Perception

Depth Perception:

1. **Monocular Depth Cues: MDC**

There are 7 major MDC:

i- *Relative size of different objects*: (things look smaller when far)
ii- *Shadow:* as with sign writing, to give depth of characters
iii- *Superposition:* close object will cover portions of the background
iv- *Motion parallax:* different parts of backgrounds seen when we move from side to side around an obstacle
v- *Height in plane*: distance objects appear higher up in the plane in a picture
vi- *Gradient colour*: close objects appear clear, sharp colours but distant objects appear grayer and washed out
vii- *Gradient of texture*: distance objects have more vague details.

2. **Binocular Depth Cues: BDC**

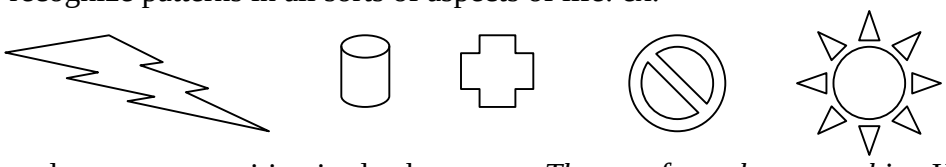
There are 3 major BDC:

i- *Binocular disparity*: Objects at different distances produce different amount of disparity. Point at a distant object and then as you close one eye the object jumps.
ii- *Ocular dominance*: When we look at any object, one eye is leading the vision and creating dominance of fixation.
iii- *Convergence*: Focusing on near objects to give an indication of depth

Recognition

Pattern recognition is how we identify complex arrangements of stimuli. Reading is a pattern recognition process developed over the years through build up of learning skills.

We recognize patterns in all sorts of aspects of life: ex.

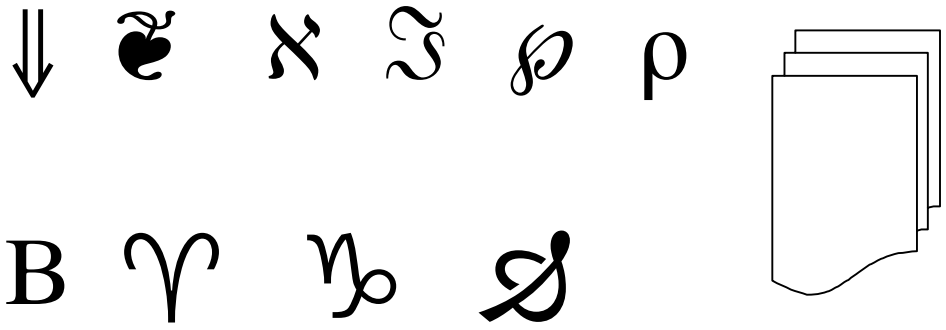


General pattern recognition is also known as: *Theory of template- matching* Holds internalized "templates" stored in our memory for any given pattern or shape. When we read handwriting for example, we are using our store of pattern recognition to identify the words written e.g.

There was once *a* crocked ❍♋■ **who** lived in *crocked*

house

*Prototype theory: A*nother Pattern recognition theory that involves comparing patterns with mental representations, but this time with prototype instead of templates. i.e. not looking for an exact match but accepting something that resembles the prototype.



Perception does not just consist of the eyes and the optic equipment (Gibson 1979), but includes the head and body too. Movement and action are fundamental to and inseparable from perception itself. For example: if you think you see some one you know on the other side of the road, you move your head and adopt a different action to perceive the person from different angle. We cannot study perception in isolation, we need to interact the whole process between the individual event and that of the environment of the perception.

Changes in the optic array, gives important information about what type of movement is taking place, this can be one of the four stages:

1. If there is a flow in optic array, this means the perceiver is moving; if there is no such flow then the perceiver is static.
2. The flow of the optic array will appear either to be coming out from the particular point, or moving towards it. The focus or center of the movement indicates the direction in which the perceiver is moving.
3. If the flow of optic array seems to be coming out from that particular point i.e. outflow, that means the perceiver seems to be moving towards a point. But if the flow seems to be moving towards a point (inflow), then the perceiver is moving away.
4. If the focal point of the flow stays in the same place, that means that the perceiver is continuing to move in the same direction. If the center of the flow shifts, so that it seems to be coming from another place, that means that the perceiver has turned and changed direction.

