WEEK 5 – Feb 05 and Feb 06th 2014
Cultural transmission

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Bio 335 – Animal Behavior
Feb 05th 2014
Central question of animal behavior – Why do animals behave they do?

- **Proximate mechanisms**
- **Ultimate mechanisms**
  - Does it give them any advantage?
  - Natural selection works on variation present in the population
    - Each animal is different from the other
  - Natural selection can lead to changes in behavior across generations
  - Cultural transmission also can!
What is cultural transmission?

- System of information transfer across individuals that affects the behavior of individuals
- Some populations may have certain behaviors while others don't
Importance of cultural transmission

- Can be used to pass on information across generations
- Can occur faster than natural selection
How cultural transmission occurs

- Typically requires a model and an observer
- But not all interactions between model and observer constitute learning
  - Local enhancement
  - Social facilitation
  - Imitation
  - Copying
Local enhancement

Fish 1 goes to the location where fish 2 foraged
Social facilitation

- Hanging out with colleagues
- This facilitates learning
- Subtle difference from local enhancement
- Former involves some action on the part of the model
Social learning – Albert Bandura's bobo doll example
Imitation

- “Acquisition of a topographically novel response through observation of a demonstrator making that response” - Cecilia Heyes
Copying

- Can copy another's actions, although the action itself need not be novel
- May get some reward because of copying
Copying – example of guppy female mate choice

- Observer chose male guppy chosen by model female
Copying – example of defensive behavior in rats

Stable fly bites model mouse as observer mouse watches.

Model mouse hides in debris (bedding, shredded paper) as observer mouse watches.

Twenty-four hours later, when exposed to stable fly, observer mouse hides in debris.
Teaching – contentious, but shown in some cases

- “Teaching must provide immediate benefit for only students and not teacher”

- “Teacher must teach naive students and help them learn something faster than if they learned on their own” - Tim Caro and Marc Hauser
Different modes of cultural transmission

- Vertical, horizontal, oblique
Grant's finches – impact of cultural transmission on genetic transmission

- Song is culturally transmitted
- Females use song to pick conspecifics
- Females use song to avoid inbreeding
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  - Natural selection can lead to changes in behavior across generations
  - Cultural transmission also can at a much faster pace!
Project

• Goal – appreciate and understand animal behavior as a science
  - Can ask questions about any behavior
  - Preferably ask questions that are relevant to a natural behavior
  - Observe the behavior and describe it in detail
  - Quantifying behavior
  - Frame a question and hypothesis about the behavior – proximate/ultimate questions
  - Design experiments, predictions for results, interpretations