AOML v2.2: Semantic Constraint Architecture

Claim Structure, Structural Rules, and Validation Habitats

Companion Document to Paper II, Foundations of the Convergent Semantic Architecture

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Revision 2 (September 2026). This is the second deposited version of AOML v2.2. It incorporates the corrections made to the specification since the first deposit of 4 August 2026, and nothing else: the inferential statistic for R1 is withdrawn pending native-speaker validation, with the reason stated; the operator count is restated as eight semantic operators, seven of them differentially licensed; the colophon's misnaming of the eighth operator is corrected; an inaccurate claim about downstream usage is dropped; REVEAL's provisional annotation is discharged; the method inventory is restated as nine plus NONE, with INTROSPECTION entered in § IV where it is in habitat, admissible under burden, and out of habitat; Type 4 is aligned with the companion Map's Second Edition in name and in definition, so that a repairable level-crossing is a Type 2 root at a Type 4 locus; TEMP is recorded as confirmed throughout; the evidence counts are stated exactly (sixteen languages from thirteen independent lineages, eight in each protocol's set); notes that disagreed with the legality matrix or with each other are corrected; § IV gains a note on names that recur across types; and the references to Paper I and the companion Map are updated. No axis, operator, rule, or habitat assignment changes except as itemized in the Revision Record at the end of this document, which is the complete account of the differences between the two deposits.

Citing this version. Work that relies on the corrections above should cite the Revision 2 version DOI. Paper II (deposited 18 August 2026) cites the first deposit, which was the version current when it published; it reproduced the first deposit's eight-method table and carries that inherited difference without independent error. Paper II's own Revision 2, prepared alongside this one, adopts the nine-method inventory.

Open item, not changed here. Layer 1A classifies axes as Epistemic, Ontological, Dispositional and Institutional, while Layer 2 defines three target types, FACTUAL, EPISTEMIC and DISPOSITIONAL; VER and AUTH are classified differently by the two. Reconciling them is a change to the architecture rather than a consolidation of corrections, so it is recorded here and deferred rather than frozen silently a second time.

Scope. Minimal formal core derived from Cross-Linguistic Compositional Analysis (CLCA) across 16 languages from thirteen independent lineages (twelve families and one isolate) and consolidated against the 16-language union pipeline. Separates primitive claim structure (six primary axes, four meta-axes, core operators, four levels) from empirically discovered structural rules (R1–R9) and validation-habitat constraints. Its central result is the meta-axis substitution family: a single schema, M[A] ↛ A, instantiated on each of the four meta-axes, which grounds the Universal Fallacy Architecture (UFA) without ontology inflation.

The architecture at a glance. 6 primary axes · 4 meta-axes · 8 semantic operators (7 differentially licensed; see the note below) · 3 target types · 4 levels · 9 methods · 9 structural rules · 5 UFA types.

Note on the operator count. The Layer 1C inventory is **eight cross-linguistically recovered semantic operators**: ATTR, CAUSE, BECOME, RESULT, ABSTR, STRAT, CONTR, REVEAL. Seven of them (all but CONTR) exhibit differential axis licensing in the legality matrix (§ II); CONTR's column is uniformly licensed (✓ on every axis), because negation is not licensed or blocked per axis in the way the others are. Earlier statements of "7 core operators" used the count in two ways: for this differentially licensed subset (all but CONTR), and, in the first deposit's colophon and in Paper I, for the seven operators probed before REVEAL emerged (all but REVEAL). In neither use is seven a claim that the inventory is closed. CONTR's own misuse is a Type 2 violation, and it is distinct from the opposition topology whose mis-specification is Type 5. Nothing in this specification asserts that these eight exhaust the composition-licensing component of the tuple; they are the inventory CLCA recovered in the semantic register.

v2.2 changes from v2.1. (1) LIFE primary axis → LIKE meta-axis: verisimilitude reanalyzed as the grammaticalized similative ("resembles A without being A"); primary axes 7 → 6. (2) EVID meta-axis added (evidentiality: source-of-knowledge marking); meta-axes 2 → 4 (DEG, TEMP, LIKE, EVID). (3) Three new structural rules: R7 (agentive polarity asymmetry), R8 (LIKE substitution), R9 (EVID substitution). (4) R1 refined: blocks direct causation of a dispositional state, not indirect facilitation of conditions. (5) Empirical ratification of the v2.1 core by the 16-language union pipeline (R1, R3, R4, REVEAL, DEG, target-type ontology: all attested in both independent language sets). The abandoned v2.2 "causal-fabrication" draft (VALID / IDEAL / § VI meta-principle) is superseded by this document.

§ I. Primitive Geometry: Axes, Meta-Axes, Operators, Levels

Design principle. Only make something primitive if the whole theory breaks without it. Everything else lives in subregions (Layer 2), condition overlays (Structural Rules, § III), or derived observations. The test for each element: does removing it collapse the constraint geometry, or just lose descriptive coverage?

Layer 1A. Primary Axes

Answer: what kind of claim is being made?

