

Memory: Models

- I. INTRODUCTION
- A. Active and Passive Aspects of Memory
- Much of perception was automatic, meaning that it goes on with little effort on our part to control or direct it.
 - The same is not true for memory.
 - Memory process sometimes are **automatic** and we are not aware of how or why we remember things; they just pop into our heads.
 - Other times memory seems an **effortful** process and we are quite conscious of trying to remember
 - What explains the differences between memories that automatic and effortful memory?

I. INTRODUCTION

B. Container Theory

- **People’s everyday metaphor of memory is a “Container”**

Memories at the top of the container are easily retrieved, those at the bottom are retrieved with more difficulty. The more relevant, important, or significant memories are closer to the top.

Memories themselves are thought to be AV recordings of events, actions, or objects

- I. INTRODUCTION
- C. Problems with the Container Theory
- Container metaphor of memory is problematic for four reasons:
 - **Role of familiarity:** Is a familiar item well remembered?
 - Which way is Lincoln facing on a penny?
 - He is facing right
 - What is written on the left of Lincoln?
 - Liberty
 - What is written on top of Lincoln’s head?
 - In God We Trust
 - **Flashbulb memory:** Clear memory for a single monumental often emotionally-significant event:
 - JFK shooting, Challenger accident, 9/11

I. INTRODUCTION

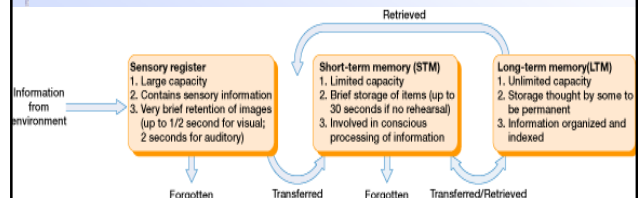
A. Active and Passive Aspects of Memory

- **Reconstructive Memory:** Memory is really a reconstruction of events and not a re-experience of the events themselves
 - Remember the first time you went swimming
- **Confabulation:** A belief that you remember something when it never really happened (or the confusion of an event that happened to someone else with one that happened to you).
 - Confusion between merely thinking about and actually saying something to someone.

II. MODEL OF MEMORY

A. Storage Model

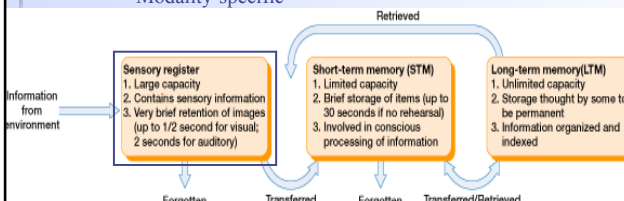
- The popular “storage” metaphor likens memory to information flowing to storage spaces.
 - Sensory, Short-term, and Long-term
 - Such a model can better account for the data.



II. MODEL OF MEMORY

A. Storage Model

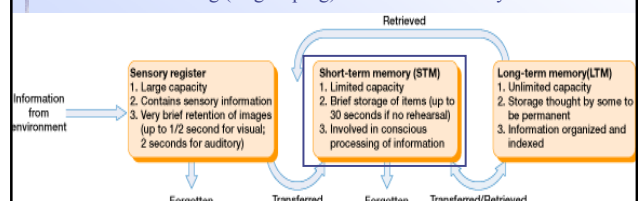
- 1. **Sensory Memory** is a very short-term (1 second) but large capacity memory buffer.
 - Visual afterimage after closing eyes or a echo in your ear after hearing something
 - Pre-categorical – you can not analyze it.
 - Modality-specific



II. MODEL OF MEMORY

A. Storage Model

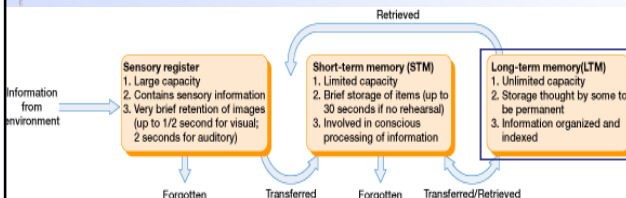
- 2. **Short-term Memory** is a longer (1 minute) but limited capacity (7 units) memory buffer.
 - STM is where information is attended to and consciously processed (working memory).
 - Rehearsal strategies keep information activated
 - Chunking (or grouping) can reduce memory load.



II. MODEL OF MEMORY

A. Storage Model

- **Long-term Memory** is a very long (life times) and large capacity (unlimited) memory buffer.
 - Octogenarians remember foreign language grammars learned 70 years previously.
 - Information in LTM is well rehearsed: Maintenance (rote memorization) vs. elaborative (knowledge associated)



II. MODEL OF MEMORY

A. Storage Model

- The three memory systems are summarized :

Table 3.1 The Three Memory Systems of the Storage Model

System	Type of Information Stored	Amount of Information Stored	Retention Interval	Example
Sensory Memory	Visual and auditory	Unlimited	Very brief	The image of the "leafy" number 5 you see when you look away from it
Short-term Memory	Verbal and visual	Limited	Very brief	7-9 items of verbal or visual information
Long-term Memory	Verbal and visual	Unlimited	Very long	The number 5 you see when you look away from it

II. MODEL OF MEMORY

B. Other Models

- The storage metaphor is not true to the biological view of the mind.
- The PDP memory model is more consistent with the neural basis of memory.
 - In this model, there are no storage structures because information is encoded across many different elements (neurons, silicon chips).
 - A new memory involves forming new connections between activated neurons.
 - This idea of the simultaneous processing of many different elements gives the model its name: **Parallel Distributed Processing**