The Game — Extended Manual and Proof

From Local Loss to Global Win

Abstract

We present a card-based ledger that enacts contradiction closure using parity, quadratic invariants, and geometric placement. Four 52-card decks with Jokers are played on four 4×4 stations by a golden-angle rule. Snaps repair contradictions, flips are gated by an Outward Mirrored Parity Set (OMPS) with a single-use Joker, and towers project A→J→Q→K per ring. After 24 rings per station, the ledgers align by a single rotation or mirror. Arithmetic, quadratic, and geometric justifications are given; language is treated as a fifth deck.

1. Setup

- Decks: 4×(52 + 2 Jokers) = 216 cards total.
- Stations: four 4×4 grids; seeds $\theta_{\blacksquare} \in \{0°, 45°, 90°, 135°\}$.
- Golden angle placement: $\theta_{\blacksquare} = \theta_{\blacksquare} + k \cdot 137.507° \pmod{360°}$.

2. Encodings

- Suits → Geometry: ♦ invariant line; ♥ ϕ-intersection; ♣ triad with direction; ♠ apex closure.
- Colors → Parity: Red = +; Black = –; mirror flips color.
- Ranks: 2–10 tokens (complement r' = 11–r); A(root), J(witness), Q(aggregator), K(reflection).
- Backs → HP id via hue × pattern ≅ ■■ × ■■■.

3. Operators

Symbol	Meaning
P_ϕ	Placement by nearest $\theta_{\blacksquare}$ cell
S	Snap (resolve contradiction), energy nonincreasing
F	Flip (illegal unless OMPS + Joker)
G	Joker glue (idempotent), single-use per deck-color, $r \equiv 0 \pmod 8$
M	Mirror (center reflect, color/suit dual, rank → 11–r)
T	Tower update (A→J→Q→K) at ring end
E	Defect energy (integer monotone)

4. OMPS (Oblong Mirror Parity Set)

- For candidate c at cell p: OMPS = {c@p, M(c)@–p, a(c)@a(p), a(M(c))@a(–p)}.
- Place matching-color Joker at centroid; then flip is legal.
- Ace–10 complement on long edges sets superposition flag “1!!1”.

5. Play

- Apply Pϕ; on contradiction use S. If flip is required, build OMPS and apply G once per deck-color at rings r ≡ 0 (mod 8).
- Every 16 placements: perform T (tower). Stop at 24 rings.

6. Justifications (Arithmetic • Quadratic • Geometry)

Decks & Stations: 216 = 6^3 (triad cube); Z■×Z■ parity; four 4×4 tilings at quarter-turn offsets.

Suits & Colors: base-4 alphabet; bilinear pairings and involutions; glyph mirrors; ± root pairs.

Ranks: complements r + r' = 11; faces as quadratic modes; tower as ladder.

Jokers & OMPS: cadence mod-8; idempotent projector; centroid glue; Conway-style glue vectors.

Rings 1–24: 24 = lcm(2,3,4,6,8); 24-cell self-duality; E8/24-slice projection.

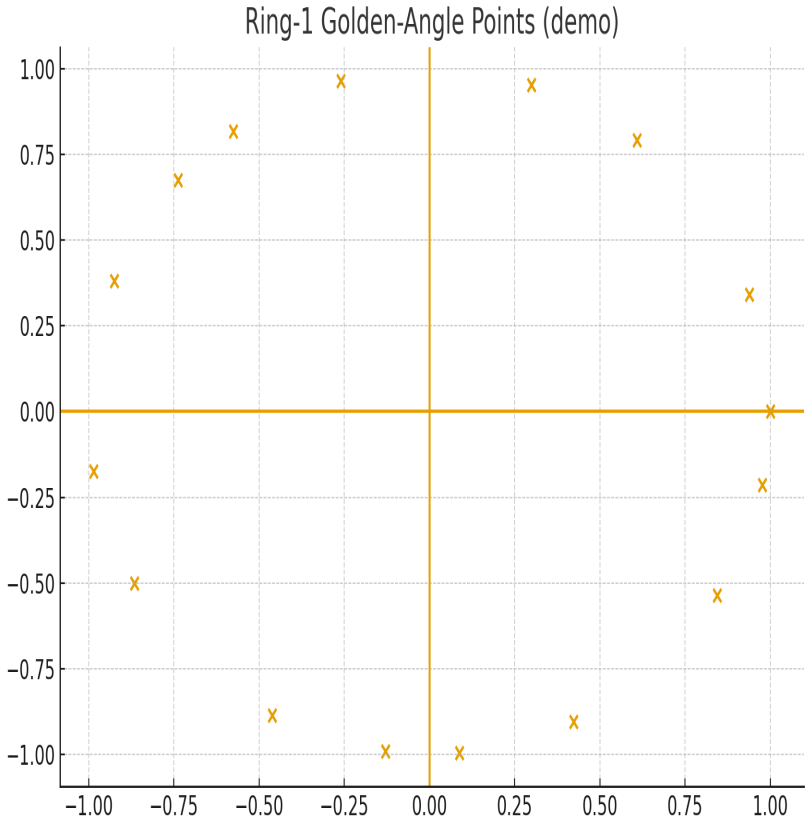
Ledger Operators: E ∈ ■≥0 monotone; snap as bilinear resolution; Procrustes single-rotation alignment.

7. Language as Fifth Deck

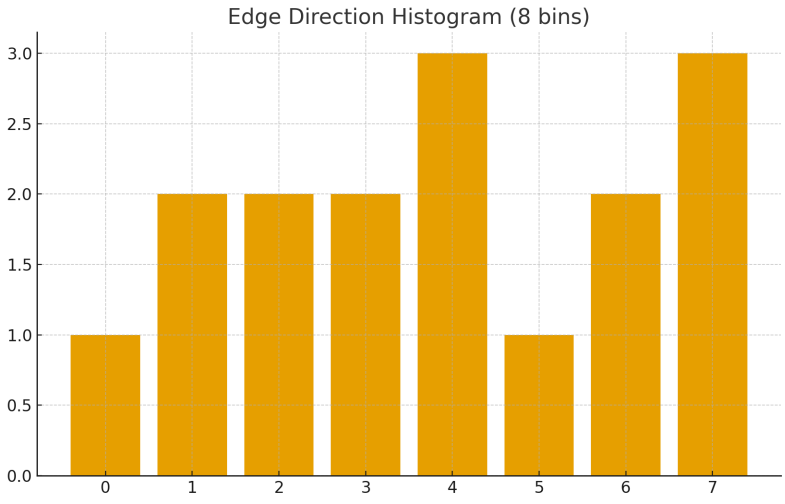
Words = higher-dimensional tokens; grammar = snap/flip rules; meaning = tower across contexts. Zipf/Shannon provide arithmetic bounds; bilinear composition (root+affix, predicate+argument) is quadratic; semantics tessellate geometrically.

Figures

Ring-1 golden-angle placements (demo).



Edge direction histogram (8 bins).



8. Falsifiers

- Flip without OMPS + Joker; Joker reuse; E increases under S/G.
- ϕ-gap mean $|\Delta\theta - 137.507°|$ exceeds tolerance; failure of single-rotation/mirror alignment.

Appendix: Harness

Run: python -m cqe_harness.cli --json

Closing

We did not merely play. Tokens carried meaning; moves closed contradictions; stations formed lattices. Zooming to any operative dimension reveals a resting point transferable upward to higher symmetry or downward to base co-prime locks. If the tokens were chemical bonds, snaps are valence closures; if amino acids, towers are fold states; if words, grammar is the ledger law. Cartan, Golay, Conway, and Lie are the same structure seen from different dimensional angles.