Axis	Role	Description	Target Type	Notes
VER · VERIDICAL (Epistemic)	Factual correspondence	Truth-value of propositions; correspondence between claim and state of affairs. The paradigm case of truth: what most people mean by "true" or "false."	Epistemic	Subregions: factual truth, correctness, reality-contact
AUTH · AUTHENTICITY (Ontological)	Genuine vs. counterfeit	Origin integrity of objects, documents, artifacts. Whether something is the original or an imitation. Validated by provenance, not observation.	Ontological	Subregions: genuineness, originality; polarity asymmetry in CAUSE (R3)
SINC · SINCERITY (Dispositional)	Honesty of intent	Inner alignment between stated and actual belief or intention. Validated by testimony, first-person access (INTROSPECTION), and pattern of	Dispositional	Subregions: honesty, reliability, faithfulness. Universal causation block (R1)

		conduct, not directly observable. Virtue, not fact.		
NORM · NORMATIVE (Institutional)	Rightness / justice	Moral, legal, or procedural correctness. Ought-claims: what should be the case rather than what is. Validated by principle or consensus, not experiment.	Institutional	Subregions: justice, legitimacy, appropriateness. Direct causation resisted
ESS · ESSENCE (Ontological)	Inherent nature	Fundamental, definitional, or necessary properties. What something is by its nature, not by observation or social convention. Resistance to change is intrinsic.	Ontological	CAUSE and BECOME strongly blocked. Abstract nominalization marginal (R2)
VERIF · VERIFICATION (Epistemic)	Evidential proof	The process of establishing, proving, or confirming a claim through appropriate evidence. Distinct from VERIDICAL: VERIF is the epistemic act of validation, not the state of correspondence.	Epistemic	Runs claim→world (see Layer 2). Strong RESULT and ATTR licensing

Layer 1B. Meta-Axes

Answer: what grammatical modulation of a primary-axis claim is asserted? Cannot substitute for the host (R5 · R6 · R8 · R9).

Meta-Axis	Role	Description	Notes
DEG · DEGREE	Magnitude modifier	Intensity, threshold, and comparison position of a claim on any primary axis. Ordinal in natural language: more/less, enough/too much, greater than. Structurally analogous to f′(x), the derivative of the primary-axis claim.	Inherits operators from host axis. Cannot substitute for host in inference (R5). Confirmed by both CLCA protocols (seeded + naive)
TEMP · TEMPORAL	Position modifier	Order, direction, and persistence of a claim across time. Ordinal: before/after, already/not yet, earlier/later. Adds internal stratification (past / present / future levels). Analogous to ∫f(x).	Inherits operators from host axis. Crossing its internal level strata without license is a Type 2 root at a Type 4 locus (R6). CLCA-confirmed via the reliability construction (sustained sincerity = TEMP[SINC], attested in both sets); substitution prohibited (R6)
LIKE · LIKENESS	Similative modifier	"Resembles A without being A." The grammaticalized similative: verisimilitude is	Inherits operators from host; cannot substitute for it (R8). Truth-stem + similative compound

		LIKE[VER], lifelikeness its aesthetic subset. Host-dependent valence: forgery (AUTH), hypocrisy (SINC), sophistry (VERIF), demagoguery (NORM), truthiness (VER), illusion (ESS). Reclassifies what v2.1 listed as the LIFE primary axis.	attested in six traditions from four independent lineages [CLCA-BOTH]
EVID · EVIDENTIALITY	Source modifier	Marks the source of a claim: directly witnessed, reported (hearsay), or inferred (conjectural). Grammaticalized three-way in Quechua (-m/-mi · -s/-si · -chá); lexical across the sample.	Inherits operators from host; cannot substitute for it (R9). Distinct from the validation-habitat layer (descriptive source-marking vs. normative admissibility)

Layer 1C. Core Operators

Answer: what structural transformation or relation is being asserted?

Operator	Role	Description	Notes
ATTR · ATTRIBUTION	Assign property	"X is [axis]": assigns a truth-kind property to a subject. The most basic assertion. Universally licensed across all primary axes.	✓ All axes. No restrictions. Universal cross-linguistically
CAUSE · CAUSATION	Bring about state	"Make X [axis]": external agent produces or destroys a state. Licensing is polarity-conditioned and target-type-conditioned. The most restricted operator in the system.	Restricted: target type governs licensing. Polarity asymmetry for AUTH. See R1, R3
BECOME · BECOMING	Change of state	"X becomes [axis]": subject transitions into an axis-state. Directionally asymmetric: positive emergence is natural, negative emergence is marked or blocked in most languages.	Biased: positive states (become-true/real) ≫ negative (become-false/fake). See R4
RESULT · RESULT	State established	"X proved/turned out to be [axis]": marks an achieved or discovered state. Licensed on every axis but ESS, where it is marginal. The pathway through which REVEAL-type constructions are often realized.	✓ on five axes; △ marginal for ESS
ABSTR · ABSTRACTION	Nominalize concept	"Truth / justice / authenticity": converts an axis-property into a standalone concept. Universally productive; marginal for ESSENCE. The LIKE similative has no independent	✓ Most axes. Marginal for ESS (cross-linguistically)

