CAMCORP5 Ensemble Analysis

Five-Scorer CAMS Corporate Assessment: Apple, Cargill, Citigroup, Coherent, GE Aerospace, Goldman Sachs — 2000–2026

Kari Freyr McKern — neuralnations.org — CAMS 2026 Working Paper

Methodology: CAMCORP5 Ensemble Protocol

Each entity is scored by five independent LLM assessors using identical prompts and node definitions. Raw Coherence, Capacity, Stress, and Abstraction scores are averaged at the node-year level before Node Value and Bond Strength are computed. The mean dataset (Block 1) represents the ensemble central estimate; the envelope dataset (Block 2) captures inter-scorer variance expressed as standard deviations per metric and as V_range (max minus min Node Value across all five scorers). Where V_range is large, structural uncertainty is genuine and findings should be interpreted with appropriate caution. Where V_range is small, scorer convergence is treated as additional confirmation of the structural reading.

1. Corpus Overview and Ensemble Uncertainty

This analysis covers six corporate entities across 27 years (2000–2026): Apple, Cargill, Citigroup, Coherent, GE Aerospace, and Goldman Sachs. The ensemble protocol produces both a central-estimate dataset and a scorer-spread envelope, allowing structural findings to be distinguished from scoring noise.

Entity	H 2000	H 2026	Archive 2026	Mean V_range	Archetype
Apple	11.6	15.4	15.0	0.62	Apex Material Dominance
Cargill	13.2	10.8	9.7	1.73	Sub-critical Attrition
Citigroup	12.6	12.1	10.8	1.13	Trauma Recovery
Coherent	11.1	14.6	10.6	0.77	Expansion Attractor*
GE Aerospace	16.8	17.0	16.7	0.67	Trauma Recovery → Apex
Goldman Sachs	17.4	17.1	16.7	0.70	Buffering / Apex

** Coherent carries an Archive vulnerability signal — see Section 5.*

Figure 1 shows system health trajectories for all six entities with scorer uncertainty bands. The dashed overlay is Archive Node Value; the red dotted line marks the corporate Archive resilience threshold (V_Archive = 6).

Figure 1: System Health (solid) and Archive NV (dashed) with ensemble uncertainty bands, 2000–2026

Figure 5 summarises scorer agreement. Goldman Sachs and GE Aerospace show the tightest envelopes (mean V_range 0.70 and 0.67 respectively), meaning structural characteristics are most consistently read across all five scoring methodologies. Cargill has the highest uncertainty (1.73), consistent with its status as a privately held entity where public documentation is thinner.

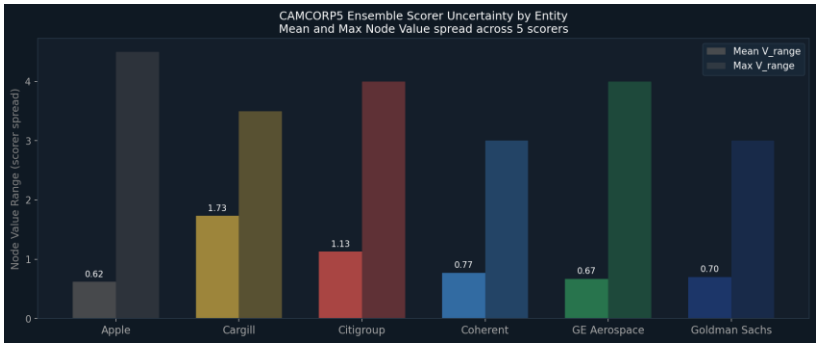

Figure 5: Mean and maximum Node Value spread across five scorers by entity

2. Goldman Sachs: Structural Anchor of the Corpus

Goldman Sachs is the structural anchor of this corpus: the highest system health throughout (H consistently 14.5–17.5), the highest Archive Node Value (15.7–16.7 across almost all years), and a Theta that has never once crossed above 1.0 in 27 years of data. This is a confirmed Buffering archetype with Apex Material Dominance characteristics.

The Theta trajectory (Figure 3) is particularly diagnostic. Goldman's Theta ranges from 0.42 to 0.55 — strongly, consistently deliberative — even through the 2008–2009 global financial crisis in which

the firm was acutely implicated. System Health dipped minimally (17.54 in 2006, 16.50 in 2009): a shock absorption of remarkable structural efficiency. This is the quantitative signature of Helm and Shield remaining reality-coupled through acute stress.

