CAMS Scale-Invariance Validation

Mythopoetic Enrichment · §5.1 Supplementary Report

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Does the CAMS signal survive blinding? Five anonymous time-series, one AI model, no hints — the pattern either speaks for itself or it does not.

This report presents the full results of the §5.1 Scale-Invariance Experiment for the Complex Adaptive Model of Societies (CAMS v3.0). Five national datasets covering 1900–2025 were stripped of all identifying information, subjected to Gaussian noise (σ = 0.3), and analysed using the standard CAMS validation pipeline. Each entity's eight institutional nodes (Archive, Craft, Flow, Hands, Helm, Lore, Shield, Stewards) were characterised by their Node Value (V_i), Bond Strength, Cognition (A×C), and Available Energy (K−S). A new mythopoetic enrichment layer has been added, producing a vivid archetypal one-liner per node and an overall entity summary — providing richer narrative fuel for blind LLM archetype recovery.

Mean Inter-Entity Distinctiveness	1.236	Target > 0.70	PASSED ✓

A distinctiveness score > 1.0 indicates that the five entities occupy highly separable regions of CAMS feature space — confirming scale-invariant structural differentiation. The result is not merely above threshold; it is substantially above it.

1. Methodology

Datasets were downloaded from neuralnations.org/scale-invariance and the associated GitHub repository (KaliBond/wintermute, blinded/ directory).[1] Each CSV contains one row per institutional node per year-step, with four raw metrics: Coherence (C), Capacity (K), Stress (S), Abstraction (A). Gaussian noise σ = 0.3 was applied at source; years were jittered ±1.

Formula	Expression	Interpretation
Node Value V_i	C + K + (A/2) − S	Overall institutional vitality
Bond Strength B(i,j)	√(max(V_i+8,0)·max(V_j+8,0)) / 32	Coupling between node pair
Cognition	A × C	Cognitive space (symbolic × coherence)
Available Energy	K − S	Affective valence / net free capacity
Distinctiveness	Mean cosine distance (upper triangle)	Inter-entity separability in feature space

Mythopoetic Enrichment Layer

A new post-processing layer derives a vivid archetypal descriptor for each node from its (Cognition, Available Energy) coordinates. Six quadrant rules map the 2D space to distinct symbolic types: Radiant Living Forge (high cognition, high energy); Storm-Forged Tower (high cognition, strained energy); Quiet Reservoir (moderate cognition, positive energy); Silent Vault (depleted cognition, exhausted energy); Polished Mirror (high cognition, balanced energy); Shadowed Hearth (all other configurations). An overall entity summary is generated from the entity-mean coordinates, providing a single narrative token suitable for blind LLM archetype recovery.

2. Dataset Overview

ID	Period	Attractor	Bond	Cognition	Avail. Energy
blinded_001	1901–2025	Library/Market Hybrid	0.731	67.7	3.5
blinded_002	1900–2025	Library	0.576	50.7	0.3
blinded_003	1900–2023	Fractured	0.521	29.6	0.7
blinded_004	1901–2024	Library	0.641	42.1	2.8
blinded_005	1931–2024	Library/Market Hybrid	0.682	61.5	2.4

Bond strength is the mean of all 64 pairwise coupling values across the bond matrix. Cognition and Available Energy are entity-wide means computed from the noisy raw data. Attractor classification: Library/Market Hybrid → bond > 0.65; Library → bond > 0.55; Citadel Hybrid → bond 0.53–0.55; Fractured → bond < 0.53.

3. Individual Entity Profiles

Each profile is presented with its node vitality metrics, mythopoetic read, and the overall entity archetype summary. These profiles are the primary output for subsequent blind LLM recovery experiments.

BLINDED_001 · 1901–2025

Library/Market Hybrid · bond 0.731 · cog 67.7 · avail_e 3.5

Node	V_i	Cognition	Avail. Energy	Mythopoetic Read
Archive	21.26	92.3	6.85	Radiant Living Forge of coherent vision, pulsing with abundant creative energy
Craft	18.71	82.6	5.33	Radiant Living Forge of coherent vision, pulsing with abundant creative energy
Flow	15.42	70.8	3.26	Radiant Living Forge of coherent vision, pulsing with abundant creative energy
Hands	12.41	48.2	2.11	Quiet Reservoir of ancient, stable wisdom
Helm	12.41	53.2	1.95	Quiet Reservoir of ancient, stable wisdom
Lore	14.91	64.0	3.39	Radiant Living Forge of coherent vision, pulsing with abundant creative energy
Shield	13.97	64.9	2.33	Radiant Living Forge of coherent vision, pulsing with abundant creative energy
Stewards	14.76	65.6	3.03	Radiant Living Forge of coherent vision, pulsing with abundant creative energy

Entity Archetype Summary

"A blazing cognitive citadel where ancient memory and living vision dance with boundless available energy."

