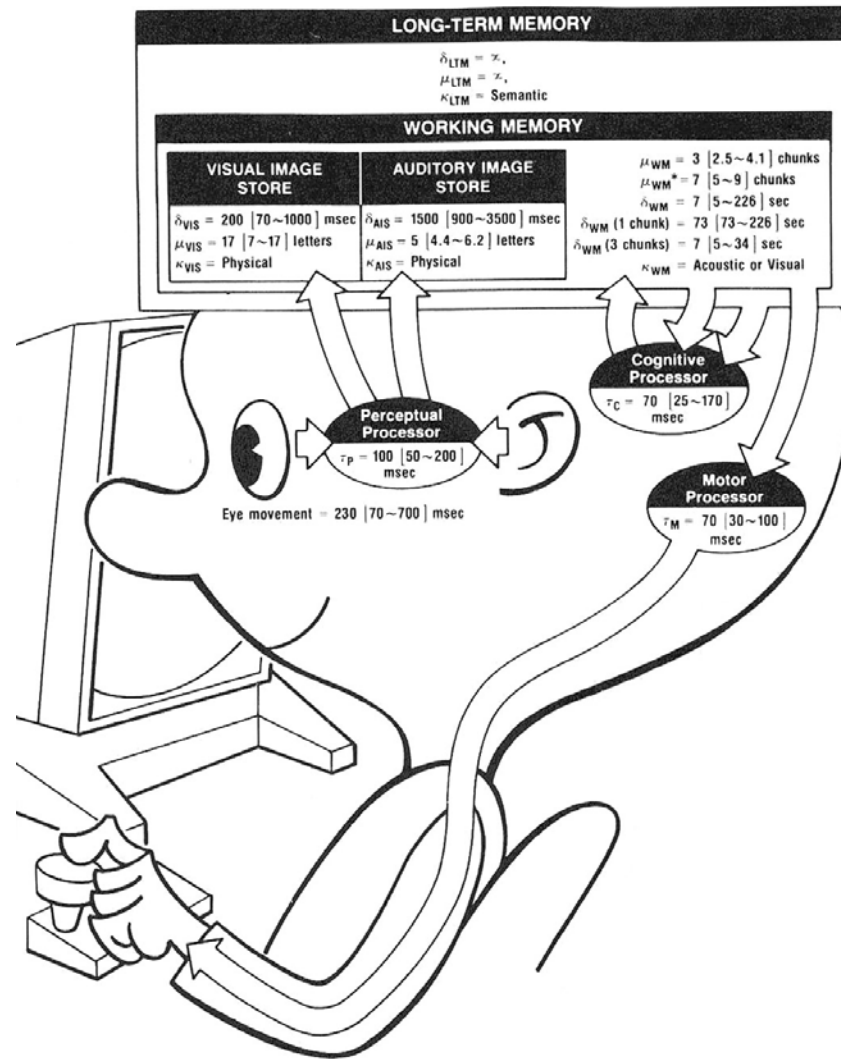
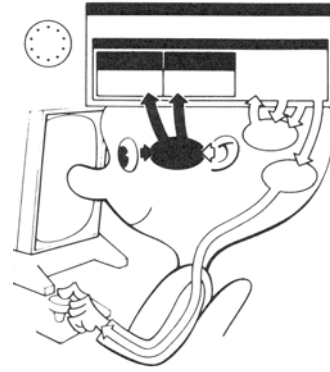


Human Information Processor (Card, Moran, Newell)

