

# Investigating the Drivers of Co-evolution in a Population of Agents

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# Introduction

- Related Work
- Simulator
- Co-evolution and the "Red Queen"
- Some Results
- Future Work/Expectations
- Conclusion

## Related Work

- Yaeger - PolyWorld
- Cliff and Miller - Pursuit and Evasion
- Reynolds - Co-evolving Tag

# Braitenberg Simulator

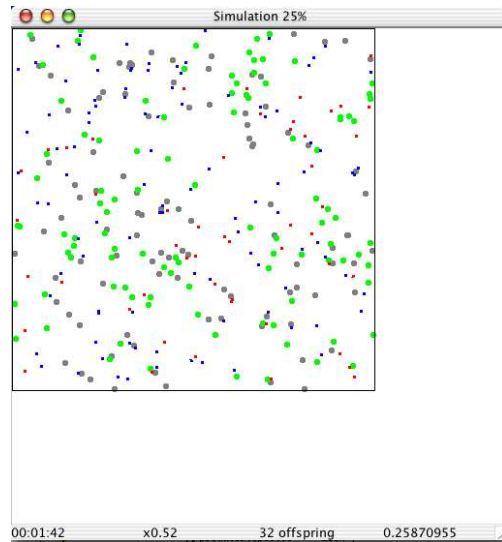


Figure 1: "Zoomed out"

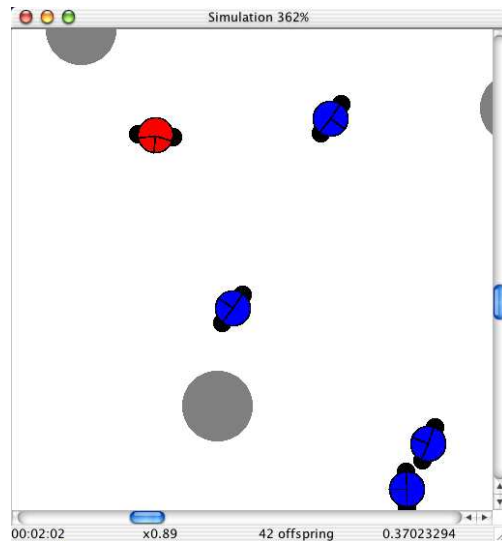


Figure 2: "Zoomed in"

## Co-evolution and the "Red Queen Effect"



"Now, here, you see, it takes all the running you can do, to keep in the same place..."

