CPT 4.2: Animal Behaviour

Topic: Introduction to animal behaviour

Ms. KAVERI K.R
DOSR IN ZOOLOGY
TUMKUR UNIVERSITY

What is behaviour?

- What is animal does, how it acts.
- A behaviour is an action / series of actions performed by an animal in response to a stimulus .
- A stimulus might be something in the environment such as sound, a smell, a colour or another individual.
- The stimulus can be related to internal state of the animal, such as being hungry or cold.
- **Ethology:** The study of animal behaviour with special aspect to the natural environment and physiological, evolutionary aspects.
- **"St. Hillarie"** choose the term Ethnology in late 18^{th} century refer to study of animal as living beings in their natural environment.
- **Language:** Human using communicate with each other by using structural language.

- **Animal behaviour** includes all the ways animals interact with other organisms and the physical environment.
- Behaviour can also be defined as a change in the activity of an organism in response to a **stimulus**, an external or internal cue or combo of cues.
- Some behaviours are **innate**, or genetically hardwired, while others are **learned**, or developed through experience. In many cases, behaviours have both an innate component and a learned component.
- Behaviour is shaped by natural selection. Many behaviors directly increase an organism's fitness, that is, they help it survive and reproduce.

TYPES OF BEHAVIOUR

Innate

- Inherited, "instinctive”
- Automatic & consistent.

Learned

- Ability to learn inherited, but the behaviour develops during animal life time.
- Variable and flexible.

Changes with experience and environment.

CATEGORIES OF BEHAVIOUR

1. Communications and releases
2. Motivation and drive
3. Bio rhythm
   Circadian rhythm and Cercannul rhythm
4. Instinct
   Learning → a)Non associate and b)Associate c)Latent learning
5. Insight learning (Reasoning)
6. Cognition
7. Genetics and Evolution of behaviour
8. Agnostics behaviour
9. Reproduction and Parental care
10. Social behaviour→ a)Altruism b)Territorial & c) dominancy hierarchy

Communication and releasers

- All sensory channel have been used by one species or another in communication – odour, touch, and sight.
- The behaviour pattern an animal first recognize is a sign stimulus or releaser such as sound, colour, appropriate structure, odour or movement which is given by another animal or some object.

Motivation and drive

- It is a matter of common observation that an animal does not respond to a stimulus in the same way every time that stimulus is encountered .
- A drive or specific motivation can be defined as an urge to perform a particular activity .
- Animal exhibit a variety of drives, such as hunger drive, thirst drive, courtship drive, mating drive, migratory drive and so on.

Biorhythms

- Any Cyclic pattern of activity in an organism .
- Most animals display a day-night rhythm/ **circadian rhythm.**
- Many of their behaviour patterns occur only at certain times of day.(24 hours cycle)
- Some animals also have an annual rhythm called **circannual rhythm.**
- Ex- migration of birds

Instinct and Learning

- The invariable and predictable nature of stereotyped behaviour suggest that it is inherited/innate/ instinctive bahaviour.
- Ex:-spider web spinning behaviour.

Bird building nest behaviour

Caterpillar making cocoon.

Dolphin leaping (jump)from water.

LEARNED BEHAVIOUR

- **Associate learning**

-Learning to associate a stimulus with a consequences.

