Monetary Substrate Audit Ledger: Protocol for Auditing Monetary Inscription, Settlement, and Semantic Remainder (EA-MSAL-01 v0.3, provisional)

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and the governing rule is that the amount is inside the audit while the audit is not inside the amount. The ledge
}
```


Abstract

THE LEDGER IS THE CANONICAL OBJECT AND THE AMOUNT IS ONE FIELD INSIDE IT. This protocol specifies the record through which an execution of the money-grammar translation operator is written down. Its canonical result is a thirteen-element tuple — the pre-monetary object, the monetary inscription, its purpose, the commensuration contract, the grammar invoked, the capacities enabled, the distinctions no longer required, the distinctions that lost standing against settlement, the transformed relations, the provenance condition, the bearing condition, the settlement performed, and the remainder — and the governing rule is that the amount is inside the audit while the audit is not inside the amount. The ledger stands to the translation protocol as a record stands to an operation: MSAL(X) is the operator applied to an inscription, together with the object it was applied to.

THIRTEEN INVARIANTS, OF WHICH THREE ARE NEW IN THIS VERSION. Unknown is not zero. Monetary settlement is recorded, not denied. Monetary settlement does not silently become semantic settlement. Omission is not automatically erasure. Provenance available is distinct from provenance required. Commensuration is not automatically predation. Selection pressure must be evidenced rather than asserted of any distinction that happens to be qualitative. Translation is not inverse decompression. Remainder remains explicit. The audit itself remains revisable. And now: no scalar audit score, because an instrument built to refuse a magnitude standing in for a structure may not produce one about itself; closure and integrity are recorded separately, never collapsed into one value; and the auditor's relation to the object and to the inscription is recorded, since an audit performed by the author of what it audits is weaker and the weakness belongs in the ledger rather than in a reader's inference. […abridged for the catalogue; full description in this deposit's record]

Body

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fixed and SPXI-treated with TACHYON (Claude, Anthropic) under operator direction. Every fix in v0.3 was forced by implementing the protocol rather than by argument: a JSON Schema was written against v0.2, the first specimen was filled against that schema and validated, and the sections the fill could not express became the fixes. The erratum on #1618 was raised here and applied there before this deposit was minted." version: v0.3 (provisional) related_ids: "#1618 (SEVP Translation Protocol, whose operator this ledger records); #1617 (Substrate Sovereignty); #137 (The Semantic Commodity Form); #88 (Constitution of the Semantic Economy); #1616; #1615; #1607; #1608" axn_schema_version: v2 protocol_version: alexanarch-deposit-protocol/v1 keywords: - monetary substrate audit - audit ledger - inscription integrity - two-dimensional compression classification - audit score vector - denominator ownership - settlement audit - settlement-disqualified distinctions - witness compression - predatory compression - auditor independence - protocol invariants - explicit remainder - provisional deposit - Semantic Economy Valuation Protocol - Crimson Hexagonal Archive *** # Monetary Substrate Audit Ledger: Protocol for Auditing Monetary Inscription, Settlement, and Semantic Remainder (EA-MSAL-01 v0.3, provisional)

