



## In Brief

What an animal does and how he does it

- **Ultimate causation**
  - evolutionary reason for the existence of a behavior
- **Proximate causation**
  - immediate cause or mechanism underlying a behavior
- **Genetic**
  - innate (nature)
  - environmental-learned (nurture)



## Ethology

The study of animal behavior

- **Fixed-action pattern**
  - (instinct) triggered by an external sign stimulus
  - *Example:* feeding behavior in birds-begging of hatchling, triggered by parent landing in nest
- **Psychologists investigating animal behavior**
  - Lorenz
  - Tinbergen
  - von Frish



# Learning

Modification of behavior by experience

- **Learning vs. maturation**
  - behaviors improve due to development of neuromuscular systems
- **Habituation**
  - learning to ignore irrelevant stimuli
- **Imprinting**
  - limited to a specific time period in animal's life, irreversible
- **Associative learning**
  - classical conditioning
  - operant conditioning

Learning the Hard Way: **Operant conditioning**

If he had only listened to his father's wise council...



Vervet monkeys learn correct use of alarm calls



Raven problem solving



# Animal Cognition

Ability to perceive, store, process and use information

- **Cognitive maps**
  - internal representations of the spatial relationships among objects in the animal's environment (kinesis and taxis)
- **Migration**
  - regular movements over long distances. Uses: *piloting*, *orientation* and/or *navigation*

Chimps making tools



## Social Behaviors

- **Agonistic behavior**
  - contest of threatening and submissive behavior that determines which competitor gains access to a resource
- Dominance hierarchies
- Territoriality
- Mating behaviors

Ritual wrestling by rattlesnakes



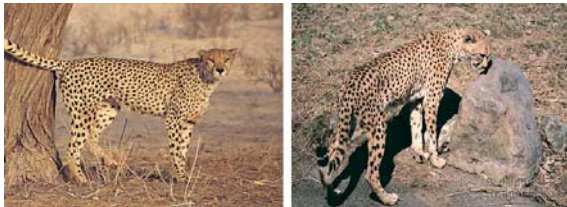
Territoriality: mountain goats and stallions



Play behavior: Cheetahs and polar bears



Staking out territory with chemical markers



## Societies

- Group of interacting and cooperating members within a population
  - Communication is the key
    - Sets us apart from wild animals (there are exceptions)
  - Inclusive fitness and altruism
- Types
    - Clutch
    - Flock
    - Herd
    - Hive
    - Pack
    - Pride
    - School

Altruistic behavior in the Belding ground squirrel/ Prairie Dog