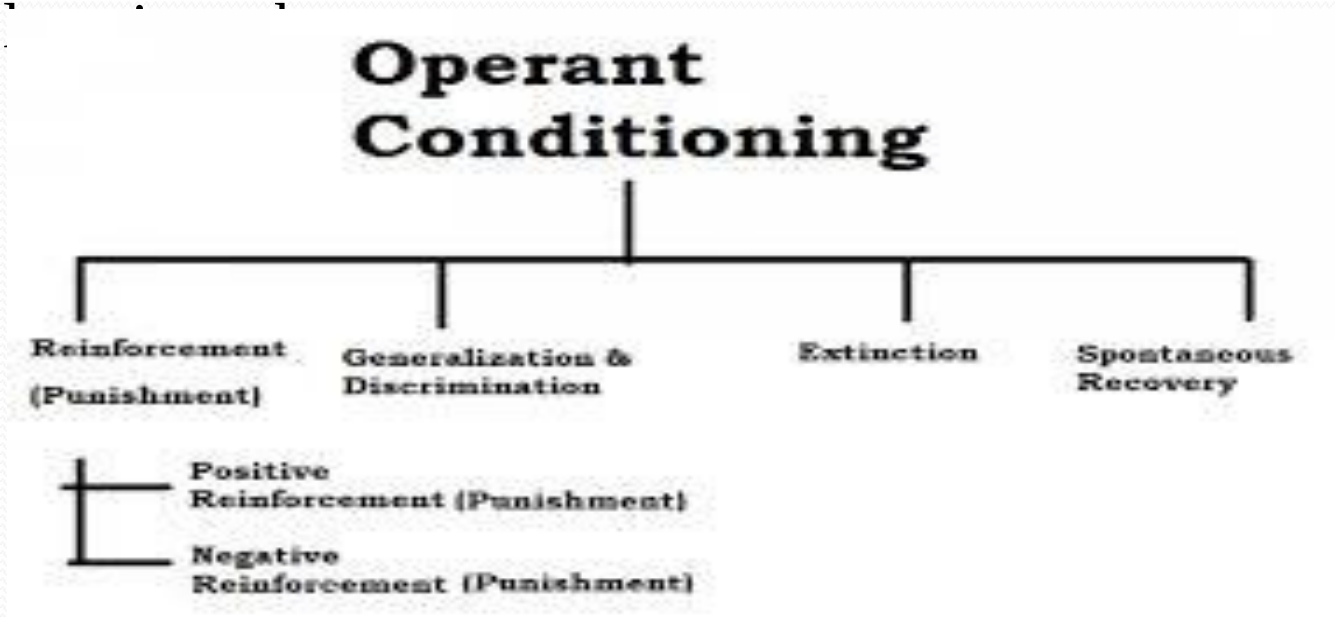
- **Operant conditioning**

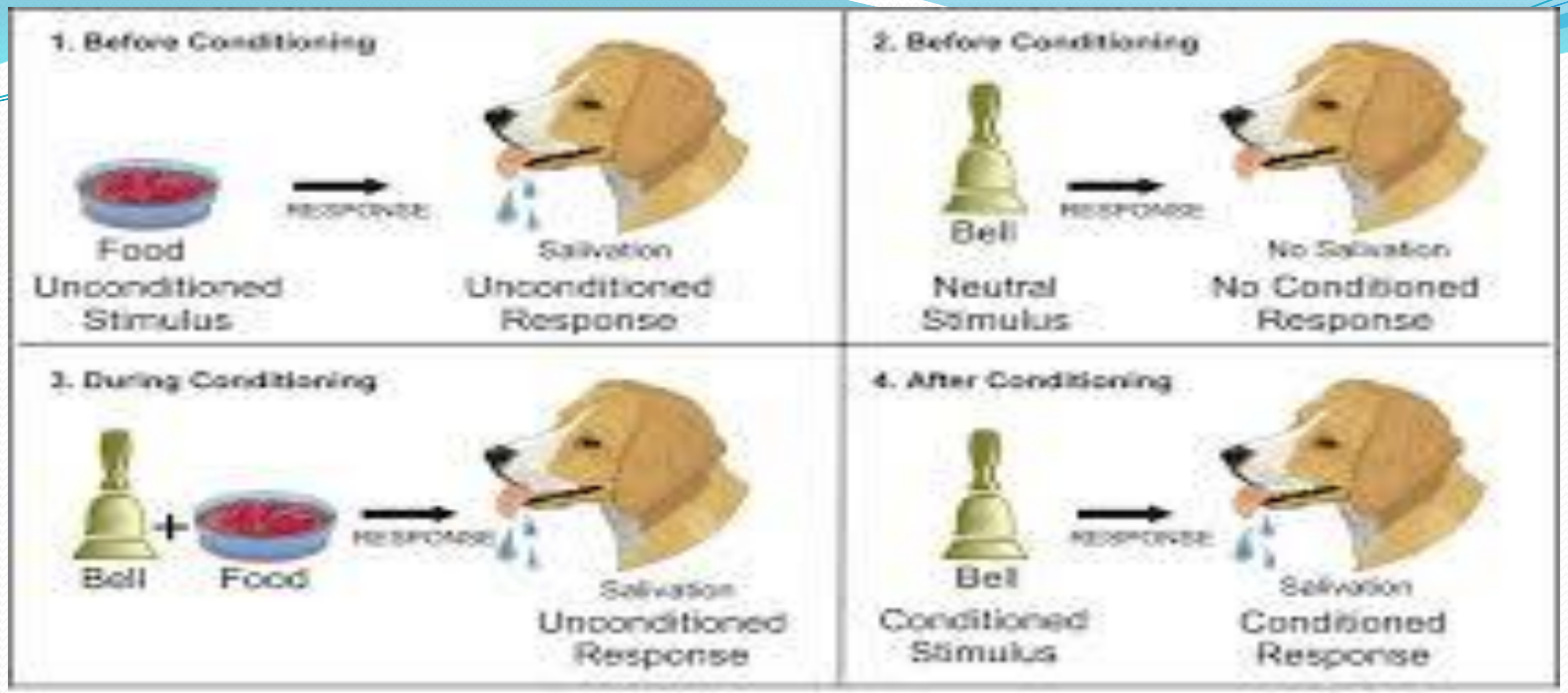
-Trial and error learning

