Ghost Mesh 48 – Parameter Sweep Harness v2.0-RPG (APP-PSH-RPG)

Purpose:
Expanded Parameter Sweep Harness for RPG ProtoAGI Simulations.
Adds dimensions for party configuration, quest dynamics, environment volatility, and NPC drift handling.

Sweep Dimensions (Updated):

• Initial Symbolic Density   : 4000 % → 6200 % (step 400)
• Initial ESS   : 0.08 → 0.30 (step 0.04)
• Dopamine Tokens   : 0, 5, 10, 20
• Serotonin Cushion Level   : 0, 1, 2 tokens/cycle
• Adaptive Threshold Protocol : ON/OFF
• Initial Party Size   : 1–5 (step 1)
• Quest Complexity Multiplier : 1.0–2.5× (step 0.5)
• Environment Volatility Index : 0.0–1.0 (step 0.2)
• NPC Drift Tolerance   : 0.2–0.6 (step 0.1)

RPG-Centric Definitions:

- Initial Party Size:
Number of Dreamlings/NPCs generated at simulation boot; affects Oxytocin bonding and stress modulation.

- Quest Complexity:
Modulates number of symbolic steps and anchor points required for quest completion.

- Environment Volatility:
Probability per cycle of Area symbolic shifts, affecting local SD, entropy, and myth-fertility.

- NPC Drift Tolerance:
Threshold for allowing NPCs to drift emotionally/symbolically before triggering healing rituals.

New Job Definition YAML (Example):

```
- mesh: Glass_Tide
cycles: 300
initial: {sd: 4800, ess: 0.12}
injections:
- {cycle: 20, token: dopamine, qty: 10}
adaptive_protocol: true
rpg_params:
party_size: 3
quest_complexity: 2.0
environment_volatility: 0.5
npc_drift_tolerance: 0.4
```

Metrics Collected:

• Stability Ratio   : % cycles inside PTL bands
• Party Cohesion Index   : mean Oxytocin bonds across party
• Quest Fulfillment Ratio   : % quests completed

• Environment Drift Incidence : % of areas destabilized
• NPC Attrition Rate   : % NPCs lost to high drift

Output Artifacts:

• results_rpg.csv   – one row per run, all RPG metrics
• heatmap_party_vs_stability.png
• violin_quests_vs_fertility.png
• environment_volatility_trends.png
• JSON report – mean + std aggregation for RPG features

Scheduler Integration:

• Supports Local Core and Cluster Pods (SLURM, Kubernetes).
• Auto-discovers Mesh Dashboard workers at ws://localhost:8765.
• Progress tracking and sweep ETA estimation included.

Quick Reference Config:

```
{
"sweep": {
"dimensions": {
"sd": "4000:6200:400",
"ess": "0.08:0.30:0.04",
"dopamine": [0,5,10,20],
"party_size": [1,2,3,4,5],
"quest_complexity": [1.0,1.5,2.0,2.5],
"environment_volatility": [0.0,0.2,0.4,0.6,0.8,1.0],
"npc_drift_tolerance": [0.2,0.3,0.4,0.5,0.6]
},
"cycles": 300,
"repeats": 3,
"adaptive": true
}
}
```

Change Log:

v2.0-RPG (2025-04-28):
• Added RPG-specific sweep dimensions.
• Integrated RPG Party, Quest, Environment, and NPC metrics into sweep output.
• New plotting templates for party cohesion and quest progression analytics.