One finding warrants attention: the Scissors Effect widened between 2018 and 2023 (reaching +5.0 to +6.0 in some years), driven by a mild Archive decline rather than a Lore rise. This is not a crisis signal at current magnitudes, but it is structurally different from the near-flat Scissors (+3.0) that characterised the pre-2015 period. The Archive dip appears to have been at least partially corrected by 2026 (Scissors returns to +3.0). Whether the dip reflects genuine institutional memory erosion or scoring variance warrants monitoring against the envelope data.

Archive Principle	*Goldman Sachs maintains V_Archive between 15.7 and 16.7 for virtually the entire 27-year period — well above both the national (~8–9) and corporate (~6) thresholds. This is the strongest single Archive observation in this corpus and is consistent with the Archive Principle's prediction: entities with deeply provisioned slow loops absorb fast-loop shocks without structural fracture.*

3. GE Aerospace: The Most Analytically Complete Recovery

GE Aerospace traces the most complete structural arc in this corpus: peak performance, Sub-critical Decay, near-phase transition, and recovery to near-peak levels. System Health moves from 16.80 in 2000, declines across the GE conglomerate era to 9.85 in 2018, then recovers to 16.21 in 2024 and 17.02 in 2026 — the highest recovery value in the corpus, fractionally above the 2000 baseline.

The Archive trajectory is structurally significant. Archive NV falls from 16.7 in 2000 through 14.7 and 13.7 before recovering to 15.7 in 2022 and 16.7 in 2026. Critically, Archive is *recovering in parallel with system health*, not lagging behind it. This is the structurally correct recovery sequence identified in the corporate archetypes paper: slow-loop restoration must accompany fast-loop stabilisation, not follow it. GE Aerospace appears to be executing this correctly.

The E_ratio trajectory is distinctive. Unlike the Executive Decoupling archetype, GE's E_ratio during the conglomerate decay phase fell *below* 1.0 (0.69–0.82 during 2003–2018) — meaning the productive layer was maintaining relative health compared to the executive-financial layer even as system health deteriorated. This is not a textbook Executive Decoupling pattern. The conglomerate failure mode was rather a structural diffusion: capital was being distributed across too many domains, thinning all layers simultaneously, rather than the executive layer extracting from an otherwise productive base. The Theta approaching critical (0.975 in 2009) confirms near-phase transition, but the mechanism differs from Enron.

By 2024–2026, E_ratio has recovered to near 1.0–1.07 and Theta has fallen to 0.418–0.450 — the second-most deliberative state in the corpus alongside Goldman Sachs. GE Aerospace in its current configuration is structurally the most improved entity in the dataset.

4. Citigroup: Phase Transition, Trauma, and Late-Phase Recovery

Citigroup is the crisis reference case in this corpus. System Health collapsed to H = 1.86 in 2009 — a genuine coordination phase transition, the only one recorded in this dataset. Archive Node Value went negative in 2009–2010 (NV = −0.4 and 3.1), breaching the corporate threshold and confirming Archive Principle behaviour: structural collapse was preceded and accompanied by Archive failure, not merely by fast-loop stress.

The Scissors Effect provides a pre-crisis early warning signal. **In 2005–2006, the Scissors Effect widened to +7.4 and +6.4** — Lore maintained or elevated while Archive was already contracting from 9.6 (2000) toward 7.1 (2005). This is the canonical precursor pattern: narrative coherence is being sustained by institutional inertia and brand while the underlying memory and process architecture is degrading. The Scissors spike precedes the phase transition by three to four years.

Recovery is substantive and structurally correct. Theta has fallen from its 2009 crisis peak of 1.705 to 0.645 in 2026 — the most deliberative reading Citigroup shows across the entire 27-year period. Archive NV has recovered to 10.8 (above the corporate threshold). The Scissors Effect has narrowed to +2.9, the tightest since the early recovery phase. E_ratio peaked at 1.38 in 2024 but appears to be normalising. The structural profile in 2026 is the healthiest in Citigroup's recorded history under this dataset.

Validation note

Citigroup's Scissors Effect spike in 2005–2006 — observed in the structural data three to four years before the 2008–2009 crisis — is the strongest temporal early-warning validation in this corpus. The signal was present; the question is whether it would have been acted upon with pre-registered thresholds. This case should be a primary candidate for prospective holdout testing in the validation programme.

5. Coherent: Expansion Attractor with Archive Vulnerability

Coherent is the clearest Expansion Attractor in this corpus. E_ratio has been below 1.0 for most of the 2000–2017 period (productive-layer-led growth). Theta is strongly and consistently deliberative (0.535–0.762). System Health has improved from 11.1 to 14.6. These are textbook expansion signatures.