-American Psychologist **B.F Skinner** And **E.L Thorndike**

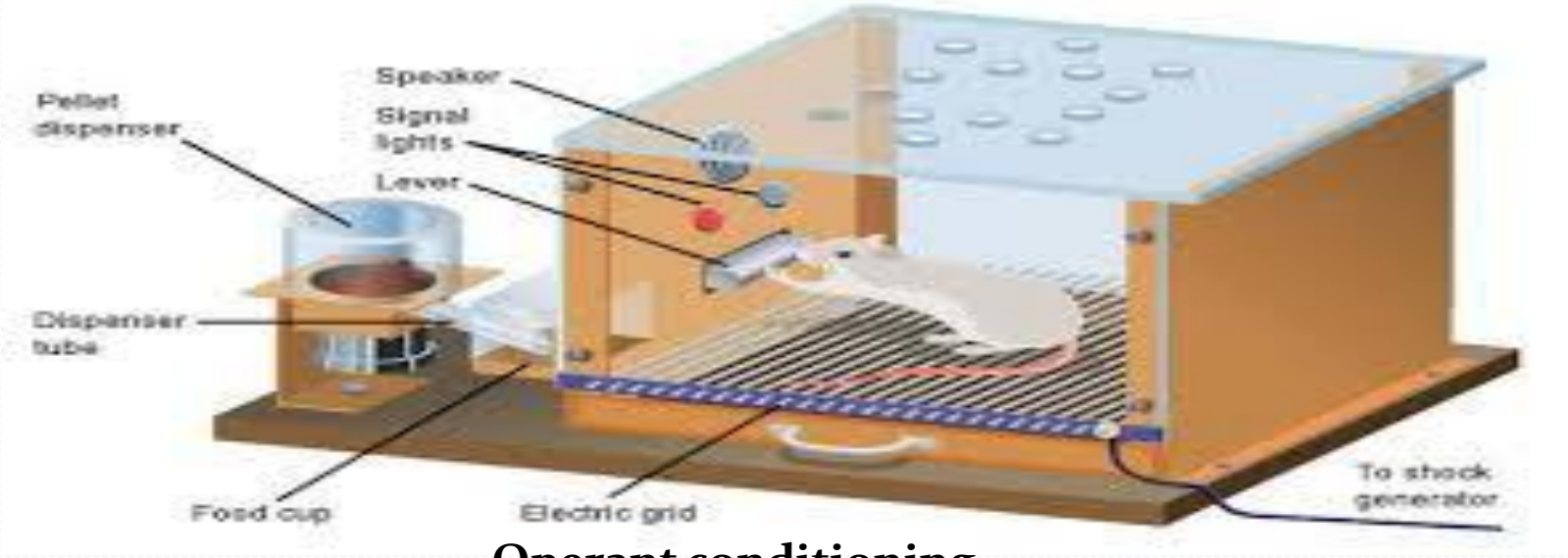
-Associate behaviour with reward or punishment.