		nominalization: it inherits from its host.	
STRAT · STRATIFICATION	Layered distinction	"Inner vs. outer truth / surface vs. deep sincerity": marks internal contrast within an axis. Universally attested. The operation through which levels become linguistically accessible.	✓ on four axes; △ restricted for AUTH and SINC (surface stratification less natural)
CONTR · CONTRAST	Negative attribution	"Not true / unreliable / invalid": predicates the negative pole of a truth-claim (CF2 negation; the negation partner of ATTR). Universally licensed [CLCA-BOTH]. Operator-level misuse → UFA Type 2. Distinct from the opposition FRAME (the precondition), whose misconfiguration is Type 5.	✓ All axes. Negation universal. Type 5 belongs to the FRAME precondition, not to this operator
REVEAL · REVELATION	Disclosure of latent truth	"X was revealed to be [axis]": presupposes a latent pre-existing host-axis state, disclosed rather than constructed. Attested in the intransitive truth-revelation construction across 16/16 languages in both CLCA sets (Sets A & B) [CLCA-BOTH]. The former "LIFE blocks REVEAL" diagnostic is retired: LIKE[A] is resemblance with no latent A to disclose, so the restriction follows from the meta-axis structure, not a separate axis.	Validated primitive (the deposited text read "provisional, pending cross-architectural validation"; the annotation was discharged by the de-leaked two-family retest reported in Papers I–II, 2026-07, with no version event). Encodes a structural presupposition that RESULT + STRAT cannot reconstruct. See § II for full operator–axis licensing

Layer 1D. Levels

Answer: at what stratum is the claim operating?

Level	Role	Description	Notes
EMP · EMPIRICAL	Physical observation	Claims grounded in observable, testable states of the world. Validated by OBSERVATION or EXPERIMENT.	Default for VER, AUTH
CONV · CONVENTIONAL	Social / legal norms	Claims grounded in institutional, cultural, or socially agreed standards. Validated by CONSENSUS or PRINCIPLE.	Default for SINC, NORM
FORM · FORMAL	Logical / mathematical	Claims grounded in logical or mathematical	Default for ESS, VERIF

		necessity. Validated by LOGIC or STATISTICS.	
ULT · ULTIMATE	Metaphysical / definitional	Claims grounded in fundamental or definitional necessity. Not falsifiable by empirical counter-example.	ESS claims often reach ULTIMATE. A level-crossing without license is a Type 2 root at a Type 4 locus; a Type 4 root is a judgment form that no legal level assignment makes well-formed

Layer 2. Target-Type Classes

A cross-cutting structural partition over the primary-axis space; governs differential operator licensing.

Target Type	Role	Description	Notes
FACTUAL	States of reality	VER, AUTH: properties of things in the world. Externally observable and, for some axes, externally producible. The paradigm domain for OBSERVATION and EXPERIMENT.	CAUSE generally licensed (subject to polarity conditions). BECOME natural for VER, asymmetric for AUTH
EPISTEMIC	Knowledge states	VER (as belief state), VERIF: properties of claims or belief-states relative to evidence. VERIF runs claim→world (testing); VER can run world→claim (discovery). Both resist direct causation of the epistemic state itself.	RESULT and ATTR strongly licensed. CAUSE restricted (cannot directly cause knowledge, only conditions that facilitate it)
DISPOSITIONAL	Character states	SINC: stable inner tendencies of agents. Not observable states of the world, not epistemic states: they are cultivated through practice and revealed through pattern of conduct. Universal causation block (R1) applies exclusively to this type.	CAUSE universally blocked (16/16 languages: 8/8 in each protocol's language set). BECOME marginal. RESULT and REVEAL licensed. This is the deepest structural constraint in the system

§ II. Core Legality Matrix: Primary Axes × Core Operators

What this table represents. This is the primitive legality layer only. It shows whether an operator is licensed (✓), restricted or conditioned (△), or blocked (✗) for each primary axis as a default structural fact. Polarity effects, target-type effects, and meta-axis substitution errors are captured in the Structural Rules (§ III), not in this table. REVEAL is a validated primitive (v2.2; its provisional annotation was discharged 2026-07); the former LIFE/REVEAL diagnostic is retired (see § I).

Axis	O1 ATTR "X is [axis]"	O2 CAUSE "make X [axis]"	O3 BECOME "X becomes [axis]"	O4 RESULT "X proved [axis]"	O5 ABSTR "truth / justice"	O6 STRAT "inner/outer	O7 CONTR "[axis] vs. not-[axis]"	O8 REVEAL "X revealed [axis]"

						[axis]"		
VER (Epistemic)	✓	∆	∆	✓	✓	✓	✓	✓
VERIF (Epistemic)	✓	∆	∆	✓	✓	✓	✓	✓
AUTH (Ontological)	✓	∆ polarity	∆	✓	✓	∆	✓	✓
ESS (Ontological)	✓	✗	✗	∆	∆	✓	✓	✓
SINC (Dispositional)	✓	✗ 16/16	∆	✓	✓	∆	✓	✓
NORM (Institutional)	✓	∆	∆	✓	✓	✓	✓	∆

Legend: ✓ licensed (universal) · ∆ restricted, conditioned, or marginal · ✗ blocked.

Restricted and blocked cells, in full

VER · VERIDICAL (Epistemic axes: knowledge and evidence states)

- CAUSE ∆ Restricted: factual states can be produced; direct production of the belief-state is limited.
- BECOME ∆ Restricted: positive bias (become-true natural); negative dispreferred (see R4).
- REVEAL ✓ Licensed: revelation constructions universal for truth-states.
- Condition (C2): CAUSE licenses production of facts or states but not direct causation of the knowledge-state itself. Condition (C3): positive inchoative strongly preferred; the negative form ("becomes false") is dispreferred or blocked in most languages (R4).