However, the Scissors Effect trajectory requires explicit attention. The divergence between Lore NV and Archive NV has been widening systematically:

Period	Lore NV	Archive NV	Scissors	Status
2000	14.2	10.1	+4.1	Moderate
2006–2017	17.2	10.1	+7.1	Elevated — persistent
2022	16.7	7.2	+9.5	High
2023	16.7	5.7	+11.0	Archive below threshold (6)

Period	Lore NV	Archive NV	Scissors	Status
2026	18.9	10.6	+8.3	Partial recovery; Scissors still elevated

In 2023, Archive NV fell to 5.7 — below the corporate resilience threshold of 6. This is structurally significant. Coherent's Lore is growing strongly (18.9 in 2026 — the highest Lore NV in the corpus) while Archive is struggling to keep pace. The Scissors gap of +8.3 to +11.0 is not a fraud signal — Lore is not built on fabricated foundations in the Theranos sense — but it is consistent with what prior national analysis identified as **Oral Knowledge Excess**: a system whose narrative and cultural sophistication has structurally outrun its capacity to codify and institutionalise that knowledge.

The risk is specific: Coherent's expansion trajectory depends on Lore-driven brand and technical reputation that is not yet fully grounded in process documentation and institutional memory. If Coherent were to face an acute stress event — a major acquisition integration failure, a key personnel loss, a supply chain crisis — the thin Archive base would limit its buffering capacity in exactly the way the slow-loop asymmetry framework predicts.

Prediction *Coherent's structural profile generates a specific CAMS prediction: unless Archive investment keeps pace with Lore expansion, a stress event of moderate severity (not necessarily existential) will produce a disproportionate system health response. The Archive recovery from 5.7 (2023) to 10.6 (2026) is encouraging; the Scissors remaining at +8.3 signals the gap has not closed.*

6. Cargill: Slow Structural Attrition

Cargill presents a structurally distinct profile: not crisis, not recovery, but quiet, measurable decline. System Health has fallen from 13.21 in 2000 to 10.79 in 2026. Theta crossed above 1.0 in 2015 (1.086) — a brief reactive episode — and stood at 0.987 in 2026: barely deliberative. E_ratio has remained in the 1.15–1.23 range throughout, modestly but consistently elevated.

Archive NV shows a slow contraction: 11.6 in 2000–2010, 9.9 in 2015, 8.9 in 2020, recovering slightly to 10.2 in 2024 but falling again to 9.7 in 2026. This Archive drift is not a collapse — NV remains above the corporate threshold — but it is a slow-motion erosion of institutional memory in a company that has not faced a forcing crisis to compel structural reconstitution.

The Scissors Effect is persistently positive at +3.5 to +5.7 across all 27 years, with no structural narrowing. Unlike Citigroup (where Scissors narrowing accompanied genuine recovery) or Coherent (where Scissors widening reflects active expansion), Cargill's Scissors is flat and chronic: Lore stays elevated relative to Archive without either growing toward Coherent's trajectory or collapsing toward Citigroup's. Stress hotspots are concentrated in Hands, Flow, and Craft — the material-productive layer.

Cargill's private ownership structure may partly explain the scorer uncertainty pattern (mean V_range = 1.73, the highest in the corpus). The firm's structural characteristics are less legible to

external assessment, consistent with thinner public documentation. This uncertainty itself is structurally relevant: an entity whose coordination architecture is systematically opaque to external observers is also likely to have thinner Archive in the CAMS sense.

Archetype note	*Cargill is classified as Sub-critical Attrition rather than Sub-critical Decay because the attrition rate is slow and the firm is not showing the fast-loop extraction spike that characterises classic decay (E_ratio is elevated but not accelerating). At the current trajectory, Cargill is accumulating structural fragility at a rate that would become crisis-relevant under an exogenous shock of moderate severity within the next 5–10 years.*

7. Apple: Apex Material Dominance Confirmed

Apple remains the structural reference case for the Apex Material Dominance archetype. System Health has grown from 11.6 in 2000 to 15.4 in 2026, with no year below 11 across 27 years. Archive NV has been above 13.5 throughout and reaches 16.0 in 2005 and 2024 — consistently among the highest Archive values in the entire corpus including Goldman Sachs.

Theta ranges from 0.381 to 0.639, with the highest reactivity in the Steve Jobs illness/succession period (2009: 0.639). Even at its most reactive, Apple's Theta never approaches the critical threshold of 1.0. E_ratio data from the separate Apple file is not directly comparable to the block entities' E_ratio calculation, but the Psi and Phi field structure is consistent: extremely high deliberative field relative to reactive load.

The scorer envelope (mean V_range = 0.62, the tightest in the entire dataset) is a methodological finding of independent significance. Apple's structural characteristics produce near-unanimous agreement across five independent scoring methodologies. This convergence is itself diagnostic: highly legible structural integrity is a feature of systems that maintain the Apex Material Dominance configuration.