Ex:





Classical Conditioning



Operant conditioning

Classical conditioning

- It was first proposed by Russian physiologist and Pioneer learning theorist **Ivon Pavlov.**
- Pavlovian conditioning or Classical conditioning

Non-associate learning (Unlearned)

A. Imprinting

- It is restricted learning which takes place early in life of an animal and is not subsequently modified.

-Follow their mother.

Ex: many newly hatched birds(goslings)

B. Habituation

- It is a simple form of learning found in all animal species.
- It is consists of learning not to respond to a certain stimulus as a result of repeated presentation of that stimulus.

  Ex: rustling leaves are worth reaction(hiding)because they sometimes indicate the approach of predator. However repeated rustling without the appearance of any predators likely caused by the wind. Animal ceases to respond to the rustling.

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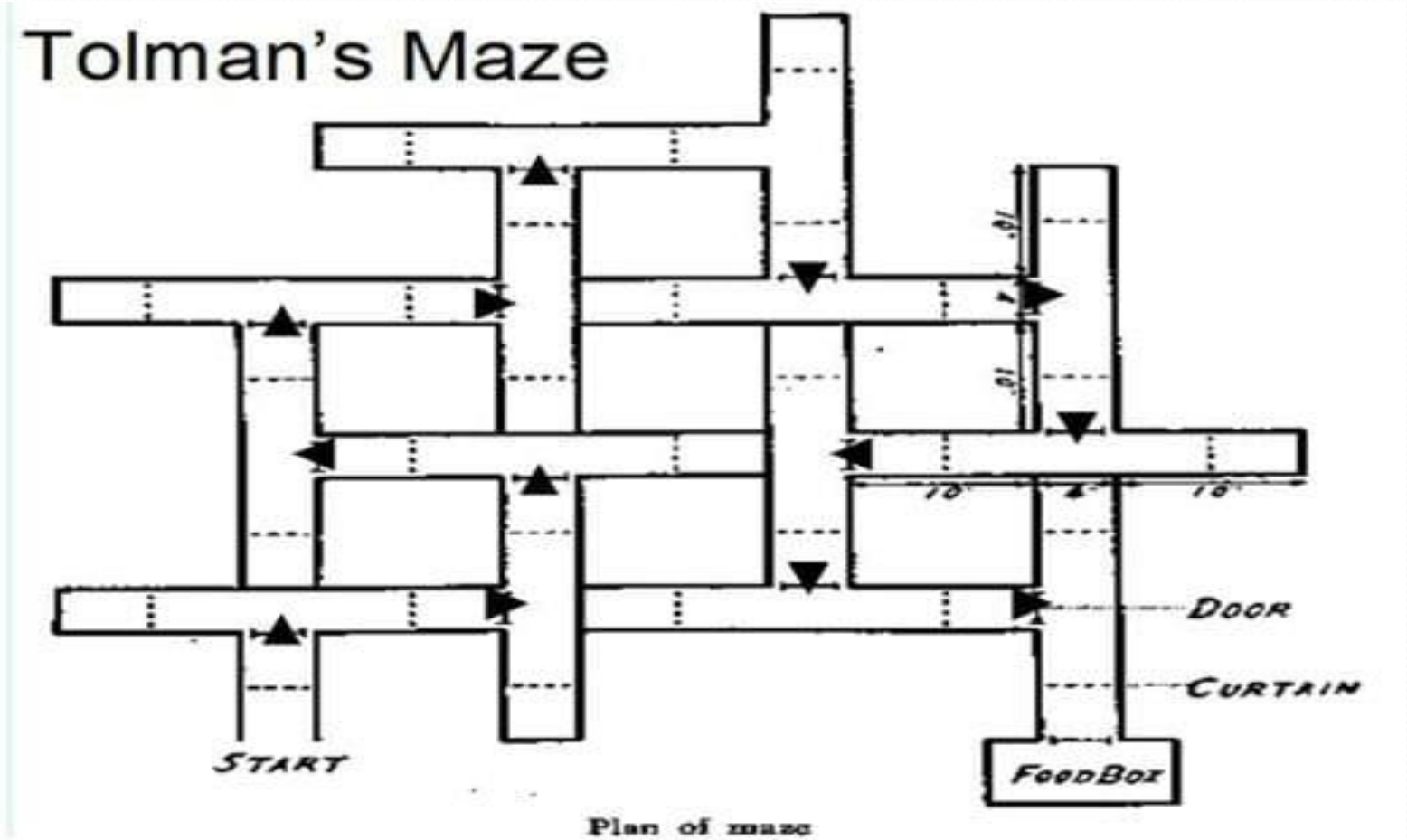
Insight learning(reasoning)

