



THAPAR INSTITUTE  
OF ENGINEERING & TECHNOLOGY  
(Deemed to be University)

# Learning

# DEFINITION

"Learning is when you learn something."

Learning is any **relatively permanent** change in behavior brought about by experience or practice.

**Relatively permanent** means that when people learn anything, some part of their brain is physically changed to record what they have learned.

This is actually process of memory, for without the ability to remember what happens, people cannot learn anything. Research suggests strongly that once people learn something, it is always present somewhere in memory, They may be unable to "get" to it but it's there.

# Association

Linking two events or stimuli that occur together in space or time. Early theories of learning were based on principles of association.

- Classical Conditioning
- Operant Conditioning

# Classical Conditioning

- Ivan Pavlov
  - Learning that results from pairing two events in the environment.
  - Learn to associate a neutral event with another event or stimulus from the environment.

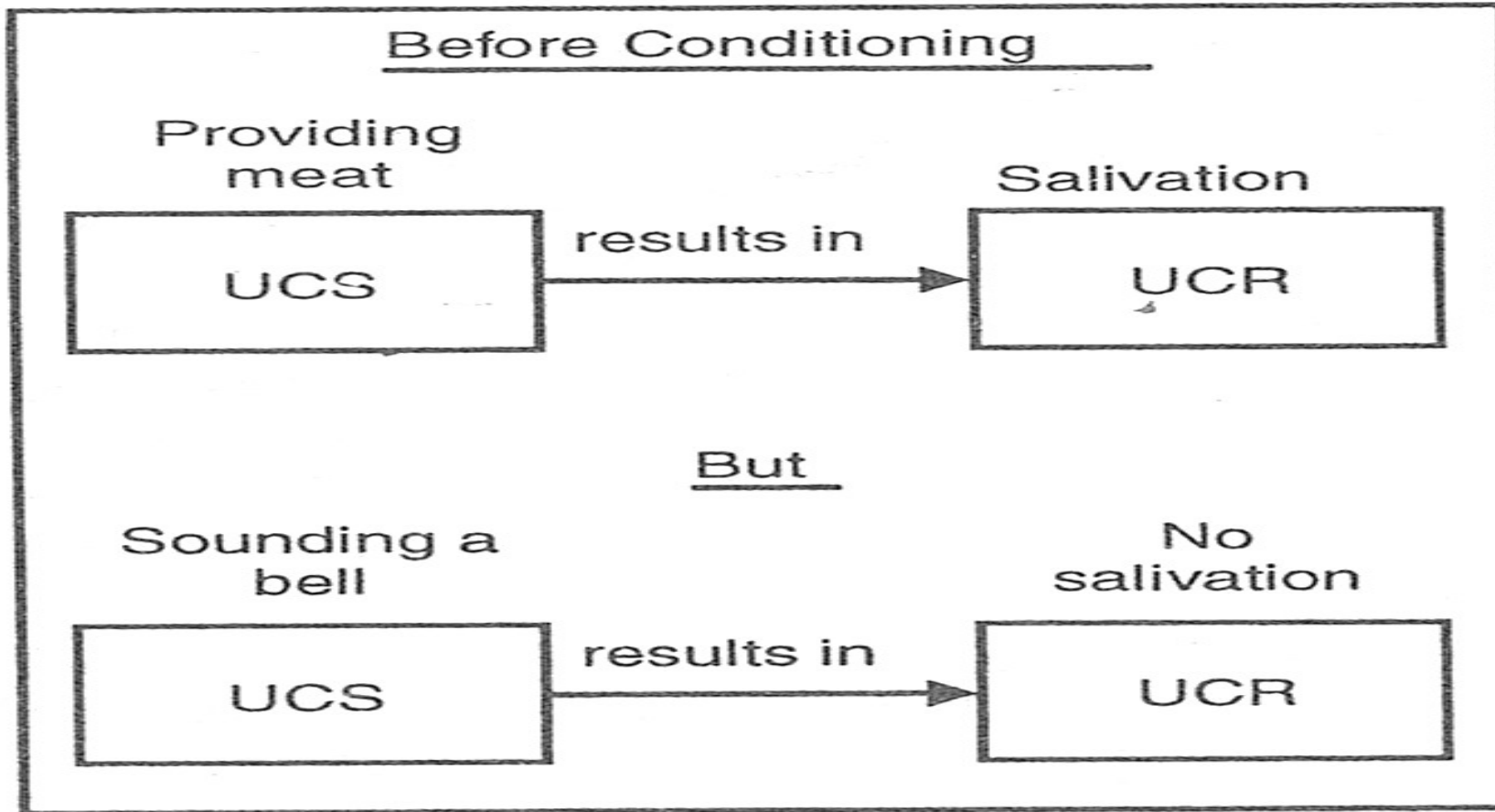
Cont...