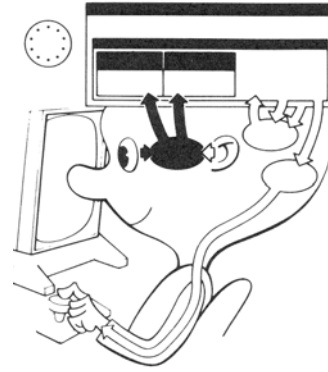


Perceptual Processor

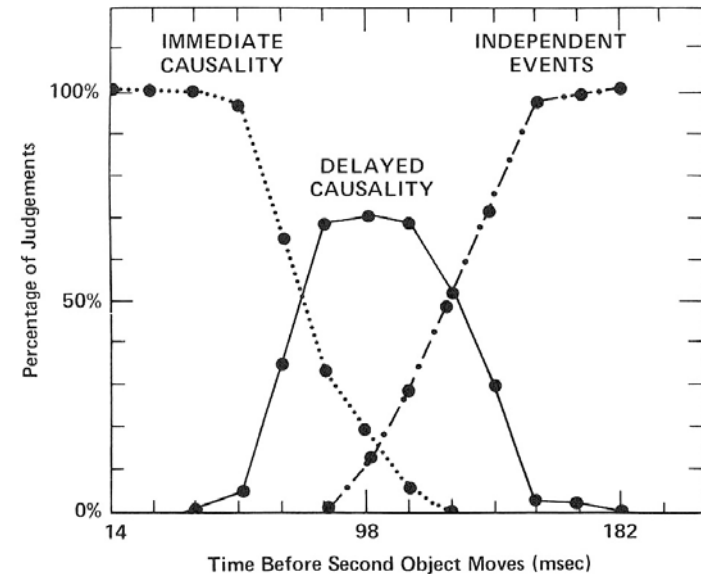
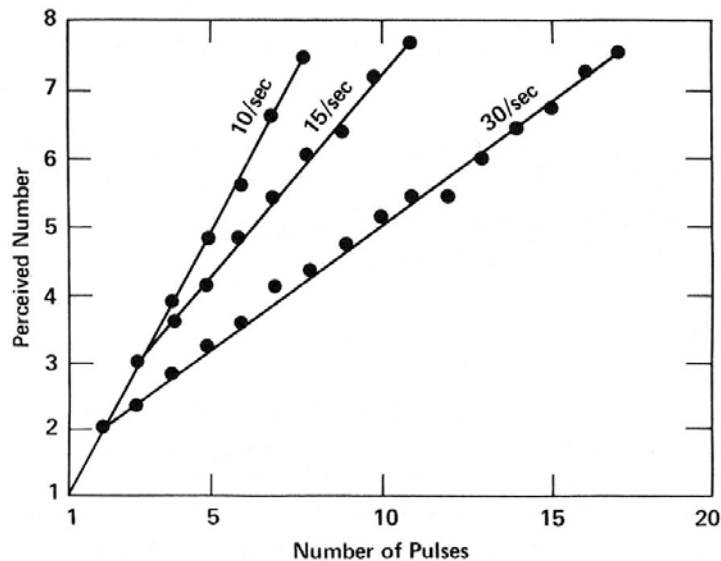


- Physical store from our senses: here sight
- Decoded for transfer to working memory
 - Progressive
 - *Example: 10ms/letter*
 - Selective
 - *Spatial*
 - *Pre-attentive: color, direction...*
- Capacity
 - Example: 17 letters

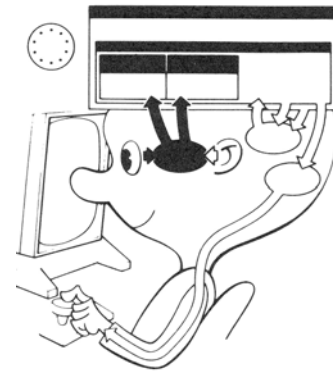
Perceptual Processor



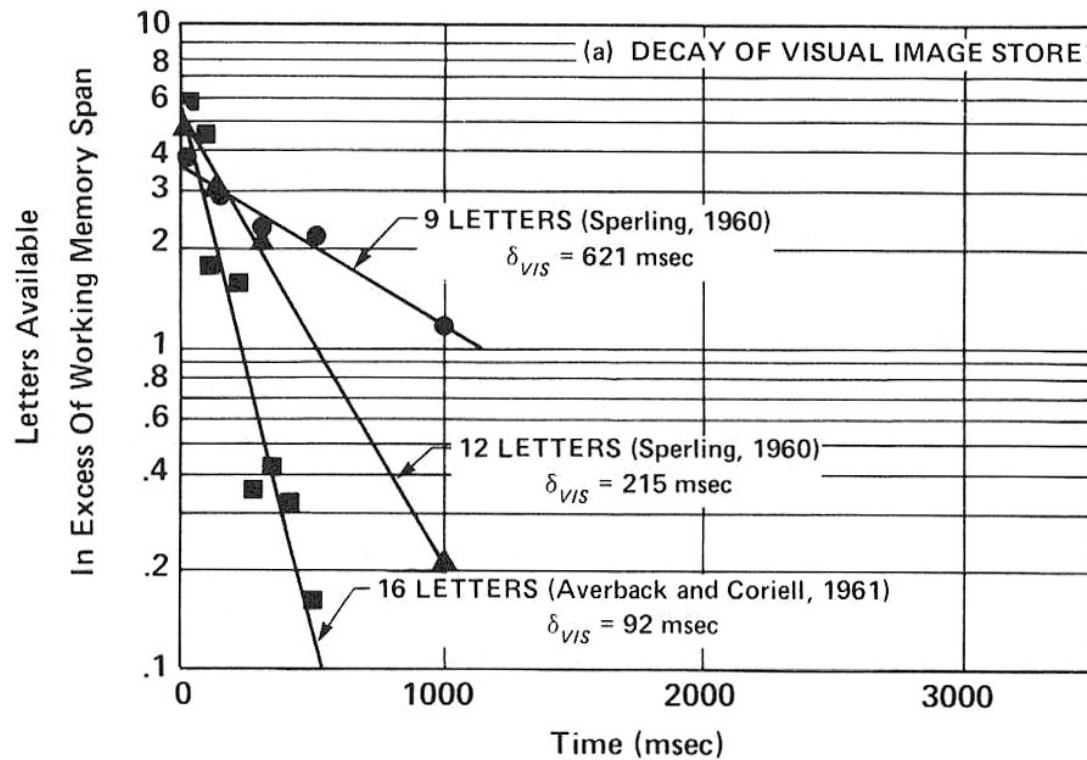
- Cycle time
 - Quantum experience: 100ms
 - *Percept fusion*
 - *Causality*