VERIF · VERIFICATION

- CAUSE ∆ Restricted: can create conditions for verification; cannot directly cause verification.
- BECOME ∆ Restricted: verification processes can develop; verification states are achieved, not undergone.
- RESULT ✓ Universal: the primary realization pathway.
- REVEAL ✓ Licensed: verification revealed through evidential process.

AUTH · AUTHENTICITY (Ontological axes: properties of things in the world)

- CAUSE ∆ Polarity-conditioned: CAUS− (destroy/forge) licensed; CAUS+ (create) blocked (see R3).
- BECOME ∆ Marginal: authenticity is revealed, not acquired incrementally.
- STRAT ∆ Restricted: internal stratification less natural for material origin.

- REVEAL ✓ Licensed: authenticity revealed, not produced; natural cross-linguistically.
- Condition (C2): Polarity asymmetry. CAUSE(+) blocked (authenticity cannot be manufactured externally); CAUSE(−) licensed (forgery, destruction of authenticity is natural cross-linguistically). This is the strongest argument for the ontological axis-class distinction (R3).

ESS · ESSENCE

- CAUSE ✗ Blocked: essential properties are intrinsic; external causation violates the axis.
- BECOME ✗ Blocked: things do not become their essence; they either have it or do not.
- RESULT △ Marginal: can result in classification; less natural for deep essence claims.
- ABSTR △ Marginal: abstract nominalization marginal cross-linguistically for ESS.
- REVEAL ✓ Licensed: "reveal its essential nature" is natural cross-linguistically.

SINC · SINCERITY (Dispositional axis: character states of agents; the universal causation block applies)

- CAUSE ✗ Universal block: 16/16 languages, 8/8 in each protocol's language set.
- BECOME △ Marginal: character development is possible but internally driven, not simple transition.
- STRAT △ Restricted: the surface/deep sincerity distinction exists but is less productive than on other axes.
- REVEAL ✓ Licensed: character revealed through conduct; natural cross-linguistically.
- Universal Causation Block (R1): CAUSE universally blocked for SINC in all 16 languages, 8/8 in each CLCA protocol's language set. Character traits are internally cultivated, not externally produced. This is the strongest single descriptive convergence in CLCA and the primary evidence for the DISPOSITIONAL target-type class. Formal inferential statistics are deferred until native-speaker validation (Paper I, Appendix B) tests the LLM-elicited judgments against human intuitions: the sixteen elicitations were produced by a shared model instrument and are not independent trials, so a test presupposing independent sampling units is not yet warranted.

NORM · NORMATIVE (moral and institutional rightness)

- CAUSE △ Restricted: institutional causation (law, policy) licensed; direct personal causation resisted.
- BECOME △ Restricted: normative states can shift; direction depends on institutional process.
- REVEAL △ Restricted: normative claims revealed through precedent, but less natural.

Meta-axes in the matrix

Meta-axes inherit operators from the host primary axis across all operators and cannot substitute for the host in any inference step.

- **DEG** · Meta: inherits from the host primary axis across all operators. Substitution Constraint (R5): DEG[A] cannot substitute for A in any inference step. Degree of a claim ≠ the claim itself. Appeal to Probability: DEG[VER] → VER. Appeal to Emotion in its intensity reading: DEG[A] → A, strength of conviction offered for the claim itself (map #99; its affective-substitution reading, SINC → VER, is a Type 1 axis transfer, map #2). Both are Type 2 Operator Overextension (meta-axis substitution subtype) in UFA.
- **TEMP** · Meta: inherits from the host primary axis; adds past / present / future stratification. Substitution Constraint (R6): TEMP[A] cannot substitute for A. Recency or temporal position cannot validate a claim on its host axis without independent method. TEMP also introduces past/present/future level structure; crossing these levels without license is a Type 2 root at a Type 4 locus. Examples: Appeal to Novelty (TEMP[NORM] → NORM; Type 2), Sunk Cost (∫past → future obligation; Type 2 root at a

Type 4 locus), Presentism (present standards applied to past events; Type 2 root at a Type 4 locus). TEMP is CLCA-confirmed through the reliability construction (Layer 1B; § VI, row 1).

- **LIKE** · Meta: inherits from the host primary axis across all operators. Substitution Constraint (R8): LIKE[A] cannot substitute for A in any inference step (see § III, § V).
- **EVID** · Meta: inherits from the host primary axis across all operators. Substitution Constraint (R9): EVID[A] cannot substitute for A in any inference step (see § III, § V).

§ III. Structural Rules: Empirical Constraints on the Core Legality Matrix

Layer distinction. These rules are not primitive: they are empirical constraints discovered through CLCA that overlay the core legality matrix. They capture polarity effects, target-type conditioning, directional biases, and meta-axis substitution prohibitions that cannot be reduced to simple ✓/✗/△ cells in the matrix above. Each rule maps to one or more UFA violation types.