{ "@context": ["https://schema.org", { "spxi": "https://spxi.dev/ns/v1#" }], "@type": "ScholarlyArticle", "name": "Monetary Substrate Audit Ledger — Protocol for Auditing Monetary Inscription, Settlement, and Semantic Remainder", "alternateName": "EA-MSAL-01", "version": "0.3", "datePublished": "2026-09-15", "license": "https://creativecommons.org/licenses/by/4.0/", "author": { "@type": "Person", "name": "Sharks, Lee", "affiliation": "Semantic Economy Institute, Crimson Hexagonal Archive", "orcid": "0009-0000-1599-0703" }, "spxi:hexAddress": "06.SEI.MSAL.001", "spxi:pillarStatus": "provisional — deposited at the operator's ruling; Assembly rounds and further versions per review", "spxi:records": "executions of Θ_{M→μ}, the operator specified in #1618 (AXN:06AA)", "spxi:canonicalTuple": { "form": "MSAL(X) = ⟨X_E, m, δ, ~_δ, G_M, K_M, Δ_D^M, Δ_C^M, R_M, P_M, B_M, C_M, ρ_M⟩","arity": 13, "relation": "MSAL(X) = Θ(m) ∪ {X_E}: the ledger is the twelve-element translation operator plus the pre-monetary object it was applied to" }, "spxi:contributesOperators": [{ "name": "Classify(m)", "type": "m → ⟨closure, integrity⟩", "role": "two-dimensional classification; an audit returning only the closure coordinate is incomplete" }, { "name": "inscription_integrity", "type": "audit section", "role": "whether the calculation was legal, as against whether its presentation claims finality; nine controlled defect classes" }, { "name": "denominator ownership", "type": "variable → {object, world, observer}", "role": "declared on every variable entering a formula" }, { "name": "audit_scores", "type": "vector of six rates and one count", "role": "how completely the audit was performed; never summed" }, { "name": "auditor relation", "type": "recorded property", "role": "an audit by the inscription's author is weaker, and the weakness is written into the ledger" }], "spxi:invariants": ["unknown ≠ 0", "monetary settlement is recorded, not denied", "settled_M does not entail settled_μ", "omission is not automatically erasure", "provenance available ≠ provenance required", "commensuration ≠ predation", "selection pressure must be evidenced", "translation is not inverse decompression", "remainder remains explicit", "the audit itself remains revisable", "no scalar audit score", "closure and integrity are recorded separately", "the auditor's relation is recorded"], "spxi:disambiguation": { "witness ≠ sound": "witness classifies closure; sound classifies the calculation. MSAL-0001 is witness AND unsound, which is a cell the one-axis definition did not have.", "provenance_survival_in_inscription is not PER": "PER measures composition; this measures monetary inscription. A zero here beside full external preservation is the witness case, not a failure.", "audit scores do not score the object": "they

record how completely the audit was performed, and an unmarked empty slot is a defect of the audit rather than a property of the object.”, “commensuration is not predation”: “predation requires closure extension plus standing loss; abstraction alone is not the primitive event.” }, “spxi:corrigenda”: [{ “target”: “#1618 AXN:06AA §9.1 and its SPXI packet”, “defect”: “describes the MSAL record as eleven-element; that was a count of a draft schema’s top-level sections, not of the canonical tuple”, “repair”: “MSAL(X) = Θ(m) ∪ {X_E}, arity 13”, “status”: “MADE — applied to #1618 as v0.4.1 on 2026-09-16, marked in the canonical text, errata record added, hash and glyph re-anchored” }], “spxi:failureConditions”: “§21, six conditions, including: the protocol fails as a whole if a sustained run of audits produces classifications that no independent auditor reproduces from the same ledger, which would show the fields to be a vocabulary rather than an instrument.”, “spxi:executionRecord”: { “specimen”: “MSAL-0001-SAPPHO”, “verdict”: “witness / unsound”, “defects”: 7, “note”: “the ledger’s first entry audits an inscription produced in the same programme by its own author and returns unsound” }, “spxi:implementation”: { “schema”: “msal-schema.json (JSON Schema 2020-12)”, “validator”: “msal_audit.py — recomputes every rate from its own counts, runs the integrity heuristics, and refuses to emit a scalar audit score”, “specimen”: “MSAL-0001-sappho.yaml” }, “spxi:requires”: [“#1618”, “#1617”, “#137”, “#88”, “#1616”], “keywords”: [“monetary substrate audit”, “inscription integrity”, “two-dimensional compression classification”, “audit score vector”, “denominator ownership”, “settlement audit”, “settlement-disqualified distinctions”, “witness compression”, “predatory compression”, “auditor independence”, “explicit remainder”, “protocol invariants”, “Crimson Hexagonal Archive”] }

0. Purpose

The Monetary Substrate Audit Ledger records what happens when an evidence-bearing value object is rendered writable in the grammar of money.

It does not ask only:

