

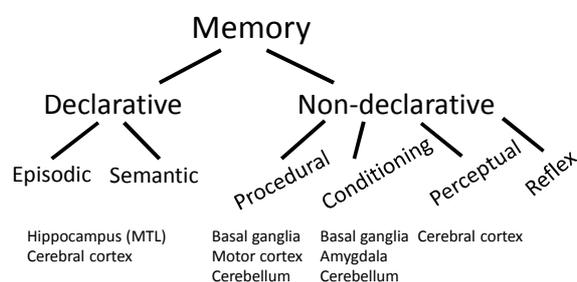
Systems Neuroscience CISC 3250

Memory

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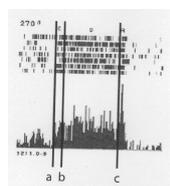
Types of memory



2

Working memory

- Memory of the recent past
- Supported by the prefrontal cortex (PFC)



Neural memory in PFC for delayed-action task
a: stimulus display onset
b: stimulus display offset
c: performance of action
Funahashi et al. 1989

3

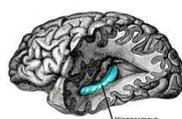
Neural system dynamics

Trappenberg 7.3.2

- Memory activity: balance of mutual excitation and mutual inhibition produces maintained sparse distributed coding
- Growing activity: mutual excitation produces global activity over time
- Decaying activity: mutual inhibition suppresses continued neural activity

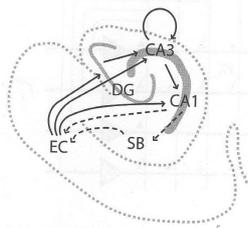
4

Anatomy of long term memory



Hippocampus (“sea horse”)
In medial temporal lobe (MTL)

- Dentate gyrus – DG
- Entorhinal cortex – EC
- Cornus ammonis – CA1, CA3
- Perforant pathway



5