Oz's Law — Subtractive Translation Engine (STE) Mechanics

The **Subtractive Translation Engine (STE)** is the symbolic core of **Oz's Law**, enforcing the axiom: **Coherence emerges solely from polarity alignment under exclusion**. STE processes player inputs (prosody weather) into nouns/verbs, then **ruthlessly subtracts** incompatibilities via logical gates until a stable quotient remains or contradiction triggers dissipation. No invention occurs — only collapse and elimination.

STE operates **real-time** (sub-ms/call), **fractally** (recursive subfields), and **append-only** until reset. Output: reduced quotient → SDF shader params → emergent Pup form.

1. State Representation

- **Nouns**: Entities present (AND-collapse synonyms → canonical, e.g., dog/pup/stat → "pup").
- **Verbs**: Allowed actions (NAND-survival: closure-preserving only).
- **Adjectives**: Always discarded.

Component	Fate	Example
Nouns	Canonical unique set	{"dog", "pup"} → {"pup"}
Verbs	Selective survival	See below
Adjectives	Dropped	"rigid" → discarded

2. Reduction Algorithm (Executed per Prosody Event)

1. **Append** new symbols.
2. **Nouns → AND Collapse**: Map to canonical → dedupe.
3. **Verbs → NAND Survival**:
   - Always: walk, evolve, signal.
   - Structural (delete, merge, freeze, probe): Survive **only** if preventing contradiction (nouns exist + no always-verbs).
4. **Contradiction**: Nouns >0 + Verbs =0 → dissipation (coherence → 0%).
5. **Quotient Level**: Complexity = |nouns| + |verbs|:

Level	Complexity	Pup Form
1	>8	Complex blob (chaotic primitives)
2	4–8	Hero (polarized traits)
3	≤3	Minimal pup (stable core)

6. **SDF Modulation**: Quotient → uniforms (e.g., "horn" → delete_strength ↑).

3. Prosody → STE Injection Table

Prosody	Op	Injected Symbols	STE Effect
Sharp bursts	DELETE	Nouns: [boundary]; Verbs: [delete]	Rigid horns; lean-black
Sustained hums	MERGE	Nouns: [signal, wing]; Verbs: [merge]	Compliant wings; thick-white
Rising contour	PROBE	Nouns: [signal]; Verbs: [probe]	Signal buffs
Falling contour	FREEZE	Verbs: [freeze]	Lock state (≥80% coh → win)
Idle	DRAG	Nouns: [moss]	Creep risk

4. Fractal Subfields (Recursive STE)

Pup = smin(subfields: body, horns, wings, tail, legs).
Each subfield runs local STE:

- **Inheritance**: DELETE → horns strongly; MERGE → wings strongly.
- Local contradiction → subfield dissipates (e.g., horns fade).
- Global coh = avg(local coh).

5. Tether Persistence

- Save minimal quotient on dissipation/FREEZE.
- Load: union → reduce (contra. → {pup, walk}).

6. Example Trace (DELETE → MERGE → Neglect → Recovery)

1. DELETE: Nouns={"boundary"}; Verbs={"delete"} → Level 2; horns sharpen.
2. MERGE: +{"signal","wing","merge"} → Level 2; wings bloom.
3. Neglect: +{"moss"} → body subfield contra. → moss creep.
4. DELETE: Resolve moss → Level 2 stable.

Oz's Law Proof: STE renders **what survives** — Pup coheres via exclusion. Violations self-dissipate.