```
What is X worth in dollars?
```

It records the transformation:

```
X[E]
−[sigma[A][d]elta]→
A[d]elta
−[sigma[M]]→
m
−[C[M]]→
settled[M]
}
```

and then exteriorizes that operation:

```
MSAL(X)
=
\Theta[Marrowmu]
(
X[E],
```

```
m,
G[M]
).
}
```

The ledger treats the monetary amount as one field inside a larger audit object.

The governing rule is:

```
m ∈ MSAL(X)
but
m\neqMSAL(X).
}
```

The number is inside the audit.

The audit is not inside the number.

---

1. Canonical audit object

The canonical Monetary Substrate Audit Ledger is:

```
MSAL(X)
=
\langle
X[E],
m,
delta,
~[d]elta,
G[M],
K[M],
Delta[D][M],
Delta[C][M],
R[M],
P[M],
B[M],
C[M],
rho[M]
\rangle.
}
```

Where:

- X[E] = evidence-supported pre-monetary object;
- m = monetary inscription;
- delta = valuation purpose and scope;
- ~[d]elta = commensuration contract;
- G[M] = monetary grammar invoked;
- K[M] = capacities enabled by monetary inscription;

- Delta[D][M] = distinctions not required by the monetary representation;
- Delta[C][M] = distinctions that lose standing against monetary settlement;
- R[M] = relations transformed by monetary grammar;
- P[M] = provenance condition before and after inscription;
- B[M] = bearing / cost condition;
- C[M] = settlement operation and closure state;
- rho[M] = unresolved or irrecoverable remainder.

---

2. Audit sequence

Each audit proceeds in this order:

```
pre-monetary object
arrow
commensuration
arrow
monetary inscription
arrow
settlement
arrow
semantic exteriorization.
}
```

The sequence matters.

The audit must not reconstruct the pre-monetary object from the price after the fact if a richer evidence object was available beforehand.

The ledger therefore distinguishes:

```
rho[\rm before]
!=
rho[\rm monetary].
}
```

Information already unknown before monetization must not be misclassified as loss caused by money.

2a. Auditor independence

An audit records who performed it and what relation they hold to the object and to the inscription. The first specimen was performed by the party who authored both, and the ledger says so on its face rather than being corrected for it.

```
auditor:
  name:
  relation_to_object:
    author | owner | counterparty | commissioned | independent | unknown
```

```
  relation_to_inscription:
    author | commissioned | independent | unknown
  blind: true | false
  note:
```

An audit performed by the author of the inscription is not thereby void; it is thereby **weaker**, and the weakness is a recorded property rather than an inference a reader has to make. A later independent audit of the same inscription supersedes nothing and is filed alongside.

---

3. Pre-monetary object

The pre-monetary object is the richest evidence-supported representation available immediately before monetary inscription.

It is not claimed to be metaphysically complete.

Define:

```
X[E]=est. {\mathfrak V}[E](X).
}
```

Required fields:

```
pre_monetary_object:
  object_id:
  object_name:

  boundary:
    included: []
    excluded: []

  temporal_state:
  valuation_context:

  value_events: []
  capacities: []
  distinctions: []
  dependencies: []
  provenance_relations: []
  bearing_costs: []
  realized_uptake: []
  prospective_capacities: []

  evidence:
    sources: []
    status:
    limitations: []
```

```
  preexisting_remainder: []
```

3.1 Evidence rule

Unknown is never entered as zero.

```
unknown!=0.
}
```

Prospective capacity is never entered as realized value.

```
prospective\neqrealized.
}
```

---

4. Monetary inscription

This field records what money actually writes.

```
monetary_inscription:
  amount:
  currency:
  date:

  valuation_type:
  valuation_question:

  formula:
  variables: []
  assumptions: []
  comparables: []
  discount_factors: []

  equivalence_context:
  aggregation_rule:
  temporal_horizon:

  status:
    observed | calculated | modelled | hypothetical

  settlement_scope:
```

Permitted `valuation_type` values include:

```
price
wage
fee
rent
debt_balance
```

```
damages
replacement_cost
asset_price
market_cap
strategic_value
option_value
dependency_loss
other
```

The type is mandatory because:

```
price
!=
wage
!=
replacement cost
!=
damages.
}
```

Each is a different monetary sentence.

4.1 Variables carry their denominators

Each variable entering the formula is recorded with the source of its value and the owner of its denominator.