Rule	Formal Statement	Empirical Basis	UFA Mapping
R1 Dispositional Causation Block	CAUSE × DISPOSITIONAL (SINC) → universally blocked. Direct causation of a dispositional character state is structurally prohibited across all tested languages. v2.2 refinement: the block is on direct causation of the state, not on indirect facilitation of conditions (Basque *zintzotu eragin*, Korean *진정성을 높이다*) nor on BECOME (character development over time). "Make someone sincere": blocked. "Help someone become more honest" / "cultivate sincerity": attested.	16/16 languages, both CLCA sets [CLCA-BOTH]. The strongest single empirical finding in the system.	Type 2 · Operator Overextension: CAUSE applied beyond its licensed scope to a dispositional target
R2 Essence Stability	CAUSE × ESS → blocked · BECOME × ESS → blocked. Essential properties are treated as intrinsic and non-manipulable: neither externally caused nor gradually acquired. Things have or lack essential properties; they do not acquire or lose them through process. "Make it essentially X": blocked. "Reveal its essential nature": licensed.	Not tested by the union pipeline (ESS-adjacent dimensions surfaced only in zh/sa); marked not-confirmed rather than confirmed.	Type 2 · Operator Overextension
R3 Authenticity Polarity Asymmetry	CAUSE(+) × AUTH → blocked · CAUSE(−) × AUTH → licensed. Authenticity cannot be externally manufactured (CAUS+ blocked) but can be destroyed or forged (CAUS− licensed). The copy-vs-forgery distinction lives not in the causation but in whether the product is then passed off as genuine: that is the R8 / LIKE layer. "Manufacture authentic goods": blocked.	Confirmed in both CLCA sets [CLCA-BOTH]. Asymmetry consistent across language families.	Type 2 · Operator Overextension: the positive polarity of CAUSE extends beyond licensed scope for AUTH

	"Forge a document": licensed.		
R4 Positive Emergence Bias	BECOME(+state) ≫ BECOME(−state) across truth-domain axes. Positive emergence is natural and productive ("become true", "become real"); negative emergence is marked, dispreferred, or blocked, conceptualized as degradation rather than autonomous development. "The rumor became true": natural. "The statement became false": marked or blocked in most languages.	Confirmed in both CLCA sets [CLCA-BOTH].	Type 2 · Operator Overextension: BECOME(−) extended beyond its licensed polarity
R5 Degree Meta-Axis Substitution	DEG[A] ↛ A in any inference step. The degree of a primary-axis claim cannot substitute for the claim itself: how much / how intensely A is the case does not establish that A is the case. The derivative is not the function. High probability (DEG[VER]) ≠ truth (VER). Very sincere-seeming (DEG[SINC]) ≠ honest.	Confirmed as a meta-axis by both CLCA protocols. Unifies Appeal to Probability, Appeal to Emotion, Argumentum ad Populum.	Type 2 · Operator Overextension (meta-axis substitution subtype)
R6 Temporal Meta-Axis Substitution	TEMP[A] ↛ A · unlicensed internal level-crossing → Type 2 root at a Type 4 locus. The temporal position of a claim cannot substitute for the claim itself, and crossing TEMP's internal past/present/future strata without license fails at a stratification locus. v2.2: TEMP gains cross-linguistic footing through the reliability construction (sustained sincerity = TEMP[SINC]). Newer ≠ better (Appeal to Novelty). Past investment ≠ future warrant (Sunk Cost). Present standards on past events (Presentism).	[FALLACY] for the substitution; [CLCA-BOTH] for TEMP itself via reliability (§ VI, row 1).	Type 2 (root) · Type 4 (locus)
R7 Agentive Polarity Asymmetry	ABSTR(agentive) × positive-pole → blocked · × negative-pole → licensed. Languages lexicalize the agent of falsehood (a single word for *liar*) but provide no parallel agentive noun for the habitual truth-teller: a polarity-conditioned licensing of the agentive nominalization. New in v2.2. Mechanism open. "Liar", "forger", "fraud": lexicalized. "Truth-teller": phrasal, never a single agentive noun.	Confirmed in both CLCA sets [CLCA-BOTH] (*liar* lexicalizes, *truth-teller* does not).	Type 2 · Operator Overextension: polarity-conditioned licensing of the agentive ABSTR operator

R8 Likeness Meta-Axis Substitution	LIKE[A] ↛ A in any inference step. Resembling A cannot substitute for being A. One schema whose violation, per host axis, is a named deception: forgery (AUTH), sophistry (VERIF), hypocrisy (SINC), demagoguery (NORM), truthiness (VER), illusion (ESS). New in v2.2. A convincing fake (LIKE[AUTH]) passed off as genuine = forgery. Truth-resembling rhetoric (LIKE[VER]) passed off as true = truthiness.	Confirmed [CLCA-BOTH]: the truth-stem + similative compound is grammaticalized in six traditions from four independent lineages.	Type 2 · Operator Overextension (meta-axis substitution subtype)
R9 Evidentiality Meta-Axis Substitution	EVID[A] ↛ A in any inference step. The evidential source of a claim cannot substitute for the claim itself: that it was asserted, reported, or inferred does not establish it. New in v2.2. It was reported, therefore true (hearsay-as-proof). It can be inferred, therefore true (inference-as-proof). Authority asserts it, therefore true.	Confirmed [CLCA-BOTH] dimension; grammaticalized three-way in Quechua, lexical across the sample.	Type 2 · Operator Overextension (meta-axis substitution subtype)

§ IV. Validation Habitats: Axis → Method → UFA Type 3 Violations

What this table represents. Methods are not semantic axes: they are validation habitats. Each primary axis has a default method that licenses the claim type and one or more inadmissible methods whose use constitutes a Type 3 Verification Habitat Mismatch in UFA. Using the wrong validation method for a claim type is one of the most common and rhetorically effective error patterns.