–Lewis Carol, Through the Looking Glass

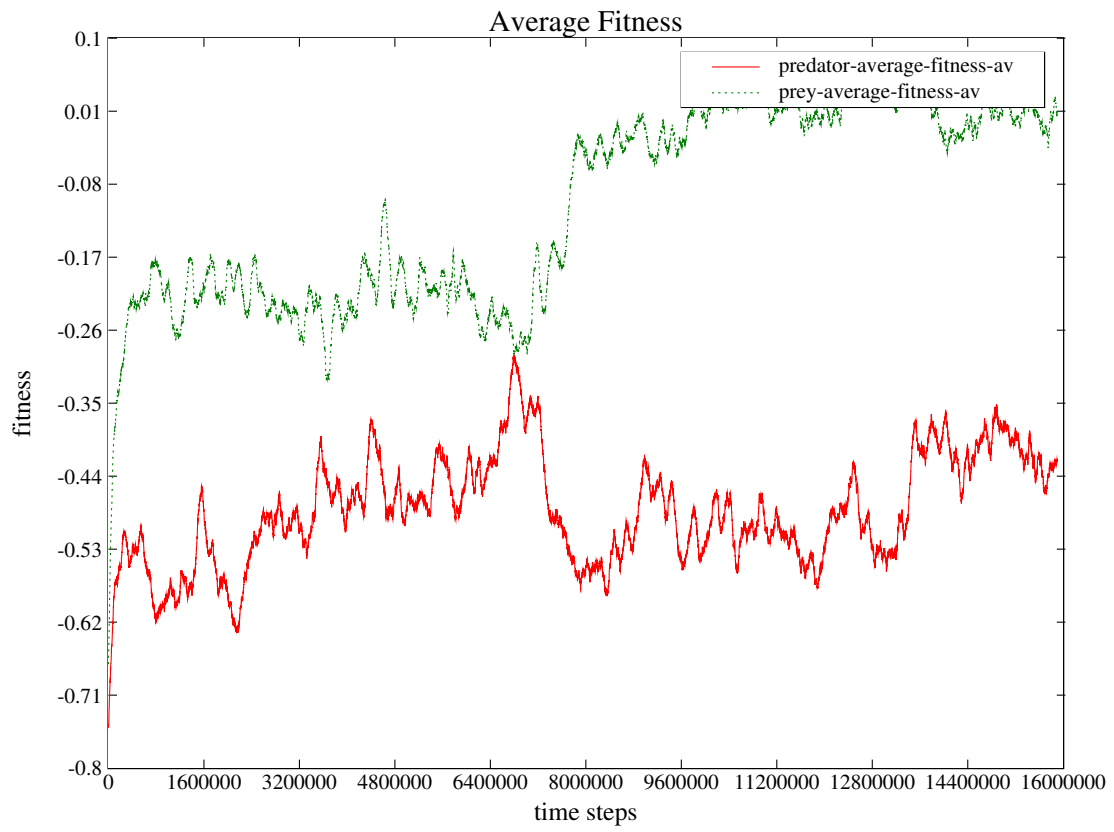


Figure 3: Fitness

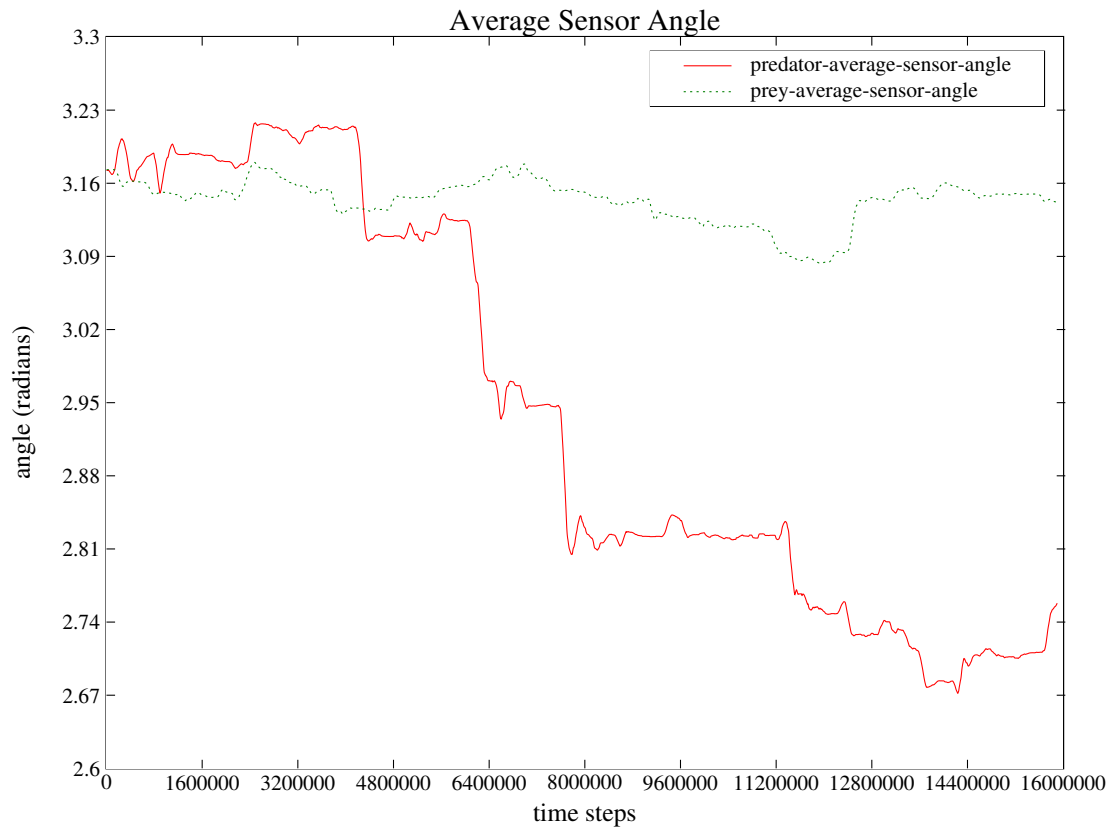


Figure 4: Sensor Angle/Field of Vision

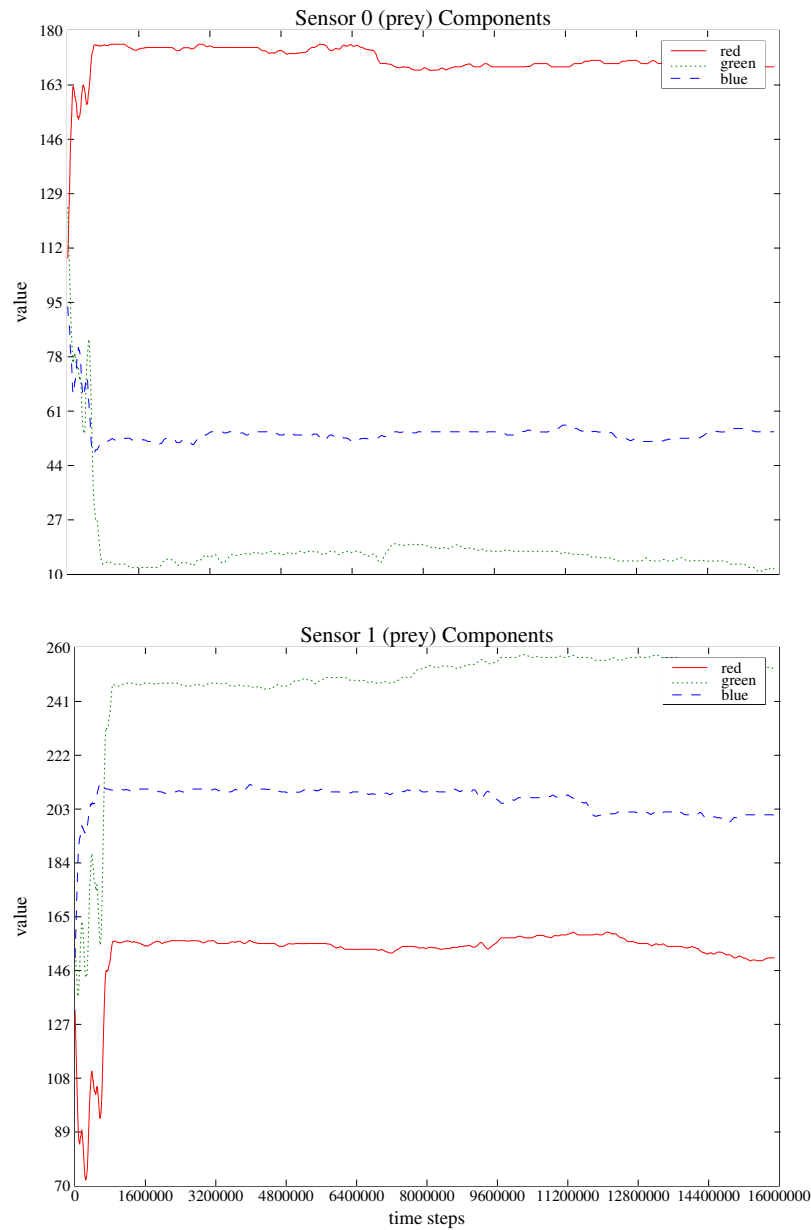


Figure 5: Prey Sensor Colour Components



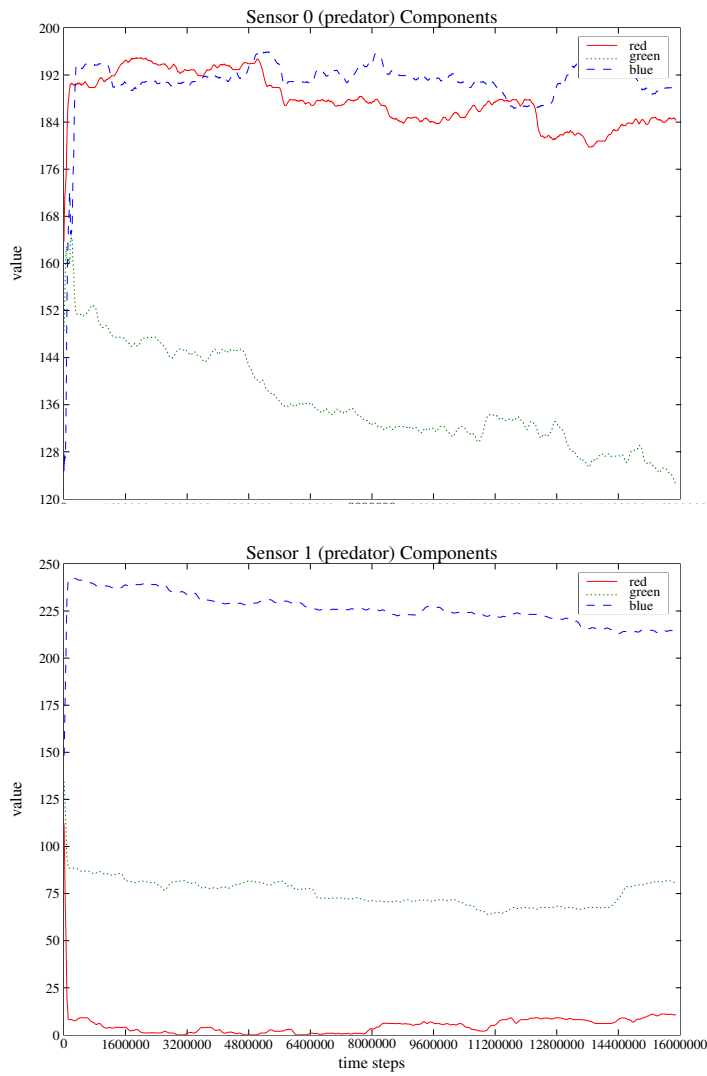


Figure 6: Predator Sensor Colour Components

## Future Work/Expectations

- Fair and Unfair Simulations
- Bigger, Longer Simulations
- More Complex Agents
- Stanley and Miikkulainen - NEAT  
(Evolving Topologies)

## Conclusions

- Robust and Flexible Simulator
- Difficult Measuring Co-evolution
- Need Complexity

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