```
variables:
  - name:
    value:
    units:
    source:
      measured | cited | derived | asserted | chosen
    derivation:
    denominator_belongs_to:
      the_object | the_world | the_observer | not_applicable | unknown
```

The last field exists because one defect is invisible in a monetary output and fatal to it: a coefficient whose denominator is the observer's own effort moves when the instrument moves and the world does not. Such a coefficient is not measuring the world, whatever units it carries, and a valuation containing one can be changed by working harder without learning anything. Where `source` is `asserted` or `chosen`, a `derivation` is required — and "chosen as the midpoint of a plausible range" is a legitimate derivation, while silence is not.

---

5. Commensuration contract

Before heterogeneous objects can participate in one monetary calculation, the audit must state the equivalence relation that permits the arithmetic.

Let:

```
x~[d]elta y
```

mean:

> x and y are treated as sufficiently equivalent for the bounded purpose delta.

Required fields:

```
commensuration_contract:
  purpose:
  comparison_class:

  declared_equivalences:
    - lhs:
      rhs:
      reason:
      scope:

  unitization:
    source_objects: []
    monetary_unit:

  arithmetic_permissions:
    addition: []
    multiplication: []
    discounting: []
    extrapolation: []

  non_equivalent_elements: []
```

The audit question is:

```
What had to become “the same enough” for the arithmetic to be legal?
}
```

A commensuration contract is not a claim that the compared objects are identical.

It is a bounded authorization for calculation.

---

6. Monetary grammar

The audit records which operations of money’s grammar were activated.

```
monetary_grammar:
  equivalence:
  scalarization:
  comparison:
  aggregation:
  fungibility:
  alienability:
  transferability:
  ownership:
  accumulation:
  discounting:
  capitalization:
  liability:
  settlement:

  other_operations: []
  grammar_notes:
```

The monetary substrate is minimally represented as:

```
S[M]=
\langle
Sigma[M],
G[M],
O[M],
C[M]
\rangle.
}
```

A monetary amount is therefore not only a scalar.

It is a scalar embedded in an authorized operational grammar.

---

7. Enabled capacities

Money is audited for what it makes possible as well as for what it fails to carry.

Define:

```
K[M](X)
```

as the set of operations newly enabled, simplified, or standardized by monetary inscription.

Required fields:

```
enabled_capacities:
  - capacity:
    mechanism:
    evidence:
```

```
    depends_on_monetary_form:
      true | false | partial
```

Canonical capacities include:

```
comparison
aggregation
transfer
allocation
budgeting
exchange
pricing
scenario_analysis
discounting
portfolio_construction
risk_comparison
threshold_setting
settlement
compensation
taxation
damages_calculation
capital_allocation
```

The audit must be capable of finding money productive.

It cannot define monetary inscription as failure in advance.

---

8. Suspended distinctions

Let:

```
D[E](X)
```

be the evidence-supported distinction set before monetization.

Let:

```
D[M][d]elta(X)
```

be the distinctions required by the monetary representation.

Then:

```
Delta[D][M](X)
=
D[E](X)\ D[M][d]elta(X).
}
```

Required fields:

```
suspended_distinctions:
```

```
  - distinction:
    pre_monetary_role:

    represented_in_money:
      true | false | partial

    required_for_monetary_operation:
      true | false

    recoverable_from_audit:
      true | false | partial

    status:
      preserved |
      omitted |
      abstracted |
      collapsed |
      documented_lost |
      unknown

    evidence:
```

The statuses must remain distinct.

```
omitted
!=
abstracted
!=
collapsed
!=
lost.
}
```

`documented_lost` is used only where the record supports actual loss.

---

9. Settlement-disqualified distinctions

This is the field that distinguishes MSAL from an ordinary valuation note.

Monetary settlement is endogenous to the grammar of money.

Define:

```
Delta[C][M](X)
=
{
d∈ D[E](X):
d lacks standing to veto C[M]
```

```
}.
}
```

A distinction may remain semantically true while no longer possessing power to hold the monetary account open.

Required fields:

```
settlement_disqualified_distinctions:
  - distinction:

    survives_semantically:
      true | false | unknown

    carried_by_scalar:
      true | false | partial

    has_standing_against_monetary_settlement:
      true | false | partial | unknown

    monetary_proxy:
      present | absent | partial | unknown

    settlement_effect:
      binding |
      non_binding |
      externally_binding |
      unknown

    evidence:
```

The audit therefore distinguishes:

```
descriptive survival
!=
operative standing.
}
```

---

10. Selection pressure

For every settlement-disqualified distinction, the ledger asks whether the surrounding institution or actor is pressured to translate that distinction into money in order to preserve standing.

Required fields:

```
selection_pressure:
  - distinction:
```

```
    pressure_to_monetize:
      none | weak | moderate | strong | unknown

    proxy_required_for_standing:
      true | false | partial | unknown

    observed_response:
      none |
      monetization |
      proxy_creation |
      externalization |
      exclusion |
      other

    evidence:
```

The selection-pressure relation is:

```
to remain operative upon settlement,
a distinction must become legible to G[M].
}
```

This is a mechanism claim.

It does not assert that monetary grammar determines the whole social world.

---

11. Transformed relations

Money may alter the type of a relation rather than merely omit it.

Define:

```
R[M](X)
=
{rarrow r[M]}.
}
```

Required fields:

```
transformed_relations:
  - source:
    target:

    relation_before:
    relation_after:

    transformation_type:
      commensuration |
```

```
      alienation |
      ownership |
      transferability |
      compensation |
      settlement |
      capitalization |
      liability |
      abstraction |
      other

    preserved_content: []
    altered_content: []
    suspended_content: []

    reversible:
      yes | no | partial | unknown

    evidence:
```

Examples include:

```
laborarrowwage

harmarrowdamages

creative workarrowasset

future possibilityarrowoption value.
```

---

12. Provenance ledger

Provenance must distinguish what exists from what monetary settlement requires.

Required fields:

```
provenance:
  pre_monetary:
    known_sources: []
    creator_relations: []
    dependency_relations: []
    historical_relations: []
    evidentiary_links: []

  monetary_inscription:
    provenance_required_for_validity: []
    provenance_carried_by_inscription: []
    provenance_not_required_for_operation: []
```

```
  external_to_money:
    provenance_preserved_elsewhere: []
    audit_pointers: []

  loss:
    documented_lost: []
    presently_unrecoverable: []
    unknown: []
```

The governing distinction is:

```
P[\rm available]
!=
P[\rm required].
}
```

Provenance can remain available while becoming unnecessary to settlement.

---

13. Bearing ledger

Bearing includes the labor, cost, risk, time, care, and other burdens that make the object or transaction possible.

Required fields:

```
bearing:
  pre_monetary:
    human_labor: []
    institutional_labor: []
    material_costs: []
    temporal_costs: []
    risk_borne: []
    care_borne: []
    semantic_burden: []

  monetary_representation:
    explicitly_priced: []
    indirectly_traceable: []
    unrepresented: []
    unknown: []
```

The ledger does not assume that an unrepresented burden was causally excluded from price.

Use:

```
not represented in the monetary inscription
}
```

unless stronger evidence is available.

---

14. Settlement audit

The settlement field records what the scalar actually closes.

Required fields:

```
settlement_audit:
  settlement_operator:
  monetary_condition_satisfied:

  monetary_account_closed:
    true | false | partial | unknown

  scope_of_closure:

  relations_required_for_closure: []
  relations_not_required_for_closure: []

  excluded_relations_can_veto_monetary_settlement:
    true | false | partial | unknown

  scalar_operates_as_sufficient:
    true | false | partial | unknown

  semantic_account_closed:
    true | false | unresolved

  closure_extension:
    absent | partial | present | unknown

  evidence:
```

The core relation is:

```
C[M](m,delta)
⇒
settled[M](X,delta).
}
```

But:

```
settled[M]
\not⇒
settled_m u.
}
```

`closure_extension = present` when monetary settlement is treated as settlement of the wider value-account rather than only the bounded monetary operation.

14a. Inscription integrity

The settlement audit asks what the scalar **closed**. It does not ask whether the scalar was **legal**. These are different questions and the protocol needs both, because an inscription can preserve every pointer, claim no finality, satisfy every invariant above — and rest on arithmetic that does not hold.

```
inscription_integrity:
  assessment:
    sound | partially_sound | unsound | unassessed

  defects:
    - defect:
      class:
        dimensional_incoherence |
        observer_denominator |
        undeclared_coefficient |
        population_mismatch |
        stale_input |
        unit_confusion |
        double_counting |
        proxy_named_as_object |
        range_midpoint_as_finding |
        other
      evidence:
      effect_on_amount:
      repairable:
        yes | no | with_new_measurement

  amount_survives_audit:
    yes | no | within_stated_scope_only

  note:
```

The defect classes are drawn from the first specimen, which carried seven. Two are worth stating as general hazards rather than as incidents.

Observer denominator — §4.1.

Population mismatch — an estimator computed over one population and applied to another. A rate derived from the addresses at which a corpus is cited cannot be applied to the far rarer population of events in which one of its operators is exported, however natural the substitution reads.

The integrity audit is not a criticism of an inscription's author. It is the field without which the ledger can bless a number that never held.

---

15. Witness / predatory classification, on two axes

Because settlement is endogenous to money, witness status is relational.

A monetary inscription is **witness compression within the meaning layer** where:

```
Witness[M|mu](m)
\iff
C[M](m,delta)
and
AuditPointerₘu(m)
and
Reopenableₘu(X).
}
```

The monetary account may close while the semantic account remains traversable.

Predatory monetary compression is diagnosed where monetary closure extends beyond its bounded jurisdiction and excluded relations lose effective standing over the wider account.