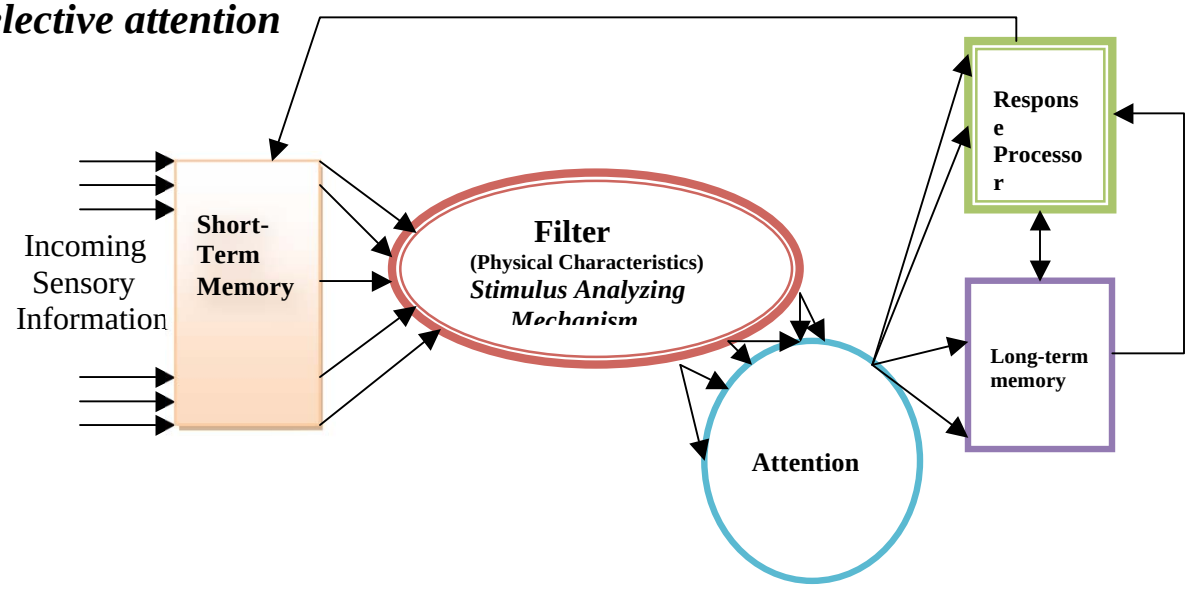
Attention

As a rule, we can only pay attention to one thing at any one time. We can only pay attention to more than one object, if the other object(s) become familiar i.e. "habitual" Radar operators scan their screen for incoming signals and can distinguish from the random "noise" the signals that are relevant and ignore others. Whilst training allows this ability, mistakes can still happen as sustained attention becomes more relevant. However there are some factors that were established as reasons for reduced performance. These influencing factors are defined as:

1. *Task factors*
2. *Individual factors*
3. *Situational factors*

Influencing factors	***Performance decrement reduced by***
Task factors	
a- Signal intensity	Brighter signals
b- Signal duration	Longer signals
c- Spatial probability	Signal near center of display
Individual factors	
a- Feedback on performance	Any feedback; true or false
b- Stimulant drugs(amphetamine)	Moderate doses
c- Eysenck Personality Scores	High Introversion
Situational factors	
Environmental noise	Moderate disturbance (eg. telephone)
Social surroundings	Presence of others (Superiors/boss)