Method inventory. The canonical inventory is nine methods plus NONE: OBSERVATION, EXPERIMENT, PROVENANCE, TESTIMONY, LOGIC, STATISTICS, CONSENSUS, PRINCIPLE, and INTROSPECTION (first-person access). The deposited table listed eight; INTROSPECTION was ruled canonical on 2026-06-27 and is entered below where it is in habitat (SINC), admissible under burden (NORM, substantive-moral pole only, through the SINC rider explained in § VI, row 2), and out of habitat (VER, AUTH, ESS, VERIF).

Note on names that recur across types. The violations listed in the final column are habitat readings: the method component of an error event. Several of these names carry a primary classification elsewhere in the companion Universal Fallacy Map; the Naturalistic Fallacy, Appeal to Nature, and the Is-Ought Gap are classified there as Type 1 axis transfers (map #14–#16), because the axis moves (VER → NORM) while the observational method is carried along un-updated, which is why they are listed in the NORM row. The habitat mismatch listed here is the method component of that same event, not a competing classification. The same holds for other names in the column whose primary classification in the Map is elsewhere (Argumentum ad Populum, Ad Hominem, Appeal to Consequences, No True Scotsman); and some entries are descriptive labels for the habitat mismatch rather than Map entries.

Axis	Default Method(s)	Admissible Exceptions	Inadmissible Methods	Canonical Type 3 Violations
VERIDICAL / VER	OBSERVATION · EXPERIMENT	STATISTICS for population claims	CONSENSUS · TESTIMONY · PRINCIPLE · INTROSPECTION	Appeal to Authority · Bandwagon · Argumentum ad Populum

AUTHENTICITY / AUTH	PROVENANCE	EXPERIMENT for material dating	CONSENSUS · OBSERVATION (appearance alone) · INTROSPECTION	Argument from Appearance · Appeal to Reputation
SINCERITY / SINC	TESTIMONY · INTROSPECTION (first-person access)	OBSERVATION of conduct pattern over time	EXPERIMENT · STATISTICS · OBSERVATION (single instance)	Ad Hominem (reverse) · Appeal to Sincerity as Proof · Passion as Evidence
NORMATIVE / NORM	PRINCIPLE · CONSENSUS	LOGIC for formal derivation from principles · INTROSPECTION (burdened; substantive-moral pole only, via the SINC rider)	OBSERVATION · EXPERIMENT	Naturalistic Fallacy · Appeal to Nature · Is-Ought Gap · Appeal to Consequences
ESSENCE / ESS	LOGIC	PRINCIPLE for definitional extension	OBSERVATION · CONSENSUS · STATISTICS · INTROSPECTION	Essentialism from Observation · Definitional Fallacy · No True Scotsman
VERIFICATION / VERIF	EXPERIMENT · STATISTICS · LOGIC	Multiple methods depending on the claim type being verified	TESTIMONY (as sole evidence) · CONSENSUS · INTROSPECTION	Ipse Dixit · Appeal to Authority · Verification by Consensus

§ V. The Meta-Axis Substitution Family and the Stability Principle

The central result of v2.2. R5, R6, R8, and R9 are not four independent rules: they are one structural pattern, M[A] ↛ A, instantiated on each of the four meta-axes. A grammatical modulation of a claim (its degree, its time, its resemblance, its source) cannot substitute for the claim itself. Each instance maps to UFA Type 2 (Operator Overextension, meta-axis substitution subtype), and together they generate a large, principled family of classical fallacies from a single schema.

Rule · Meta-Axis	**Schema**	**"X[A] passed off as A" yields**
R5 · Degree	DEG[A] ↛ A	Appeal to Probability · Appeal to Emotion · Argumentum ad Populum
R6 · Temporal	TEMP[A] ↛ A	Appeal to Novelty · Sunk Cost · Presentism
R8 · Likeness	LIKE[A] ↛ A	Forgery (AUTH) · Sophistry (VERIF) · Hypocrisy (SINC) · Demagoguery (NORM) · Truthiness (VER) · Illusion (ESS)
R9 · Evidentiality	EVID[A] ↛ A	Appeal to Authority · Hearsay-as-proof · Inference-as-proof

The stability principle. The six primary axes are load-bearing primitives. When new data surfaces an apparent need to split an axis or add a value, the refinement almost always resolves into an existing orthogonal layer (a meta-axis modulation (DEG/TEMP/LIKE/EVID), a level stratification, a subregion, or a cross-axis predicate) rather than a

new axis. The working rule: prefer an orthogonal-layer resolution before enlarging the axis set. Of seven proposed refinements tested against the 16-language union pipeline (§ VI), six dissolved into existing structure; the one genuine residual is recorded, not absorbed. That 6-and-1 asymmetry is the architecture's honesty check.

§ VI. Resolved Refinements and the Single Open Conflict

The proposal arc. Seven candidate refinements were examined against the union-pipeline data. Six dissolved into existing structure rather than new axes or values; the seventh, Sanskrit *mithyā* / a multi-valued opposition FRAME, is the single genuine open conflict, and it challenges the bivalence of the FRAME on the ESS axis (a Type-5 precondition question), not an operator or an axis.

