Communication: The phenomenon of one organism producing a signal that, when responded to by another organism, confers some advantage (or probability of it) to the signaler or its group

Issues:
- Intent (teleology)
- Conspecific requirement
- Response requirement

KINDS OF SIGNAL FUNCTION

1. Recognition
   a. Species
   b. Sex
   c. Class
   d. Individual

2. Group Spacing & Coordination

3. Reproduction
   a. Courtship
   b. Bond forming & maintenance
   c. Parent/off-spring

4. Agonistic & Social Status
   a. Aggressive
   b. Submissive

5. Alarm

6. Hunting for Food

7. Giving & Soliciting Care

8. Soliciting Play

9. Synchronizing Hatching

SIGNAL STRUCTURE

1. Sensory Modality

   Visual

   Acoustical

   Chemosensory

   Tactile

Galvanic

2. Environmental Constraints

3. Phylogenetic Constraints

4. Stereotypy

5. Ritualization

change in intensity

change in rate

change in rhythmic repetition

change in components from original behavior

change in orientation

emancipation

conspicuous structures

6. Discrete/Graded Signals

7. Composite (several sensory modalities) Signals

8. Redundancy (< ambiguity)

9. Alerting Components

10. Context-related

SIGNAL SOURCE

Maintenance Behavior (e.g., preening)

Autonomic Responses

Intention Movements

Displacement Behavior

Re-directed Behavior

SIGNAL USE

I. SHARING INFORMATION

Honest Signaling
Non-Fakeable

Stable Social Groups
- Kin
- Reciprocal Altruism

Metacommunication

II. MANIPULATION

Dishonest Signaling

Assessment (recipient) & Devaluation

Mimicry

- Batesian

- Mullerian

- Aggressive

		Change in Recipient's Fitness >	Change in Recipient's Fitness <
Change in Signaler's Fitness	>	**MUTUALITY**	**DECEIT**
	<	**EAVESDROPPING**	**SPITE**

Evolution of Behavior

Will never really know, can only infer
What is inference based on?
- Comparative approach of living species
- Evidence from fossils (functional morphology)

Rules:
1. Occum's razor - simple explanations are better than complex; example: two closely related species share a common trait because:
   - A. independently evolved by both spp
   - B. inherited from a common ancestor
2. Shared traits of related species are conservative
3. Differing traits of related species are recent
4. Simple 6 complex rather than the opposite

Some terms
- Generalized/Specialized
- Primitive/Advanced

Factors maintaining behavioral traits (conservative)
- Phylogenetic inertia
- Lack of a preadaption
- Stable ancestral niche

Factors encouraging behavioral change
- Courtship function (species recognition)
- Important to interspecific competition
- Occurrence of an unoccupied niche
- Intense predator/prey interaction