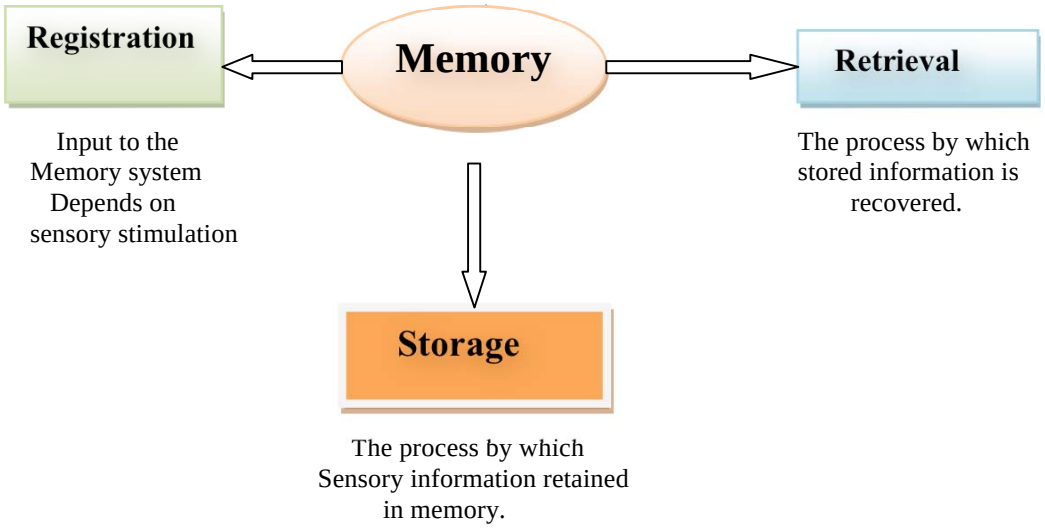
Selective attention



Memory

When it comes to learning, memory and past experience go hand in hand. Without memory experience would be "lost" without any benefit. Learning may therefore depends on memory for its longevity and memory would have no "contents" without learning. Therefore, memory can be defined as *the retention of learning or past experience.* Memory consists of three stages:

1- **Registration**: Selective attention. How do we select the sensory information that will become stored in memory?
2- **Storage:** How do remember? And is there more than one kind of memory?
3- **Retrieval:** Are there different kinds of remembering? And why do we forget?



Out of all the processes of memory, Storage is probably the most important part. However without retrieval, storage is an inept process. Accordingly we can distinguish aspects of storage and retrieval as three functions:

a- Sensory memory: Modality Specific "buffer Store"
b- Primary Memory: otherwise can be called Short term Memory (STM)
c- Secondary memory: otherwise can be called Long term memory (LTM)

Sensory Memory: SM gives us accurate account of the environment as experienced by the sensory system. It is affected by five sensory elements of the sensory system (See, Hear, taste, smell and touch).

Short term memory (STM): This often referred to as the "working memory". It is analyzed in term of three dimensions:

1- *Capacity*: When we reduce a larger information to smaller amount ; we are "chunking" the information. This not only increases the capacity of STM but also makes it more likely that the information will be stored longer. It also helps encoding information by imposing a meaning on otherwise meaningless letters or numbers. Arranging letters into words, words into phrases and phrases into sentences and so on. E.g.

S.H.E.L.L.S.B.P.I.T.V.B.B.C.B.A.

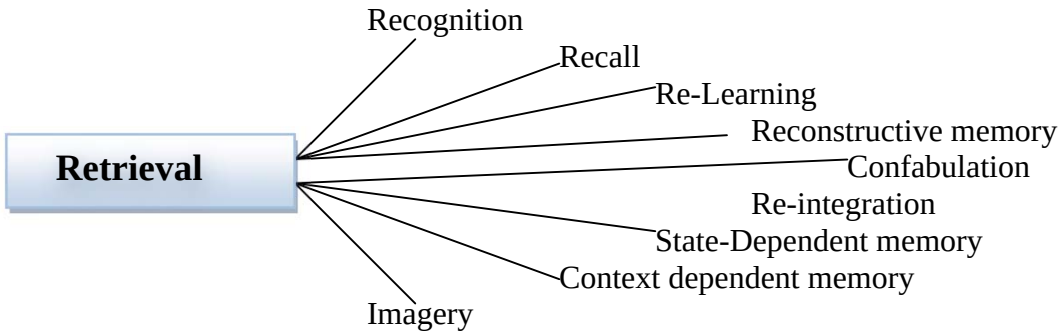
3. **Duration**: Unaided, we can hold STM for 15-30 seconds. (Atkins & Shiffrin 1971) but it can be extended with rehearsal or repetition. Rehearsal requires some kind of speech (overtly or mentally) but it is easily disrupted by external (some one asks you a question) or internal (mental thinking) distractions.

4. *Coding:* Coding in STM is primarily acoustic. i.e. information from sensory memory is converted into sound and is stored in this form.