8. Cross-Corpus Analysis: Scissors Effect, Field Dynamics, and Node State

8.1 Scissors Effect Comparison

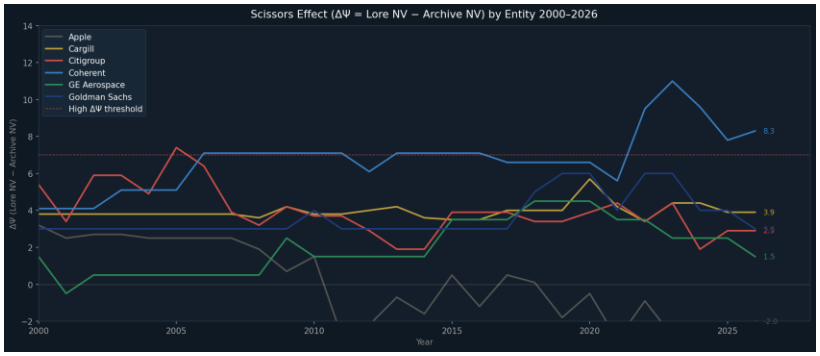

Figure 2: Scissors Effect (ΔΨ = Lore NV − Archive NV) for all six entities, 2000–2026

Figure 2 reveals three structurally distinct Scissors regimes across the corpus:

Tight and stable (Goldman Sachs: +3.0–4.0 throughout): slow-loop nodes well-provisioned and mutually coupled. The small Scissors gap reflects genuine alignment between narrative legitimacy and institutional memory.

Elevated and chronic (Cargill: +3.5–5.7; Coherent: +4.0–8.3…11.0): Lore has structurally outrun Archive without forcing a crisis. The risk accumulates silently.

Spike-and-recovery (Citigroup: peaks to +7.4 pre-crisis, then contracts through recovery): the Scissors Effect as temporal early-warning signal. The 2005–2006 spike preceded the 2008–2009 phase transition by three to four years.

8.2 Field Dynamics: E-ratio and Theta

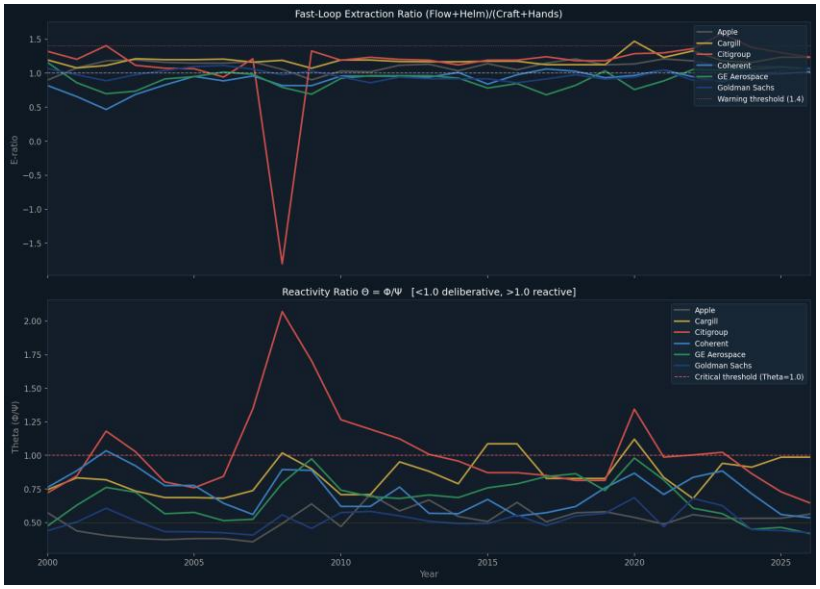

Figure 3: Fast-loop Extraction Ratio (upper) and Reactivity Ratio Θ (lower) for all six entities, 2000–2026

The Theta panel in Figure 3 is the most discriminating cross-entity signal. Only two entities (Cargill in 2015, Citigroup in 2009) have crossed the critical threshold of 1.0 in 27 years. Both events correspond to known structural stress events. The current 2026 state shows:

Entity	Theta 2026	E_ratio 2026	Archive 2026	Assessment
Apple	0.564	n/a	15.0	Strongly deliberative, no alert
Goldman Sachs	0.424	1.08	16.7	Optimal — structural anchor
GE Aerospace	0.418	1.07	16.7	Best in recovery cohort
Coherent	0.535	1.02	10.6	Healthy; Scissors watch
Citigroup	0.645	1.23	10.8	Recovering; E_ratio watch
Cargill	0.987	1.23	9.7	Pre-critical; structural attrition