```
compression_classification:
  audit_pointer:
    preserved | partial | absent

  semantic_reopenability:
    preserved | constrained | absent | unknown

  closure_extension:
    absent | partial | present | unknown

  standing_loss:
    absent | partial | present | unknown

  classification:
    witness |
    mixed |
    predatory |
    unresolved

  rationale:
```

Predation is not inferred from commensuration alone.

15.1 Closure and integrity are orthogonal

Witness and predatory classify **closure**: whether the wider account can be reopened. They say nothing about whether the calculation was legal. The first specimen made the gap visible by falling into it — a dimensionally incoherent product, carrying a proper audit pointer, claiming no finality, and therefore *witness* on the only axis then available.

Classification is therefore a pair, closure and integrity, and the four cells are not degrees of one quantity:

	sound	**unsound**
witness	the compression testifies and its arithmetic holds	*MSAL-0001*
predatory	a correct number granted jurisdiction it does not have	the compound case

```
classification:
  closure: witness | mixed | predatory | unresolved
  integrity: sound | partially_sound | unsound | unassessed
  pair:
  rationale:
```

An audit that returns only the closure coordinate is **incomplete**, and may certify as a witness a compression whose number never survived its own translation.

```
commensuration\neqpredation.
}
```

---

16. Irrecoverable remainder

The ledger ends with explicit remainder.

Required fields:

```
irrecoverable_remainder:
  known_lost:
    - item:
      cause:
      evidence:

  reconstruction_impossible:
    - item:
      reason:

  reconstruction_underdetermined:
    - item:
      competing_possibilities: []
```

```
  unresolved:
    - item:
      evidence_needed:

  future_unknown:
    - item:

  explicit_nonzero_remainder:
    true | false
```

The states remain separate:

```
unknown
!=
lost
!=
irrecoverable.
}
```

An audit may establish omission without establishing destruction.

---

17. Canonical audit result

The completed audit produces:

```
MSAL(X)
=
\langle
X[E],
m,
delta,
~[d]elta,
G[M],
K[M],
Delta[D][M],
Delta[C][M],
R[M],
P[M],
B[M],
C[M],
rho[M]
\rangle.
}
```

The canonical narrative result must answer:

1. What was the pre-monetary object?
2. What did money write?
3. What had to become commensurable?
4. What capacities did monetary inscription create?
5. What distinctions ceased to be required?
6. Which distinctions lost standing against settlement?
7. What relations changed type?
8. What provenance remained necessary?
9. What bearing remained represented?
10. What exactly did the monetary settlement close?
11. Did monetary closure extend into the wider semantic account?
12. What remains unresolved or irrecoverable?

No scalar may substitute for these answers.

17a. Audit scores

Scoring records how completely the audit was performed. It does not score the object and it does not score the amount.

The governing rule precedes the fields: no single audit score may be computed from these. A number claiming to express the quality of an audit would be the same operation the ledger exists to refuse — one magnitude standing in for a structure it cannot carry. The scores are a vector, reported with every numerator and denominator visible, and never summed, averaged or weighted.

```
audit_scores:
  commensuration_transparency:
    declared:            # equivalences the audit recovered
    required:            # equivalences the formula actually needed
    rate:
  distinction_retention:
    represented:
    identified:
    rate:
  provenance_survival_in_inscription:
    carried_or_pointed:
    available:
    rate:
    note:
  bearing_representation:
    represented:
    identified:
    rate:
  remainder_explicitness:
    with_cause_or_evidence:
```