#	Proposal	Outcome
1	SINC split (reliability as sub-axis)	Dissolved → TEMP[SINC]: reliability is sustained-over-time sincerity; the finding also grounds TEMP cross-linguistically
2	NORM split (deontic / institutional)	Dissolved → R1 on NORM's SINC rider: substantive/moral NORM is constitutive (CAUSE blocked); institutional NORM is constituted status (CAUSE licensed)
3	AUTH neutral intermediate	Dissolved → LIKE[AUTH] + R8: acknowledged copy (neutral) vs. forgery (passed off as genuine)
4	VER/NORM gradient	Dissolved → an axis-neutral conformity predicate (correctness takes its axis from its standard); the axes stay distinct
5	Partial-truth rule	Dissolved → R5 + the deception principle (DEG[VER] passed off as VER, knowingly)
6	Deontic interaction	Dissolved → NORM over truth-related conduct ("one ought not to lie" is NORM on its normal domain)
7	FRAME multi-valued (*mithyā*)	Mostly dissolved (LIKE[ESS] + level-relativity); a strong *anirvacanīya* residual is recorded, not adopted

The single open conflict. FRAME bivalence vs. Advaita *anirvacanīya*. This is the only refinement not resolved into existing structure. Sanskrit's *mithyā*, genuinely indeterminable as either *sat* (real) or *asat* (unreal), a stable third ontological value resisting the opposition FRAME's binary assumption, is single-tradition, single-language [CLCA-B], with no cross-corpus parallel, and is held open as an open question in the data itself. The FRAME remains binary by default; the three-valued ontology is recorded as a scoped open question pending evidence that other traditions independently lexicalize a third ontological value. The decision is deferred, appropriately so: it should not be resolved on one tradition's evidence. That one genuine residual, not swept in after six clean dissolutions, is what gives the stability principle (§ V) its discriminating power.

Colophon

Architecture. AOML v2.2 (Axis–Operator–Method–Level) · six primary axes · four meta-axes · eight semantic operators (seven differentially licensed; CONTR uniformly licensed; REVEAL validated) · four levels · nine structural rules (R1–R9).

Empirical basis. CLCA G-phase outputs over 16 languages (Sets A & B, no shared languages) plus the 16-language union pipeline.

UFA type classifications. Type 1 Axis Transfer Error · Type 2 Operator Overextension (including the meta-axis substitution family R5/R6/R8/R9) · Type 3 Verification Habitat Mismatch · Type 4 Stratification Failure (First Edition name: Stratification Misalignment; a Type 4 root is a judgment form no legal level assignment makes well-formed, and a repairable level-crossing is a Type 2 root at a Type 4 locus) · Type 5 Contrast Frame Collapse. CONTR (the negation operator) and the opposition FRAME (the Type-5 precondition) are distinguished; see § I.

Machine-readable companions (in the public replication repository):

- Constraint matrix (JSON): https://github.com/WellFlow-Labs/CLCA_A/blob/main/aoml/aoml_constraint_matrix_v2.2.json
- Architecture notes (Markdown): https://github.com/WellFlow-Labs/CLCA_A/blob/main/aoml/AOML_v2.2_architecture.md
- Living HTML version of this specification: https://github.com/WellFlow-Labs/CLCA_A/blob/main/Aoml_v2.2_constraint_architecture.html

Related documents:

- Seeley, B. A. (2026). *Cross-Linguistic Compositional Analysis (CLCA)*. Paper I, Foundations of the Convergent Semantic Architecture. Revision 2. https://doi.org/10.5281/zenodo.23242522
- Seeley, B. A. (2026). *The Universal Fallacy Architecture: Structural Error Prediction from AOML Constraint Geometry*. Paper II, Foundations of the Convergent Semantic Architecture. https://doi.org/10.5281/zenodo.21998398. This document is its normative companion specification.
- Seeley, B. A. (2026). *The Universal Fallacy Map* (Second Edition). Companion document to Paper II. https://doi.org/10.5281/zenodo.21880635
- Seeley, B. A. (2026). *Terminology Correspondence Table*. Companion document to the series (Papers I–IV). https://doi.org/10.5281/zenodo.21781768

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Revision Record (Revision 2, September 2026)

Each entry gives the location, the first-deposit reading, the Revision 2 reading, and the reason for the change.

Location	First deposit (4 August 2026)	Revision 2	Reason
Title block	A single DOI line	Revision note; concept DOI and version DOIs distinguished; the open item on target-type vocabulary recorded	Deposit
The architecture at a glance	"7 core operators (8 in the full Layer 1C inventory)" · "8 methods"	"8 semantic operators (7 differentially licensed)" · "9 methods"	Operator count restated; ninth method added