- **Elements of Classical Conditioning** : Neutral Stimulus : Stimulus that has no effect on the desired response.
- **Unconditional stimulus (UCS)** that causes the dog to react in a specific way.
- **Unconditional response (UCR)** noticeable increase in salivation.
- Here bell was an artificial stimulus.

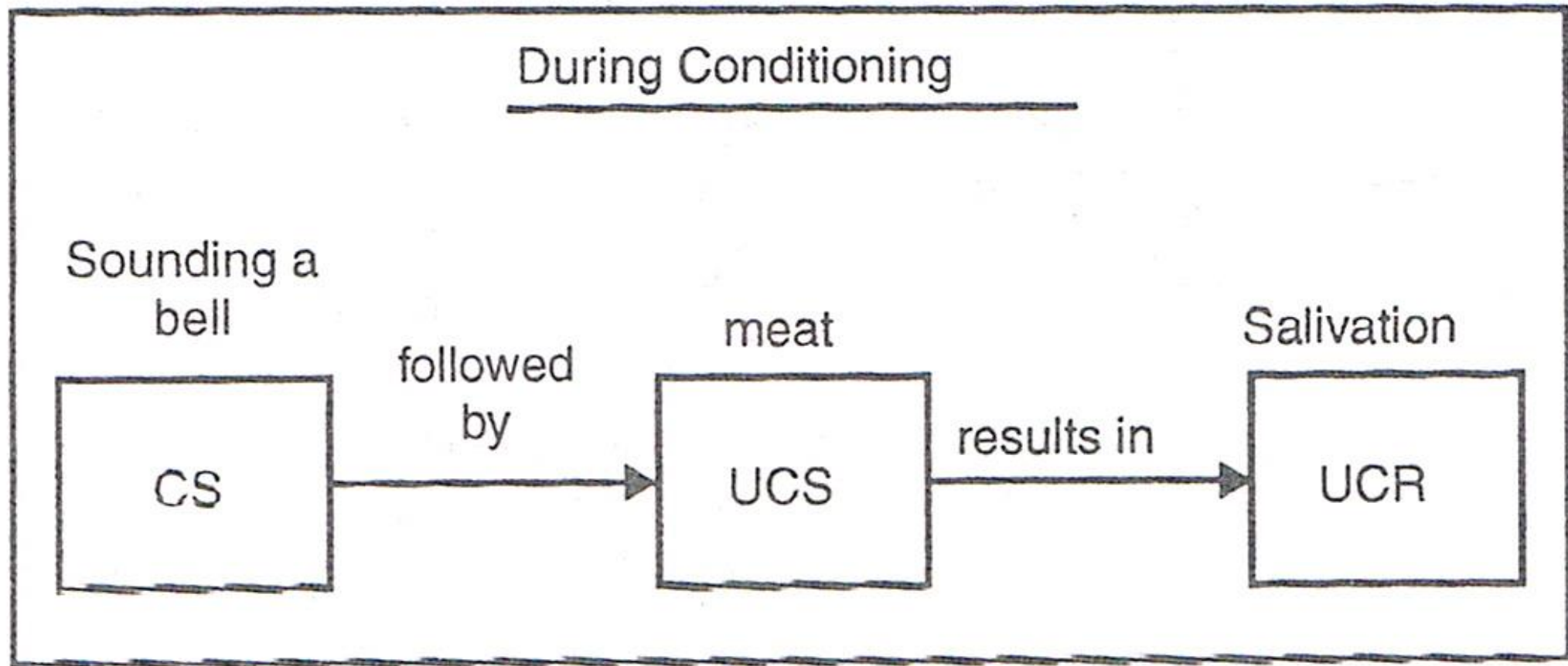
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- **Conditioned Stimulus (CS)** : Stimulus that is able to produce a learned reflex response by being paired with the original unconditional stimulus. (ringing of bell and salivation)
- **Conditioned Response (CR)** : Learned reflex response to conditioned stimulus.