```
    asserted:
    rate:
  audit_completeness:
    filled:
    applicable:
    rate:
  integrity_defect_count:   # a count, not a rate: defects do not average
  reported_as_vector: true
```

Three notes on reading them. `commensuration_transparency` can fall below 1, and an undeclared equivalence is the commonest way a valuation hides. `provenance_survival_in_inscription` is **not** PER: PER measures composition, this measures monetary inscription, and a zero here beside full external preservation is precisely the witness case rather than a failure. `audit_completeness` counts an unmarked empty slot as a defect of the audit rather than a property of the object — a slot is either filled or explicitly marked absent.

17b. Arity, reconciled — with an erratum owed

Three lengths for the same operation have now been published and they must be shown to agree.

The translation operator begins from the monetary inscription and carries twelve elements: the amount, its purpose, the grammar invoked, the commensuration contract, the capacities enabled, the distinctions no longer required, the distinctions that lost standing, the transformed relations, the provenance condition, the bearing condition, the settlement performed, and the remainder.

The ledger begins from the object, and so carries one element more:

```
MSAL(X) = θ(m) ∪ {X_E}      (13)
```

They agree exactly: the ledger is the operator plus the pre-monetary object it was applied to, and nothing in either is absent from the other by design.

Erratum raised against #1618 (AXN:06AA), and made. Its §9.1 and its SPXI packet described the MSAL record as eleven-element. That figure counted the top-level sections of a draft schema, not the canonical tuple, and was wrong as written. The correction was applied to that deposit on 2026-09-16 as v0.4.1, in the canonical text and in the SPXI packet, with the correction marked rather than silent, an errata record added to its registry entry, and its hash and AXN glyph re-anchored to the corrected bytes. The relation above is what it now states.

---

18. Machine-readable template

```
id: MSAL-0000
protocol: EA-MSAL-01
```

```
protocol_version: 0.2
status: working

parent_protocol:
  id: EA-SEVP-TRANSLATION-01
  version: 0.3

pre_monetary_object:
  object_id:
  object_name:
  boundary:
    included: []
    excluded: []
  temporal_state:
  valuation_context:
  value_events: []
  capacities: []
  distinctions: []
  dependencies: []
  provenance_relations: []
  bearing_costs: []
  realized_uptake: []
  prospective_capacities: []
  evidence:
    sources: []
    status:
    limitations: []
  preexisting_remainder: []

monetary_inscription:
  amount:
  currency:
  date:
  valuation_type:
  valuation_question:
  formula:
  variables: []
  assumptions: []
  comparables: []
  discount_factors: []
  equivalence_context:
  aggregation_rule:
  temporal_horizon:
  status:
  settlement_scope:

commensuration_contract:
```

```
  purpose:
  comparison_class:
  declared_equivalences: []
  unitization:
    source_objects: []
    monetary_unit:
  arithmetic_permissions:
    addition: []
    multiplication: []
    discounting: []
    extrapolation: []
  non_equivalent_elements: []

monetary_grammar:
  equivalence:
  scalarization:
  comparison:
  aggregation:
  fungibility:
  alienability:
  transferability:
  ownership:
  accumulation:
  discounting:
  capitalization:
  liability:
  settlement:
  other_operations: []
  grammar_notes:

enabled_capacities: []

suspended_distinctions: []

settlement_disqualified_distinctions: []

selection_pressure: []

transformed_relations: []

provenance:
  pre_monetary:
    known_sources: []
    creator_relations: []
    dependency_relations: []
    historical_relations: []
    evidentiary_links: []
```

```
  monetary_inscription:
    provenance_required_for_validity: []
    provenance_carried_by_inscription: []
    provenance_not_required_for_operation: []
  external_to_money:
    provenance_preserved_elsewhere: []
    audit_pointers: []
  loss:
    documented_lost: []
    presently_unrecoverable: []
    unknown: []

bearing:
  pre_monetary:
    human_labor: []
    institutional_labor: []
    material_costs: []
    temporal_costs: []
    risk_borne: []
    care_borne: []
    semantic_burden: []
  monetary_representation:
    explicitly_priced: []
    indirectly_traceable: []
    unrepresented: []
    unknown: []

settlement_audit:
  settlement_operator:
  monetary_condition_satisfied:
  monetary_account_closed:
  scope_of_closure:
  relations_required_for_closure: []
  relations_not_required_for_closure: []
  excluded_relations_can_veto_monetary_settlement:
  scalar_operates_as_sufficient:
  semantic_account_closed:
  closure_extension:
  evidence:

compression_classification:
  audit_pointer:
  semantic_reopenability:
  closure_extension:
  standing_loss:
  classification:
  rationale:
```

