TCNJ Mission

The College of New Jersey, founded ..., is primarily an undergraduate and residential college with targeted graduate programs. TCNJ's exceptional students, teacher-scholars, staff, alumni, and board members constitute a diverse community of learners, dedicated to free inquiry and open exchange, to excellence in teaching, creativity, scholarship, and citizenship, and to the transformative power of education in a highly competitive institution. The College prepares students to excel in their chosen fields and to create, preserve and transmit knowledge, arts and wisdom. Proud of its public service mandate to educate leaders of New Jersey and the nation, The College will be a national exemplar in the education of those who seek to sustain and advance the communities in which they live.

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Unit C2 Goals

- Discuss Multimodal Group Work C1
  – The most general winning strategy?
- Discuss examples of societies
  – Unusual communities/societies
- Explore the mechanism underlying all sorts of social activities (animal or human)
- Understand what to do with Exercise C2

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Take-Home Exercise C1

- Field work: Competition, cooperation, comparison
- Reading: Main points
- Connection: Field work and reading
- "The most general winning strategy"
- Connection to family values

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More Examples

- College courses/education
- Majority rule
- Child-parent relation

Things to consider
- Type/amount of rewards
- Starting points (initial conditions)
- Sharing: resources, procedure, fate, etc.
- Reputation, prestige, pride, self-esteem
- Emotions (what kind?)

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In a Slightly Different Way

- Egoism
- Altruism
- Egotruism

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Group Exercise 1

- The Irishmen in the area (say, 100 of them) like to go to the local pub when Irish music is played (Thursday evenings) only if the pub is not crowded (say, up to 60 people).

How could they predict the pub is not crowded?

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El Farol Problem

- Example attempts
  - Same as the last week
  - Average of the last four weeks
  - Trend in the last eight weeks
- If they can all predict, all of them would go and the pub will be crowded. False prediction
- There is no absolute way to predict the crowdedness of the pub.   Implications?

Where is This Community?

Social classes
- Within each colony, there is a strict division of labor. Some are warriors who defend their colony. The farmers collect leaves, and the domestic workers tend the mushroom beds and the young.

Job description
- Farmers collect leaves. Well-worn trails are made as they travel to and from their colony. They are selective about the leaves they collect, and will often travel a long distance to find a certain plant. In this way, they spread out their consumption so that trees do not become stripped.
- In special chambers, domestic workers process the leaves into a pulp, making a bed of fertilizer upon which mushrooms are grown. They carefully weed the mushroom bed, ensuring that only one kind of mushroom is grown, and they continually add additional leaves to enrich the crop.

Leaf Ants

- Extremely complex behavior involving social classes and responsibilities

Where is This Community?

- The entire community consists of the near-blind, due to some genetic condition.
- This community survived many years, even against the attacks of invaders.

Army Ants

- Successful for millions of years.
- How could they function?
  - E.g., how could they find food?

Travel Plan

- Drive from Trenton to Anchorage?

Group Exercise 2

A. How would a computer program find the shortest path between two points?
B. How would a colony of ants find the shortest path between the nest and the food source?

Swarm Intelligence

- Each ant is not very intelligent.
  - Cf. the guy in the Chinese room or neurons
- Their colonies exhibit complexity approaching that of intelligence.
  - Cf. the entire Chinese room or the brain
- The intelligence is in the colonies, possibly including the environment.
  - Cf. the shortest path recorded in the environment (not known by each ant)

cf. Mass Stupidity

Other Examples

- Animal societies
  - Microorganisms
  - Plants
  - Insects and other "lower" animals
  - Primates, canids, sea mammals, birds
- Human societies
  - Connectedness among people
  - Families and economics

Limitations of Game Theory

- Hypothesis: Many real-world phenomena are too complex for Game Theory.
  - Existence of unsolvable problems (e.g., El Farol)
  - Difficult to be applied to complex systems
  - Generally assumes complete rationality (cf. "bounded rationality")

Exercise C2

- Multimodal group work
  - Field work
  - Reading
  - Report (one submission per group)
  - Prepare to explain/discuss
- Must adjust your plan and the use of time to fit within your available time

Theme: The mechanism underlying all sorts of social activities (animal or human)

Unit Summary

- Discuss Multimodal Group Work C1
- Discuss examples of societies
- Explore the mechanism underlying all sorts of social activities (animal or human)
- Summary question
  - What is your feeling about the connection between you and the society (or groups) you belong to?