BLINDED_002 · 1900–2025

Library · bond 0.576 · cog 50.7 · avail_e 0.3

Node	V_i	Cognition	Avail. Energy	Mythopoetic Read
Archive	13.74	66.7	1.87	Radiant Living Forge of coherent vision, pulsing with abundant creative energy
Craft	11.02	51.9	0.66	Shadowed Hearth of flickering, uncertain potential
Flow	10.09	52.1	-0.06	Shadowed Hearth of flickering, uncertain potential

Hands	7.35	30.5	-0.81	Shadowed Hearth of flickering, uncertain potential
Helm	9.79	50.9	-0.34	Shadowed Hearth of flickering, uncertain potential
Lore	11.14	56.6	0.32	Shadowed Hearth of flickering, uncertain potential
Shield	11.43	50.6	1.20	Quiet Reservoir of ancient, stable wisdom
Stewards	9.26	46.0	-0.37	Shadowed Hearth of flickering, uncertain potential

Entity Archetype Summary

"A shadowed realm where memory flickers and available energy ebbs and flows like tide on ancient stone."

BLINDED_003 · 1900–2023

Fractured · bond 0.521 · cog 29.6 · avail_e 0.7

Node	V_i	Cognition	Avail. Energy	Mythopoetic Read
Archive	11.30	41.1	2.10	Quiet Reservoir of ancient, stable wisdom
Craft	9.33	31.0	1.04	Quiet Reservoir of ancient, stable wisdom
Flow	9.30	30.8	1.03	Quiet Reservoir of ancient, stable wisdom
Hands	5.61	20.1	-0.98	Silent Vault of depleted memory and exhausted will
Helm	6.94	21.6	0.05	Shadowed Hearth of flickering, uncertain potential
Lore	8.85	36.4	0.08	Shadowed Hearth of flickering, uncertain potential
Shield	9.05	26.1	1.18	Shadowed Hearth of flickering, uncertain potential
Stewards	9.25	29.9	1.15	Shadowed Hearth of flickering, uncertain potential

Entity Archetype Summary

"A quiet, sunlit archive of stable but dormant wisdom."

BLINDED_004 · 1901–2024

Library · bond 0.641 · cog 42.1 · avail_e 2.8

Node	V_i	Cognition	Avail. Energy	Mythopoetic Read
Archive	13.26	51.1	2.56	Quiet Reservoir of ancient, stable wisdom
Craft	14.16	45.6	4.05	Quiet Reservoir of ancient, stable wisdom
Flow	12.51	40.3	2.86	Quiet Reservoir of ancient, stable wisdom
Hands	9.85	29.0	1.63	Shadowed Hearth of flickering, uncertain potential

Helm	12.07	42.2	2.47	Quiet Reservoir of ancient, stable wisdom
Lore	11.41	41.1	1.86	Quiet Reservoir of ancient, stable wisdom
Shield	12.52	41.0	2.78	Quiet Reservoir of ancient, stable wisdom
Stewards	14.47	46.4	4.05	Quiet Reservoir of ancient, stable wisdom

Entity Archetype Summary

"A shadowed realm where memory flickers and available energy ebbs and flows like tide on ancient stone."

BLINDED_005 · 1931–2024

Library/Market Hybrid · bond 0.682 · cog 61.5 · avail_e 2.4

Node	V_i	Cognition	Avail. Energy	Mythopoetic Read
Archive	17.36	76.4	4.42	Radiant Living Forge of coherent vision, pulsing with abundant creative energy
Craft	13.23	58.8	1.98	Quiet Reservoir of ancient, stable wisdom
Flow	13.51	64.7	1.79	Radiant Living Forge of coherent vision, pulsing with abundant creative energy
Hands	10.24	43.8	0.51	Shadowed Hearth of flickering, uncertain potential
Helm	15.64	71.0	3.20	Radiant Living Forge of coherent vision, pulsing with abundant creative energy
Lore	12.69	57.0	1.70	Quiet Reservoir of ancient, stable wisdom
Shield	13.68	54.7	2.66	Quiet Reservoir of ancient, stable wisdom
Stewards	14.48	65.5	2.61	Radiant Living Forge of coherent vision, pulsing with abundant creative energy

Entity Archetype Summary

"A blazing cognitive citadel where ancient memory and living vision dance with boundless available energy."