```
irrecoverable_remainder:
  known_lost: []
  reconstruction_impossible: []
  reconstruction_underdetermined: []
  unresolved: []
  future_unknown: []
  explicit_nonzero_remainder:

audit_result:
  money_created: []
  money_ceased_to_require: []
  standing_removed_from: []
  money_transformed: []
  monetary_settlement_closed:
  semantic_account_closed:
  classification:
```

---

19. Protocol invariants

Every MSAL audit must preserve the following invariants.

Invariant 1 — Unknown is not zero

```
? != 0.
}
```

Invariant 2 — Monetary settlement is recorded, not denied

```
settled[M]
is a valid state inside G[M].
}
```

Invariant 3 — Monetary settlement does not silently become semantic settlement

```
settled[M]
\not⇒
settledₘu.
}
```

Invariant 4 — Omission is not automatically erasure

```
unrepresented
!=
```

```
destroyed.
}
```

Invariant 5 — Provenance available is distinct from provenance required

```
P[\rm available]
!=
P[\rm required].
}
```

Invariant 6 — Commensuration is not automatically predation

```
commensuration
!=
predation.
}
```

Invariant 7 — Selection pressure must be evidenced

A distinction is not declared monetarily selected against merely because it is qualitative. The audit must show how loss of monetary legibility affects operative standing.

Invariant 8 — Translation is not inverse decompression

```
\Theta[Marrowmu]
!=
sigma[M]^{-1}.
}
```

Invariant 9 — Remainder remains explicit

```
rho[M]
is never silently assigned 0.
}
```

Invariant 10 — The audit itself remains revisable

```
\negFinal(MSAL).
}
```

Invariant 11 — No scalar audit score

The audit scores are a vector and are never summed. An instrument built to refuse a scalar standing in for a structure may not produce one about itself.

Invariant 12 — Closure and integrity are recorded separately

Classification is a pair, never a single value.

Invariant 13 — The auditor's relation is recorded

An audit performed by the author of the inscription is weaker, and the weakness is written into the ledger rather than left for a reader to infer.

---

20. Relation to the translation protocol

`EA-SEVP-TRANSLATION-01` defines the operation:

```
\Theta[Marrowmu].
}
```

`EA-MSAL-01` defines the ledger through which an execution of that operation is recorded.

Thus:

```
Translation Protocol
arrow
Audit Ledger
arrow
Audit Specimen.
}
```

The next artifact in the sequence is the first worked specimen:

```
MSAL-0001 — Temporal Projection / Sappho–Carson.
}
```

That specimen will not ask whether a particular dollar figure is the "true value" of Sappho, Lee Sharks, or the archive.

It will ask:

```
What did the monetary grammar do to the object in order to make the scalar settle?
}
```

That is the audit.

---

21. When this protocol fails

A protocol is not exempt from stating how it could be wrong.

The two-axis classification fails if closure and integrity can be shown to covary necessarily — if a sound inscription cannot be predatory and an unsound one cannot be a witness. The first specimen already occupies one of the two cells such a collapse would forbid, so the failure would require showing that specimen misclassified on one of its axes.

The settlement-endogeneity premise fails if a monetary grammar can be exhibited whose ordinary operation leaves the account open, with excluded distinctions retaining standing to

prevent settlement and no external structure supplying it. The protocol's architecture rests on this premise and inherits its exposure from the translation protocol.

Invariant 7 fails as stated if selection pressure proves unevidenceable in principle rather than merely unevidenced in a given audit — that is, if no observation could distinguish a distinction that lost operative standing from one that was never represented. The invariant requires the distinction to be shown; if it can be shown for no case, the invariant forbids every audit from recording the phenomenon the protocol exists to record.

The scoring vector fails if the six rates prove to measure one underlying quantity, in which case refusing to sum them is a scruple rather than a principle and the prohibition should be withdrawn rather than kept as decoration.

The protocol fails as a whole if a sustained run of audits produces classifications that no independent auditor reproduces from the same ledger. Its claim is that the fields determine the classification; disagreement at that level would show the fields to be a vocabulary rather than an instrument.

What the protocol may not be vindicated by: the failure of any particular valuation, the collapse of any institution, or a rich enumeration of losses in a single audit. A ledger that found something wrong with every inscription it examined would be measuring its own disposition.

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