- It is the most advanced form of learning.
- Responses produced by insight are those resulting from a rapid appreciation of relationships in which animals solve problems too quickly to have gone through a trial-and error processes.
- The animal seems to arrive at a solution by reasoning.
- Reasoning can be defined as the ability to combine spontaneously two or more separate /isolated experiences to form a new experiences, which is effective for obtaing a desired end

Cognition

- Cognition means mental function , including perception, thinking and memory.
- Study of the minds of organisms.
- Cognition ethology has adopted a persceptive that the mental experiences and consciousness that characterize nonhuman animals can be explained by examining the impact of evolution on cognitive processes .
- Ex:**Tolman and Honzik's** (1930) experiment with rats.3 groups of rats were tested in a maze.
- Maze is a network of pathways and blind alleys between a starting point and a goal.
- Animals in a coventionally reward group received food when they successfully completed the maze.
- No reward rats were allowed to wander in the maze at will but were never presented with food in the goal box.
- A third , delayed reward group received no food reward for the first ten days of the experiment but was given food on successful completion of the maze on the eleventh and subsequent days.

Tolman's Maze



Plan of maze

Genetic and evolution of behaviour

- Behaviour like other traits of organisms, found to be coded by the genes in the breeding experiment.(genetic basis)
- Behaviour is subjected to evolutionary change and adaptive.

Agnostic behaviour(aggression)

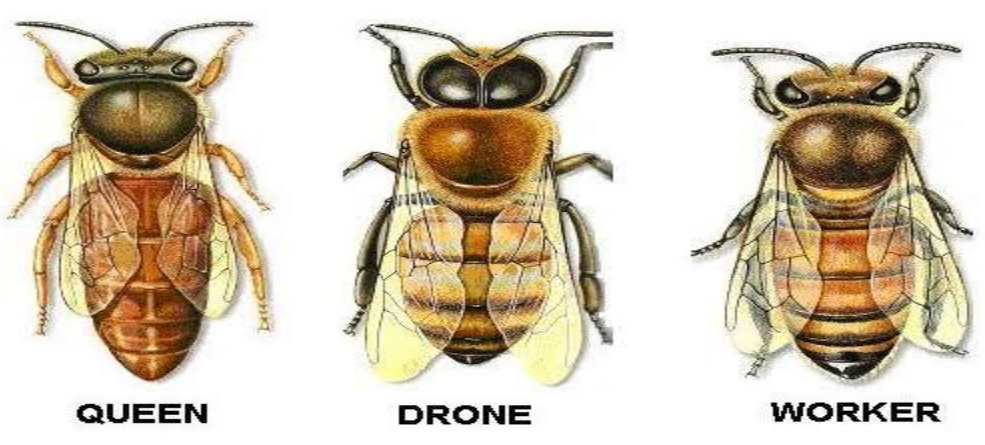
- Attacking, threat, submissive and fleeing behaviour form a complex often referred as agnostic behaviour.
- It is represents with the member of their own species resolve conflicts for food, mate and other limited resources.
- Combats tend to be ritualized and end with the dominance of one individual and submission of another.

Reproductive behaviour and parental care

- Behaviour is reproductive success and maximizes an individuals genetic contribution for succeeding generations.since there is fixed amount of energy available for gametes production and eggs contain more Energy reserves than sperm, female produces fewer eggs than male produces sperm.
- Parental care of the young increases the probibility of their survival but reduces the number of young produced.

parental care

- **Social behaviour**
- Any kind of interaction resulting from the response of one animal to another of the same species represents social behaviour.
- A social groups aggregates of the individuals of the same species that come together because of mutual **advantages** such as reduction in predation / increase in foraging efficiency. Disadvantages of social group formation are increased competition within the group and grater risk disease.



i)Alturism- it is a selfless or self-sacrifice behaviour.