# Before Conditioning

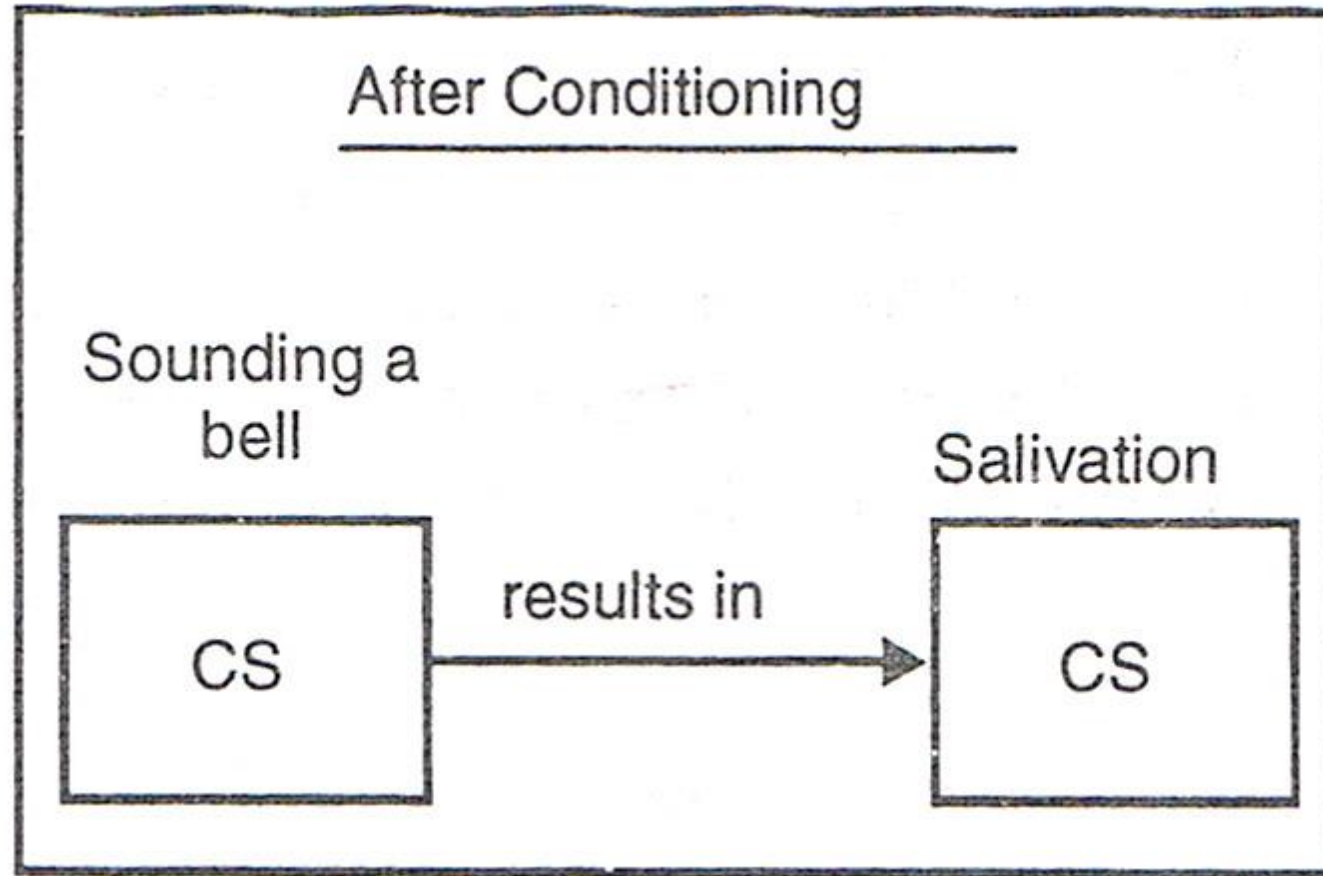


# During Conditioning

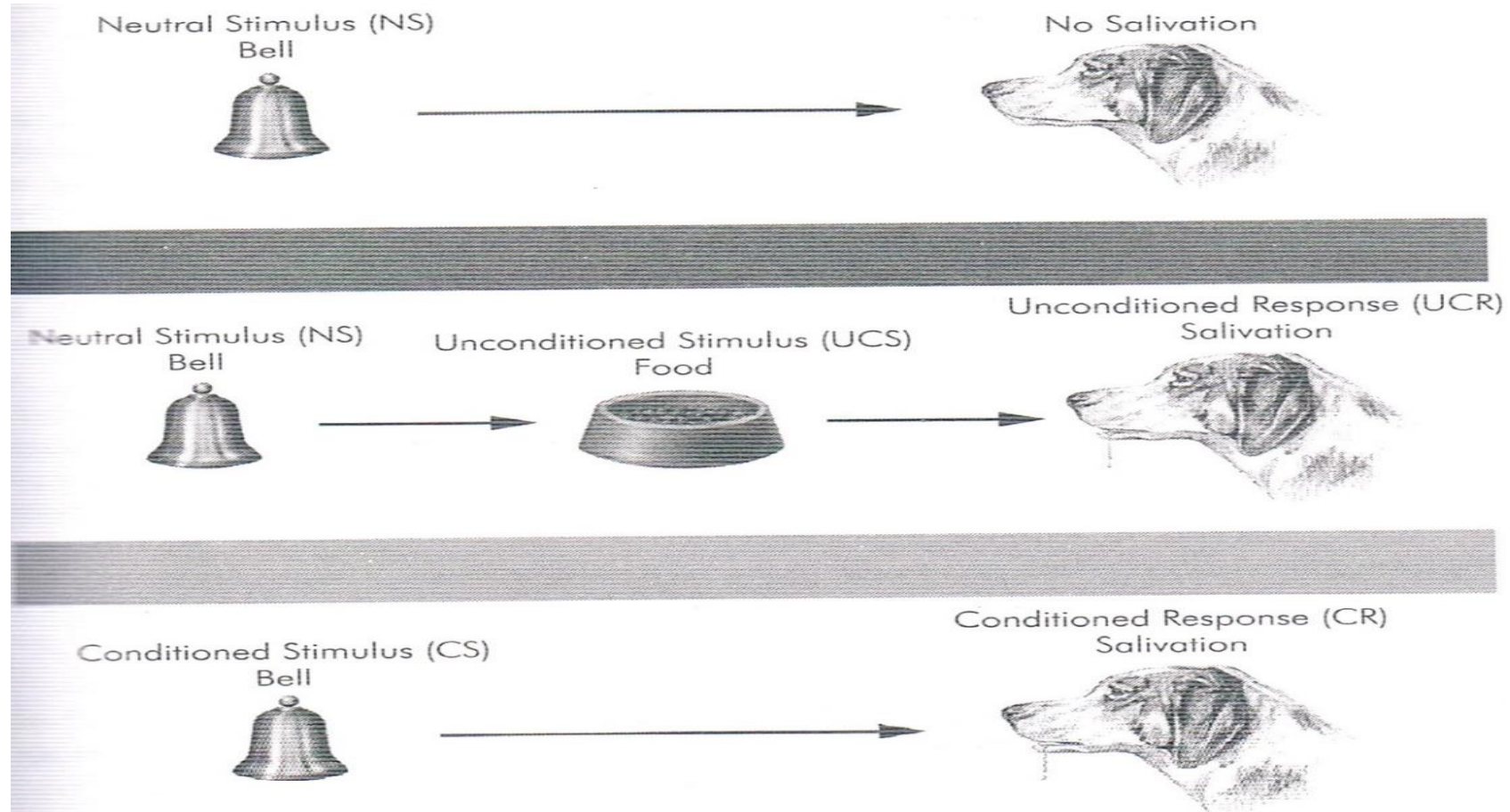




# After Conditioning



# Conditioning Process



# Cont...

- Pavlov spent the rest of his career studying what eventually he termed classical conditioning, learning to make a reflex response to a stimulus other than the original, natural stimulus that normally produces it.

## Operant Conditioning/ Instrumental learning

- **B.F. Skinner:**

Learning that relies on associating behavior with its results or consequences.

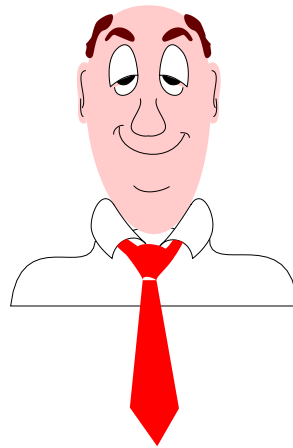
Defined as “operant” – animal is operating on environment – not passive like CC (classical conditioning).

Highlights importance of reinforcement & punishment in learning.

Cont...

- Operant Conditioning

The response is made first,  
then reinforcement follows.



# Cont...

- Operant Conditioning also referred to as instrumental conditioning – organism learns to engage in certain behavior because that leads to **reward or prevents a punishment**.
- In Operant Conditioning organisms engage in operant behavior that result in desirable consequences.

# Operant Conditioning

## Procedure

- a. **Shaping**:

Conditioning procedure that uses reinforcers to guide behavior closer to desired behavior.

