Week 7a: Tuesday, March 1st
Good Afternoon, Colleagues

Are there any questions?
Logistics

● Project proposal questions?
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- Next week’s readings posted, survey soon to be assigned
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  - Team binaries, internet league
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  - Paper on pair programming
Motivation from real insects

- Ant colonies exhibit remarkably complex behaviors
  - Food gathering
  - Burial
  - Nest building
  - Reproduction
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Model the ant, not the colony
Go to the Ant

- Complex system behavior from many simple agents
Go to the Ant

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- Complexity comes from interactions, the environment
Agent Definition

Agents tied to environment

- Agent = <State, Input, Output, Process>
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- Environment = \langle \text{State, Process} \rangle
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- **Agent** = `<State, Input, Output, Process>`
- **Environment** = `<State, Process>`

Note: supports hierarchical agents
Examples from Nature

- Ants: path planning
- Ants: brood sorting
- Termites: nest building
- Wasps: task differentiation
- Birds and Fish: flocking
- Wolves: surrounding prey
Principles

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• Simple agents (small, forgetful, local)
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- Provide an “entropy leak”
Class Discussion

Austin Broyles on being a swarm