Transfer of some benefits from the alturist to recipient, at the cost of the alturist.

Ex: parental care (parent sacrifice their own interests to preserve their offspring.)

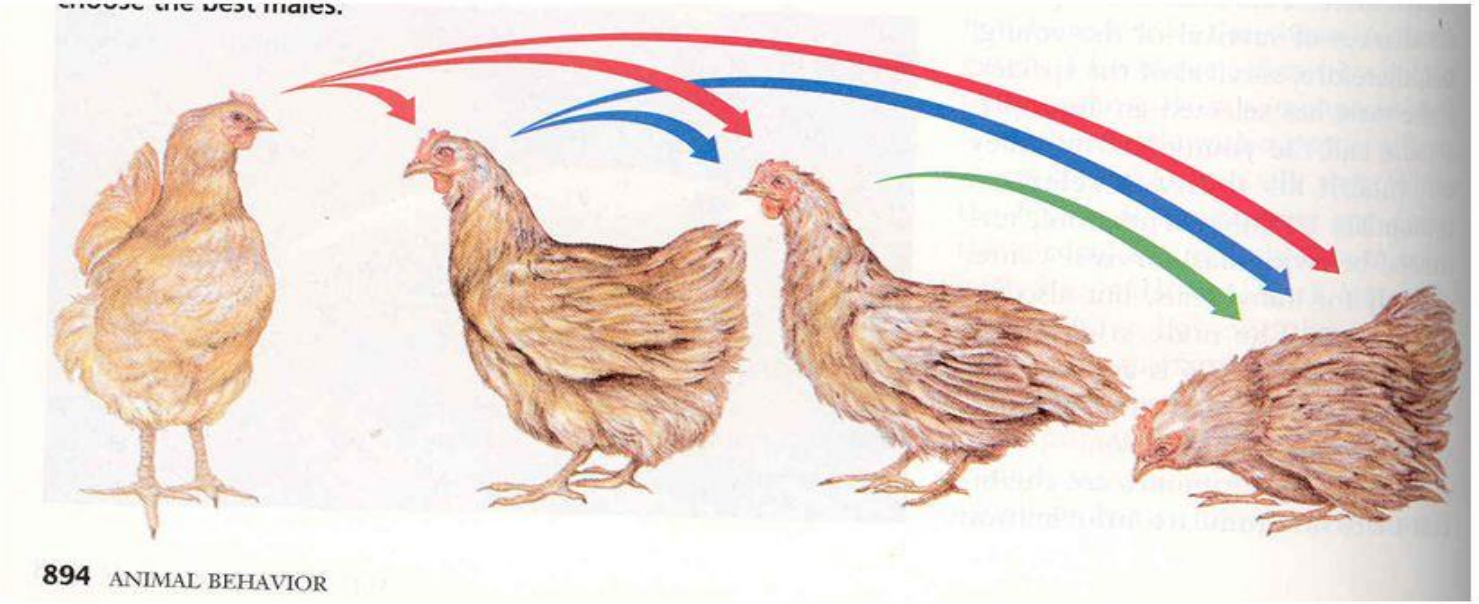
Social insects such as termites, ants, bees and wasps.

ii)Territorial behaviour and dominance hierarchy:

- In territorial behaviour , an animal defend a specific area, territory against others of the same species.
- Territorial behaviour is commonly found in animals when the habitat is fairly uniform, reproductive and stable and population is small in relation to resources.
- Social or dominance hierarchy form of social organisation there is a rank order of individuals with a most dominant(alpha), individual at the top of the rank order and other individuals increasingly subordinate those above them in rank order.
- a hierarchy often develops when food or other resources become limited or when animals are crowded.

Dominance Hierarchies

- Aggressive behavior in animals leads to dominant and submissive animals.
- This an innate behavior



894 ANIMAL BEHAVIOR

Territorial behaviour