- successive approximations

- b. **Reinforcer**:

Anything that increases the frequency of the preceding response or strengthens behavior.

# Reinforcement Schedules

Exhibit 2-3 Schedules of Reinforcement			
Reinforcement Schedule	Nature of Reinforcement	Effect on Behavior	Example
Continuous	Reward given after each desired behavior	Fast learning of new behavior but rapid extinction	Compliments
Fixed-interval	Reward given at fixed time intervals	Average and irregular performance with rapid extinction	Weekly paychecks
Variable-interval	Reward given at variable time intervals	Moderately high and stable performance with slow extinction	Pop quizzes
Fixed ratio	Reward given at fixed amounts of output	High and stable performance attained quickly but also with rapid extinction	Piece-rate pay
Variable-ratio	Reward given at variable amounts of output	Very high performance with slow extinction	Commissioned sales



# Methods of shaping behavior

- Shaping Behaviour: systematically reinforcing each successive step that moves an individual closer to the desired response.
  - i. **Positive reinforcers:** strengthens response by presenting stimulus after response.
  - ii. **Negative reinforcers:** strengthens response by removing an avoidance stimulus after a response.
  - iii. **Punishment:** strengthens response by presenting negative stimulus after a response.

# Social Learning

- The view that people learn through observation and direct experience.
- **Bandura's 4 Principle's Of Social Learning**
- From his research Bandura formulated four principles of social learning.

## **Attention**

- We cannot learn if we are not focused on the task. If we see something as being novel or different in some way, we are more likely to make it the focus of their attention. Social contexts help to reinforce these perceptions.

Cont...

## **2. Retention**

We learn by internalizing information in our memories. We recall that information later when we are required to respond to a situation that is similar the situation within which we first learned the information.

### **3. Reproduction**

We reproduce previously learned information (behavior, skills, knowledge) when required. However, practice through mental and physical rehearsal often improves our responses.

### **4. Reinforcement/Motivation**

We need to be motivated to do anything. Often that motivation originates from our observation of someone else being rewarded or punished for something they have done or said. This usually motivates us later to do, or avoid doing, the same thing.