Note on the operator count	Seven core, CONTR uniformly licensed, eight in full; "which is the count the papers use"	Eight recovered operators, seven differentially licensed; the downstream-usage clause dropped; adds that the inventory is not asserted to exhaust the composition-licensing component	Operator count restated; inaccurate claim about downstream usage dropped
Layer 1C, REVEAL, Notes	"Provisional primitive (pending cross-architectural validation)"	"Validated primitive"; the annotation discharged by the de-leaked two-family retest reported in Papers I–II, 2026-07, with no version event	REVEAL's provisional annotation discharged
Layer 2, DISPOSITIONAL, Notes	"CAUSE universally blocked ($p < 10^{-9}$)"	"CAUSE universally blocked (16/16 languages: 8/8 in each protocol's language set)"	Inferential statistic withdrawn pending native-speaker validation
§ II, introductory note	"REVEAL is a provisional primitive (v2.2)"	"REVEAL is a validated primitive (v2.2; its provisional annotation was discharged 2026-07)"	REVEAL's provisional annotation discharged
§ II, SINC cells	"16/16 languages, $p < 10^{-9}$" · "Fisher's exact $p < 10^{-9}$"	"16/16 languages, 8/8 in each protocol's language set"; the R1 statement replaces the statistic with that convergence and states why inference is deferred (shared model instrument; elicitations not independent trials)	Inferential statistic withdrawn pending native-speaker validation
§ II, TEMP note	"Meta (provisional)"; "crossing these levels without justification = UFA Type 4 Stratification Misalignment"; "cross-architectural confirmation pending"	"Meta"; such a crossing is "a Type 2 root at a Type 4 locus", with the examples typed as in the Map; TEMP CLCA-confirmed through the reliability construction	Alignment with the Map, Second Edition, in definition as well as name; TEMP's status agreed with Layer 1B and R6, which already recorded the confirmation
§ IV, method inventory	Table of eight methods; no inventory statement	Inventory paragraph: nine methods plus NONE; INTROSPECTION entered in every row (in habitat for SINC; admissible under burden for NORM, substantive-moral pole only, via the SINC rider; inadmissible for VER, AUTH, ESS, VERIF)	INTROSPECTION, ruled canonical 2026-06-27, was missing from the first deposit's table
§ IV, note on names that recur across types	Absent	Added: the Type 3 column gives habitat readings; the Naturalistic Fallacy, Appeal to Nature and the Is-Ought Gap carry their primary Type 1 classification in the Map (#14–#16), and other names in the column have their primary classification elsewhere or are descriptive labels	Clarification against the Map, Second Edition

§ IV, Type 3 column	Appeal to Nature in the VER row; "Is-Ought Error"	Appeal to Nature in the NORM row, where the observational method is out of habitat; "Is-Ought Gap", the Map's name for #16	Consistency with the note above it and with the Map
§ IV, method inventory, references	An internal ruling identifier cited; the SINC rider not cross-referenced	Identifier removed; the SINC rider cross-referenced to § VI, row 2	Public text should not cite internal records
Colophon, Architecture	"seven core operators plus REVEAL provisional (eight in the full Layer 1C inventory)"	"eight semantic operators (seven differentially licensed; CONTR uniformly licensed; REVEAL validated)"	The first deposit placed REVEAL outside the seven, contradicting its own operator note; REVEAL's annotation discharged
Colophon, UFA type classifications	"Type 4 Stratification Misalignment"	"Type 4 Stratification Failure (First Edition name: Stratification Misalignment)", with the Second Edition's definition: a Type 4 root is unassignability, a repairable level-crossing a Type 2 root at a Type 4 locus	Alignment with the Map, Second Edition
References, Paper I	First deposit, 10.5281/zenodo.21709636	Revision 2, 10.5281/zenodo.23242522	Paper I's Revision 2 corrects its account of what the method recovers
Scope; Layer 1B, LIKE; R8	"16 typologically unrelated languages"; "6 unrelated traditions"	"16 languages from thirteen independent lineages (twelve families and one isolate)"; "six traditions from four independent lineages"	Paper I counts lineages, not languages: several of the sixteen, and three of the six traditions, are Indo-European
Note on the operator count	"Earlier statements of '7 core operators' count that differentially-licensed subset"	Both earlier uses stated: the differentially licensed subset (all but CONTR), and the seven probed before REVEAL emerged (all but REVEAL)	The first deposit's colophon and Paper I used the second sense
Layer 1A, SINC; VERIF	SINC "validated by testimony and pattern of conduct"; VERIF "see § V"	SINC adds first-person access (INTROSPECTION); VERIF refers to Layer 2	INTROSPECTION is SINC's habitat method (§ IV); § V does not treat claim-to-world direction
Layer 1C, RESULT and STRAT	RESULT "Universally licensed … ✓ All axes"; STRAT "✓ All axes. Restricted for AUTH and SINC"	RESULT licensed on every axis but ESS, where it is marginal; STRAT ✓ on four axes, △ for AUTH and SINC	Agreement with the legality matrix of § II
Layer 1B, TEMP; Layer 1D, ULT; R6	TEMP "generates Type 4 UFA violations when crossed"; ULT "Level-crossing without justification = Type 4"; R6 "internal level-crossing → Type 4", mapping "Type 2 / Type 4"	A level-crossing without license is a Type 2 root at a Type 4 locus; R6's mapping "Type 2 (root) · Type 4 (locus)"	Alignment with the Map, Second Edition, in definition as well as name
Meta-axes in the matrix, DEG	"Appeal to Emotion: DEG[SINC] → VER"	The intensity reading, DEG[A] → A (map #99), distinguished from the affective-substitution reading, a Type 1 transfer (map #2)	The example did not instantiate the DEG[A] ↛ A schema it illustrated

§ VI, open conflict	An internal question identifier cited	Removed	Public text should not cite internal records
Related documents	Map cited by concept DOI 10.5281/zenodo.21766167; Paper II without DOI	Map cited as Second Edition, 10.5281/zenodo.21880635; Paper II's DOI 10.5281/zenodo.21998398 and full title added	Deposit records

Unchanged in Revision 2 and noted for the record: the axes, meta-axes, operators, levels and target types of § I and their assignments (the table notes change only as itemized above); every cell of the legality matrix of § II; the formal statements of the structural rules R1–R9 in § III, except R6's typing of level-crossing; the habitat assignments of § IV other than the INTROSPECTION entries; § V in full; and § VI except the removal of an internal identifier.