Simulating Olson’s Bandits: Towards an ABM of government decision making and sensemaking in dynamic, competitive environments

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**Abstract.**

**Keywords:** Agent-Based Modeling (ABM), Olson’s Bandits, Complex Adaptive System, Co-Evolution, Governance

1. Introduction

P1:

Introduce the concept of Olsons bandits and their impact

P2:

Who has modeled this in the past? What were practical applications of their research?:

P3:

What do we do:

Model a scenario of roaming and stationary bandits

P4:

Practical impact

* Teaches us the impact of time-horizon on governance
* Postulates why governments arise in the first place

P5:

What we focus on and the scope of our findings

1. Related Work
2. Theory

Extensions of Olsons agents

What have we determined? What questions are still asking?

1. Relevant Simulations and ABM

Has it been simulated before?

What simulations are similar and we can learn from?

1. Modeling Olsons Bandits

Explain Steps in the Model

Show Con-Ops

1. Results
2. Baseline

Here we first establish a baseline to gauge typical performance of agents within our OODA simulation,

| Parameters | Description | Base value |
| --- | --- | --- |
| Population | Total number of agents | 25 |
| Agent Resources | The initial number of resources for agents | 75:25 |
| Environment Resources | The initial number of resources for environment | 75:25 |
| Observation Range | How far the agents can see around them | 4:1.25 |
| Move Cost | The cost for agents to move one step. | 1 |
| Regrow Time | The number of ticks it takes for the environment to regrow their resources. | 1 |
| Energy Loss | An absolute attrition value for agents each tick. | 1 |
| Observe Score | The Observe Step score of agents | 2.5:0.75 |
| Complexity Score | The Complexity Step score of agents | 2:1 |
| Stochasticity Score | The Stochasticity Step score of agents | 1.5:0.75 |
| Decide Score | The Decide Step score of agents | 2:0.5 |
| Act Score | The Act Step score of agents | 1.5:0.25 |

**Table 1: Baseline initial conditions and parameter values**

1. Scenario 1

Describe scenario

Show key visuals

Analysis

1. Scenario 2

Describe scenario

Show key visuals

Analysis

1. Scenario 3

Describe scenario

Show key visuals

Analysis

1. Conclusion

What are key takeaways

Next Steps

So What?!