Long Term Memory (LTM): LTM is assumed that LTM has unlimited capacity. It has same dimensions as STM:

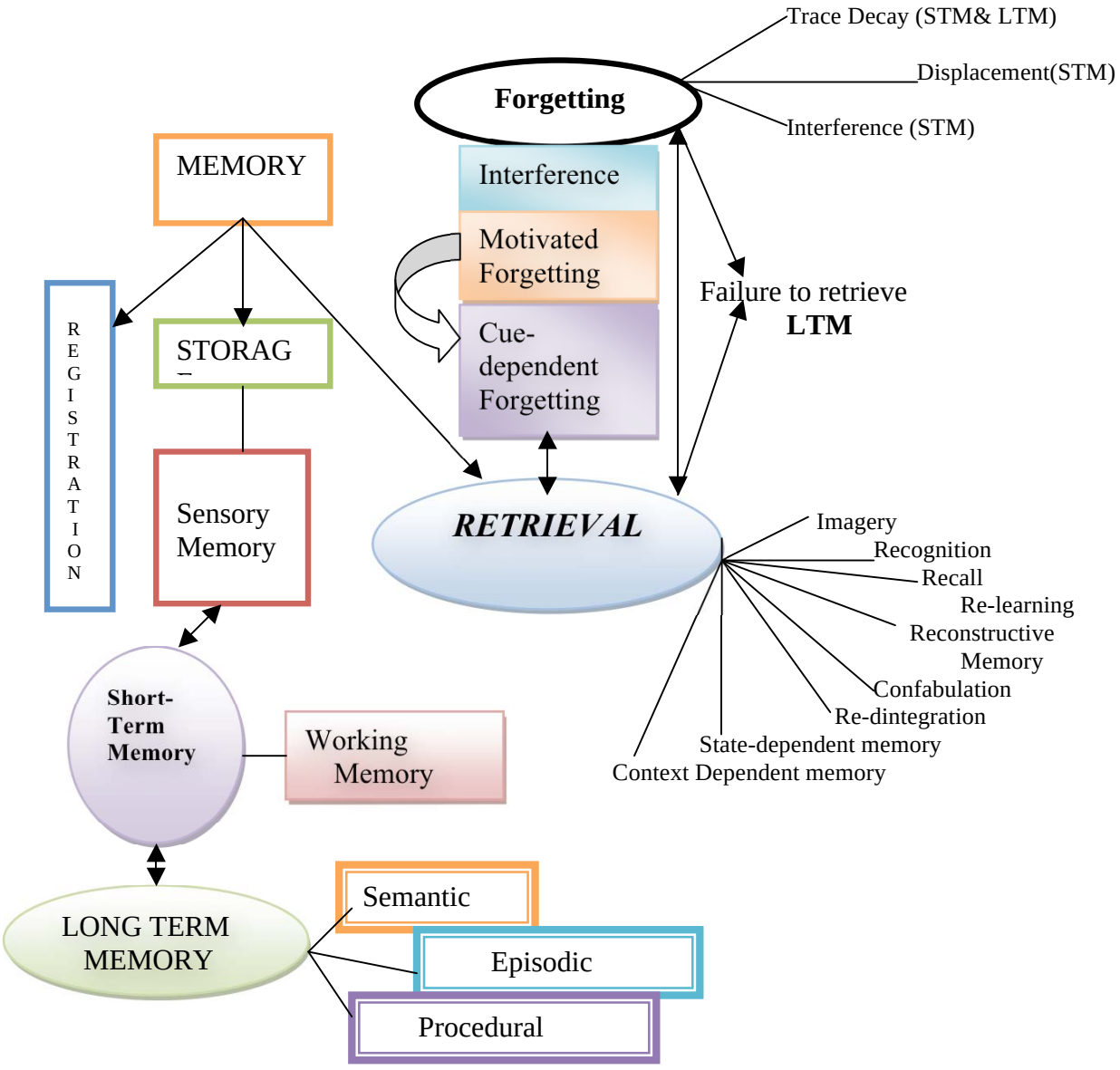
1. Capacity: In contrast to STM, capacity is unlimited.
2. Duration From few seconds to several years (perhaps permanent)
3. Coding in contrast to STM where coding is primarily acoustic, coding in LTM is at least:
   - i- Semantic: Material in terms of verbal coding
   - ii- Visual or imaginary: pictorial form and abstracts images
   - iii- Acoustic : sensory memory into sound and links up with other forms of LTM.

Retrieval: "remembering" can take many forms, however that are many ways that helps retrieval of information takes place:



Motivated Forgetting - Repression

According to Freud, forgetting is motivated. However repression, painful and disturbing thoughts or ideas actively push out the conscious mind and made unconscious in order to protect our-selves against them. However, according to Freud, the unconscious is largely composed of theses repressed memories that are exceedingly difficult to retrieve but remain in storage and continue to exert a great influence over us even though we are unaware of them.



Summary of the three components of memory and forgetting

(Source: Richard D Gross, Psychology -The Science of Mind & Behaviour 1992 2nd Ed.- P341)