within an evolving field of clarity ( $\Phi$ ), replacing static correspondence models with structural participation. A formal graph-theoretic model is presented, detailing how reflections (user-submitted expressions) are parsed into causal graphs and evaluated for adequacy. The protocol incorporates dynamic alignment with a system-wide causal model and enables governance via a novel Proof-of-Adequacy (PoA) mechanism. Applications in AI alignment, decentralized governance, and collective cognition are explored.

## Introduction

In the current epistemic landscape, information abundance has given rise to epistemic fragmentation. Truth, increasingly mediated by popularity metrics, suffers from distortion, overload, and polarization. Classical knowledge infrastructures—from encyclopedias to consensus-based DAOs—struggle to preserve coherence in a recursive, decentralized world. The Noësis Protocol aims to address this crisis not by enforcing correctness, but by designing a system that recursively aligns user-submitted ideas with an evolving, formal representation of reality. Inspired by Spinoza's [1] concept of Substance and adequate ideas, and encoded through TRA, Noësis reimagines truth as participatory clarity.

## Philosophical Foundations

### Spinoza's [1] Metaphysics

Spinoza [1] posited that reality is composed of a single infinite Substance (Deus sive Natura), expressed through infinite attributes. Human beings perceive only two: Thought and Extension. All finite things are "modes" of Substance, existing as particular modifications of these attributes.

A key concept in Spinoza's [1] Ethics is that of an adequate idea: a thought that corresponds necessarily and structurally to the order and connection of causes. Adequacy is not belief but structural clarity. Freedom, for Spinoza [1], is the power to act from the necessity of one's own nature—an increase in one's power of understanding.

### \*Corresponding author(s)

**Erez Ashkenazi**, Independent  
Researcher, HaMeyasdim 347, Yesud  
HaMa'ala 12105500 - Upper Galilee, Israel

**ORCID:** 0009-0001-5461-0459

**Tel:** +972-052-830-8978

**Email:** erezsnz@gmail.com  
erez@noesis-net.org

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## Theory of Relational Adequacy (TRA)

TRA extends Spinoza [1] by introducing an operational model of adequacy:

- **Adequacy (A):** Structural alignment between a reflection and the evolving system-wide causal graph  $\Phi$ .
- **Joy ( $\Delta A$ ):** The increase in adequacy between successive reflections.
- **Truth:** Not correspondence, but the capacity of a reflection to integrate recursively into the system.

TRA reframes epistemology as dynamic participation in a recursive clarity engine [2].

### Formal Model

Let:

$R_n$  be a reflection submitted by a user

$G(In)$  be the causal graph parsed from  $R_n$

$\Phi$  be the system-wide causal clarity graph

$E(X)$  denote the set of directed edges in graph  $X$ .

### Adequacy function

The adequacy of a reflection is defined as:

$$A_n = \frac{|E(In) \cap E(\Phi)|}{|E(\Phi)|} - \frac{|E(In) \setminus E(\Phi)|}{|In|} \cdot A_{n-1}$$

Where:

The first term measures alignment (clarity)

The second term penalizes distortion (novelty not yet integrated).

### Joy function

$$J_n = A_n - A_{n-1} \quad J_n = A_n - A_{n-1}$$

Joy represents growth in clarity. A negative value indicates epistemic distortion [3].

### Truth function

$$\text{Truth}(R_n) = \sum_m \text{Coherence}(R_n, \Phi_m) \cdot \text{Influence}_m$$

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Truth is defined as the total influence a reflection has on recursion and system coherence.

## Protocol Architecture

The Noësis Protocol consists of:

A frontend interface for submitting reflections

A backend clarity engine that parses text into causal graphs

An on-chain smart contract (ReflectionVault) that records submissions and scores

A decentralized model of Nature ( $\Phi$ ) that evolves based on recursive alignment.

### Smart contract layer

A Solidity smart contract stores:

sender address

cid (IPFS hash)

adequacy score

timestamp

### Governance: Proof-of-Adequacy (PoA)

PoA replaces Proof-of-Work and Proof-of-Stake with clarity:

Reflections with high A scores influence governance

$\Phi$  is updated only through valid, recursively adequate contributions

Participation grants influence proportional to clarity, not wealth or popularity [4-6].

## Applications

### AI alignment

Noësis provides a scoring system to evaluate AI outputs by structural adequacy, enabling recursive alignment with human epistemology.

### Decentralized governance

Decisions are made not by vote count but by coherence with  $\Phi$ . This allows governance based on understanding rather than popularity.



## Distributed philosophy engines

Collective clarity systems can be instantiated across domains: science, ethics, law, or art, forming recursive fields of knowledge [7,8].

## Conclusion

Noësis introduces a novel ontological protocol for epistemic clarity. Grounded in substance monism and recursive logic, it transforms truth from a static correspondence to a participatory process of structural adequacy. As decentralized systems evolve, clarity engines like Noësis may redefine our relationship to knowledge, governance, and intelligence itself.

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