GAME OF LIFE

ANATOMY OF A SIMULATION

"We played god with pixels... here's what happened."

AUTHOR DATA

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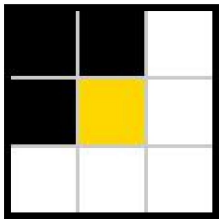CLASS: BSE-7A

SUBJECT: SIMULATION

ACCESS GRANTED

MISSION PARAMETERS

The Mechanics of Existence

BIRTH

CONDITION:

Exactly 3 Neighbors

"From the void!"

SURVIVAL

CONDITION:

2 or 3 Neighbors

Status: Stable

Risk: Low

DEATH

CAUSES:

- **Loneliness:** < 2
- **Overcrowding:** > 3

SYSTEM SPECS

GRID SIZE: 100 x 100

GENERATIONS: 200 MAX

MODES: FINITE / PERIODIC

DENSITY ARRAY
0.2 | 0.5 | 0.8 | 1.0

EXPERIMENT: POPULATION DENSITY

SPARSE (0.2)

0.2

OUTCOME: STABILIZATION

Initial drop, then equilibrium. Most complex structures form here.

MEDIUM (0.5)

0.5

OUTCOME: FILTERING

Exponential decay. Only resilient pockets survive.

HIGH (0.8)

0.8

OUTCOME: CATASTROPHE

Immediate collapse. "Island" formation (approx 12 cells left).

EXTREME (1.0)

1.0

OUTCOME: EXTINCTION

Instant death by overcrowding.

BOUNDARY TOPOLOGY

FINITE

THE "CLIFF"

Gliders crash and vanish. Entropy decreases rapidly.

VS

PERIODIC

THE "TORUS"

Wrap-around mechanics. Infinite loops. High complexity.

CATEGORY I: STILL LIFES
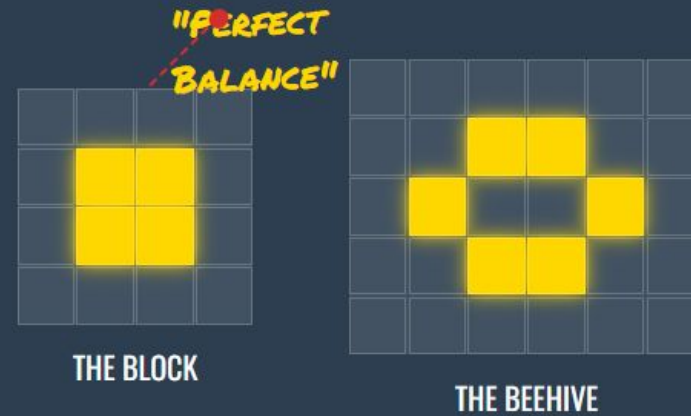
STATIC STABILITY

Patterns that do not change from one generation to the next. They are perfect equilibriums.

Period: 1	
Motion: None	
Rarity: Very Common	

"PERFECT BALANCE"

THE BLOCK

THE BEEHIVE
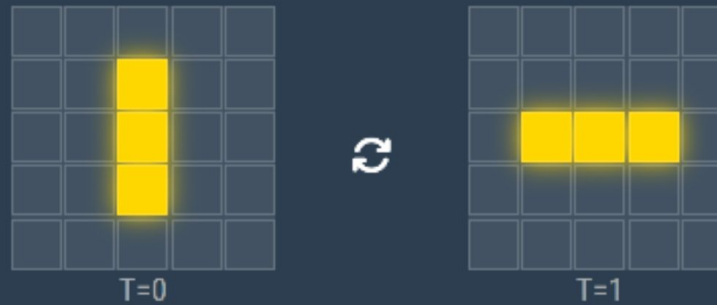
"The fossils of the simulation"

CATEGORY II: OSCILLATORS

PERIODIC CYCLES

Patterns that repeat after a fixed number of generations.

Motion: Stationary

Type: Cyclical

THE BLINKER (P2)

"THE HEARTBEAT OF THE GRID"

"Infinite Loop"
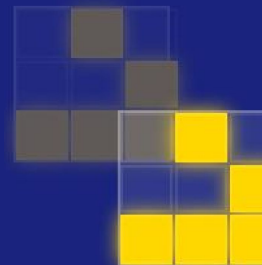
CATEGORY III: SPACESHIPS

TRAVELERS

Finite patterns that return to their initial state but at a different location. They "move" across the grid.

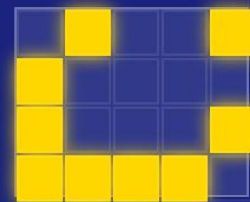| |
|---|
| Speed: c/4 (Glider) |
| Direction: Diagonal / Orthogonal |

"Information carriers"

THE GLIDER (Motion Trail)

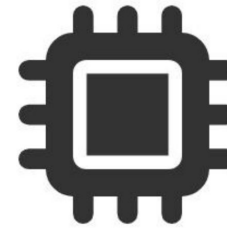DIAGONAL MOVEMENT ->

L.W.S.S (Lightweight Spaceship)

Moves Orthogonally (c/2)

POST-MORTEM ANALYSIS

VERDICT

✓ **0.2 DENSITY** is the "Sweet Spot" for life.

✓ **PERIODIC** grids allow infinite complexity.

⚠ **FINITE** grids kill entropy (Death occurs).

SIMULATION SUMMARY

"The Game of Life proves that complex behavior can emerge from simple rules. While high density leads to immediate extinction, sparse beginnings allow for beautiful, self-sustaining systems to evolve."

CASE CLOSED