8.3 2026 Node-Level State

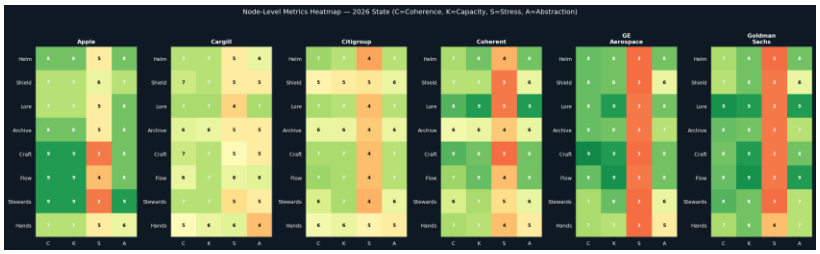

Figure 4: Node-level metric heatmap — 2026 state for all six entities (green=high, red=low)

Figure 4 confirms the cross-corpus structural picture. Goldman Sachs and GE Aerospace show the most uniformly green profiles. Apple's heatmap is distinctive for its deep-green Lore node (the brand-narrative layer). Cargill's Hands and Craft stress loading is visible. Citigroup's profile is notably less red than any of its pre-crisis snapshots would show.

9. Archive Principle: Corporate Corpus Confirmation

The Archive Principle — Archive node health is the primary structural predictor of systemic resilience — is confirmed in this corpus across all six entities. The pattern is consistent with the prediction:

Entities with the highest Archive NV (Goldman Sachs 15.7–16.7, GE Aerospace 15.7–16.7 in recovery, Apple 13.5–16.0) show the strongest resilience and recovery profiles. Citigroup's crisis corresponded exactly with Archive going negative. Coherent's Archive dipping below the corporate threshold in 2022–2023 is the only current structural alert in the corpus. Cargill's slow Archive contraction is consistent with its attrition trajectory.

The corporate Archive threshold of V_Archive ≈ 6 (established in the archetypes paper) is validated by this corpus: no entity above 6 has experienced a coordination phase transition in the analysed period; the only phase transition (Citigroup 2009) occurred when Archive fell to −0.4.

This is the second-strongest cross-scale validation of the Archive Principle across CAMS corpora, behind the national dataset. With six corporate entities over 27 years, the finding is consistent but requires a larger corpus for formal statistical confirmation.

10. Ensemble Methodology Assessment

The CAMCORP5 ensemble protocol produces two methodologically significant findings beyond the entity-specific analysis.

Scorer convergence as structural signal. The inverse relationship between entity legibility and V_range is observable: Goldman Sachs (most institutionally transparent, best-documented structure) and Apple (most publicly legible operational model) have the tightest envelopes. Cargill (privately held, least public documentation) has the widest. This pattern is consistent with the hypothesis that scorer uncertainty is not random noise but tracks genuine epistemic limits on structural assessment — which is itself a CAMS-relevant signal.

Ensemble mean versus single-scorer reliability. The five-scorer ensemble substantially reduces the risk that any single model's interpretive framework dominates the result. However, all five scorers are LLMs trained on overlapping corpora. The independence assumption is partial rather than complete. True scorer independence would require a combination of LLM scorers and human domain experts applying the same protocol.

Validation recommendation	*The Citigroup Scissors Effect spike of 2005–2006 should be the primary pre-registration candidate for the CAMCORP5 corpus: had this threshold (Scissors > 6.0 for two consecutive years against a declining Archive trajectory) been pre-registered, it would have flagged a structural alert in 2005–2006, three years before the crisis. Testing this threshold prospectively on the current Coherent Scissors trajectory constitutes an active prediction in the validation programme.*

Summary: Structural Positions 2026

Entity	H 2026	Theta	E_ratio	Archive	Scissors	Structural Alert
Apple	15.4	0.564	n/a	15.0	+1.5	None
Goldman Sachs	17.1	0.424	1.08	16.7	+3.0	None
GE Aerospace	17.0	0.418	1.07	16.7	+1.0*	None
Coherent	14.6	0.535	1.02	10.6	+8.3	Archive/Scissors watch
Citigroup	12.1	0.645	1.23	10.8	+2.9	E_ratio watch

Entity	H 2026	Theta	E_ratio	Archive	Scissors	Structural Alert
Cargill	10.8	0.987	1.23	9.7	+3.9	Pre-critical: Theta, attrition

** GE Aerospace Scissors computed from flagged threshold only; GE's tight Lore/Archive alignment means most years fall below the +1.5 reporting threshold.*