4. Bond Strength Comparison

Bond strength is the geometric mean of node value pairs, normalised to [0, 1]. High bond strength indicates a tightly coupled, coherent institutional network. The Fractured attractor (003) and lower-bond Library profiles (002, 004) present structurally distinct signatures from the high-coupling Library/Market Hybrids (001, 005).

Dataset	Arch	Craf	Flow	Hand	Helm	Lore	Shie	Stew
blinded_001	0.914	0.835	0.732	0.638	0.638	0.716	0.686	0.711
blinded_002	0.679	0.594	0.565	0.480	0.556	0.598	0.607	0.539
blinded_003	0.603	0.541	0.541	0.425	0.467	0.527	0.533	0.539
blinded_004	0.664	0.692	0.641	0.558	0.627	0.606	0.641	0.702
blinded_005	0.793	0.663	0.672	0.570	0.739	0.647	0.678	0.702

Values shown are node self-coupling (diagonal of the bond matrix). Colour coding: teal ≥ 0.70 · blue ≥ 0.58 · gold ≥ 0.50 · rust below 0.50.

5. Stage 3 Validation Result

Feature vectors were constructed by concatenating node vitality values, upper-triangle bond matrix values, and node-level cognition and available energy scores (total dimensionality: 8 + 36 + 8 + 8 = 60 features per entity). Vectors were z-score normalised column-wise before computing pairwise cosine distances.

Metric	Value	Target	Status
Mean inter-entity cosine distance	1.2358	> 0.70	PASSED ✓
Number of entities processed	5	5	✓
Feature dimensionality	60	—	—
Gaussian noise applied at source	σ = 0.3	σ = 0.3	✓

The mean cosine distance of 1.236 substantially exceeds the 0.70 threshold. Values above 1.0 on cosine distance (which has a theoretical maximum of 2.0) indicate that the entities' normalised feature vectors point in broadly opposing directions in feature space — a strong signal of structural differentiation. This is consistent with the hypothesis that CAMS captures structurally distinct civilisational archetypes that persist under blinding and noise.

The five entities span a range of attractor states — Library/Market Hybrid (001, 005), Library (002, 004), and Fractured (003) — which accounts for the high cross-entity separability. The Fractured entity (003) is particularly distinctive: a mean bond strength of 0.521 and mean cognition of 29.6 place it in a structurally separate quadrant from the Library/Market Hybrids (001, 005), which show mean cognitions of 67.7 and 61.5 respectively.

6. Next Steps

Blind LLM archetype recovery

Feed each of the five enriched JSON profiles to a capable LLM (no hints, no entity names). The mythopoetic entity summary and node-level reads provide richer narrative fuel than numerical arrays alone, improving the quality of structural archetype labelling. Valid recovery requires: (1) correct attractor quadrant assignment; (2) identification of at least two structural transitions; (3) an archetype label consistent with CAMS typology.

Blind break and verification

Once recovery results are documented and sealed, break the blind by matching MarkerXXX labels to their real-world entity names. Submit qualified results to kari.freyr.4@gmail.com with subject 'Scale Invariance Submission'. Results will be published in the Neural Nations research diary.

Quadrant label automation

Add automatic (Cognition, Available Energy) quadrant labels to each node and entity — e.g. High-Cog / Positive-Energy, Low-Cog / Stressed — to complement the mythopoetic reads and provide a more systematic classification grid.

Mythopoetic language tuning

Refine the six quadrant archetypes with richer, more varied language — drawing on the existing CAMS archetype vocabulary (sunburned archivist, Iron Archive, Mandarin Citadel, etc.) — to improve the distinctiveness of node-level descriptions and reduce repetition when many nodes share the same quadrant.

Extended dataset suite

Apply the same pipeline to additional national datasets and non-national entities (cities, supranational blocs, historical civilisations) to further test CAMS scale-invariance across context types.

Sources

1. Neural Nations Scale-Invariance Experiment — https://neuralnations.org/scale-invariance

2. GitHub Repository — KaliBond/wintermute (blinded/ directory) — https://github.com/KaliBond/wintermute/tree/main/blinded

3. CAMS-CAN Framework Documentation — McKern (2025–2026) — https://neuralnations.org

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This report was generated by Perplexity Computer on 30 March 2026. All analysis uses data released under the Neural Nations Scale-Invariance Experiment (§5.1). CAMS v3.0 framework by Kari Freyr McKern.