Epistemic Doctrine

Aurora Research Initiative (ARI)

Epistemic Doctrine (v1.0)

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Aurora Research Initiative — Epistemic Doctrine (v1.0.0)

This document establishes the epistemic foundation of the Aurora Research Initiative (ARI).
It defines the theory of knowledge, scientific principles, and evidentiary standards that govern the Aurora ecosystem—AWO, CRI-CORE, and all associated case studies.

The doctrine ensures that scientific outputs are not only reproducible and falsifiable, but grounded in transparent, accountable, and rigorously traceable epistemic processes.

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1. Epistemic Mission

ARI's mission is to construct a **verifiable, audit-first form of scientific cognition** where every claim, process, and artifact is anchored in:

- reproducibility
- provenance
- transparent reasoning
- identity integrity
- falsifiable structure

The doctrine explains *why* these constraints exist and how they shape the Aurora ecosystem.

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2. Foundational Epistemic Principles

ARI is built on six foundational epistemic principles:

2.1 Audit-First Cognition

Knowledge must be constructed through processes that can be re-run, re-validated, and fully audited. This replaces opaque peer-review with transparent procedural validation.

2.2 Reproducibility as a Precondition

A claim is not considered knowledge unless it can be: - repeated
- verified
- reconstructed
- traced through documented processes

2.3 Provenance as Identity

The origin, lineage, and history of artifacts are inseparable from their meaning.
Every artifact must be: - metadata-complete
- identity-bound
- provenance-attested

No artifact stands alone without its provenance chain.

2.4 Falsifiability as Non-Negotiable

All claims must have clear conditions under which they could be shown false.
Ambiguous, unfalsifiable, or purely rhetorical claims are not treated as valid outputs.

2.5 Human Oversight & Interpretability

While automation, AI models, and deterministic runners assist in research execution, ARI requires: - human interpretive oversight
- transparent reasoning
- readable artifacts

Opaque automated knowledge is considered epistemically incomplete.

2.6 Independence of Roles

Knowledge generation must not collapse governance, tooling, method, and validation into a single role. This prevents circular approval and epistemic capture.

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3. Epistemic Position of AWO and CRI-CORE

3.1 AWO — Method-Level Epistemic Layer

AWO implements: - procedural reproducibility
- workflow-based reasoning
- deterministic reasoning pipelines (temporary)
- metadata enforcement (temporary)

AWO **produces epistemically traceable reasoning chains**, but does not define epistemic doctrine.

3.2 CRI-CORE — Tooling-Level Epistemic Engine

CRI-CORE enforces: - identity binding
- deterministic outputs
- artifact verification
- attestation independence

CRI-CORE ensures validity **mechanically**, but does not set epistemic rules.

3.3 ARI — Institutional Epistemic Authority

ARI defines: - what counts as knowledge
- what counts as evidence
- what constitutes transparency
- how reproducibility is measured
- the epistemic boundaries of tools and methods

ARI governs epistemology; AWO and CRI implement it.

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4. Standards for Knowledge Claims

Any scientific or technical claim within ARI's ecosystem must satisfy the following:

4.1 Traceability

The claim must point to: - the process that produced it
- the inputs
- the runtime environment
- the identity of contributors
- the provenance of artifacts

4.2 Reconstructibility

A third party must be able to rebuild the artifact from: - the workflow
- the metadata
- the documented reasoning

4.3 Independence

No claim may be validated by: - its own creator
- its own tooling
- its own workflow

Validation must come from a separate role.

4.4 Interpretability

Results must be readable, explainable, and reviewable.
Opaque pipelines are insufficient.

4.5 Falsifiability

Every claim must include: - what would invalidate it
- what conditions would contradict it
- what experimental or computational evidence could show it wrong

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5. Epistemic Prohibitions

To maintain epistemic integrity:

- No self-approval of claims
- No unverifiable reasoning steps
- No undocumented transformations
- No opaque automated reasoning
- No metadata-incomplete artifacts
- No post-hoc rationalization without logs
- No reliance on authority or reputation as evidence

Knowledge is procedural, not reputational.

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6. Relationship to Scientific Case Studies

Case studies (Waveframe v4.0, Societal Simulator, etc.) must adhere to this doctrine:

- metadata-complete
- provenance-traceable
- reproducible
- falsifiable
- identity-bound
- independently verifiable

Case studies serve as **applications** of the doctrine—not exceptions.

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7. Revision & Amendment Rules

Changes to the Epistemic Doctrine require:

1. Institutional Coordinator approval
2. Governance log entry
3. Version increment
4. Backward compatibility statement

5. Clear and justified rationale

No doctrinal change may be made without an official log entry.

This doctrine establishes the epistemic foundation for all scientific work within the Aurora ecosystem.