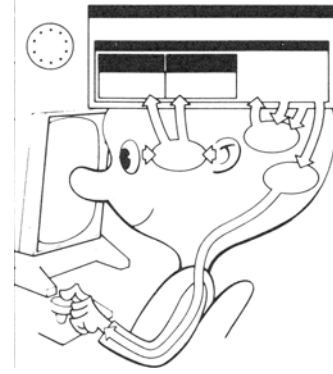
Perceptual Processor



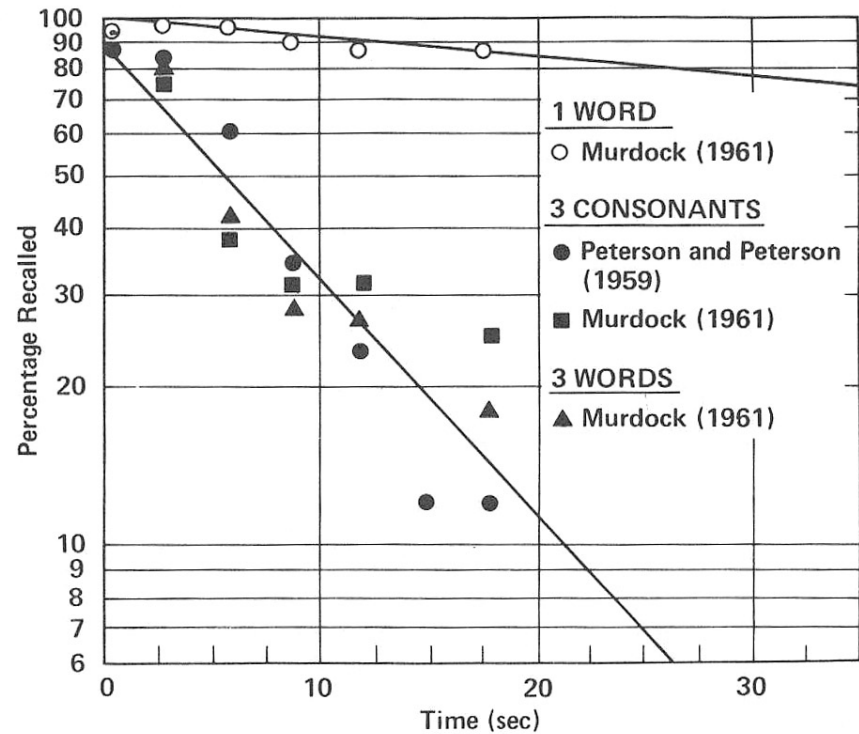
- Decay: 200ms



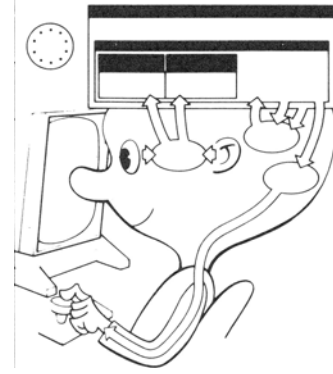
Working Memory



- Access in chunks
 - Task dependent construct
 - 7 ± 2 (Miller)
- Decay
 - Content dependant

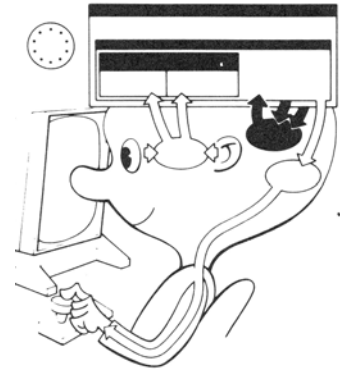


Long term memory



- Very large capacity
 - Semantic encoding
- Associative access
 - Fast read: 70ms
 - Expensive write: 10s
 - *Several Rehearsal and or recall,*
- Context at the time of acquisition key for retrieval
- Noisy

Cognitive Processor

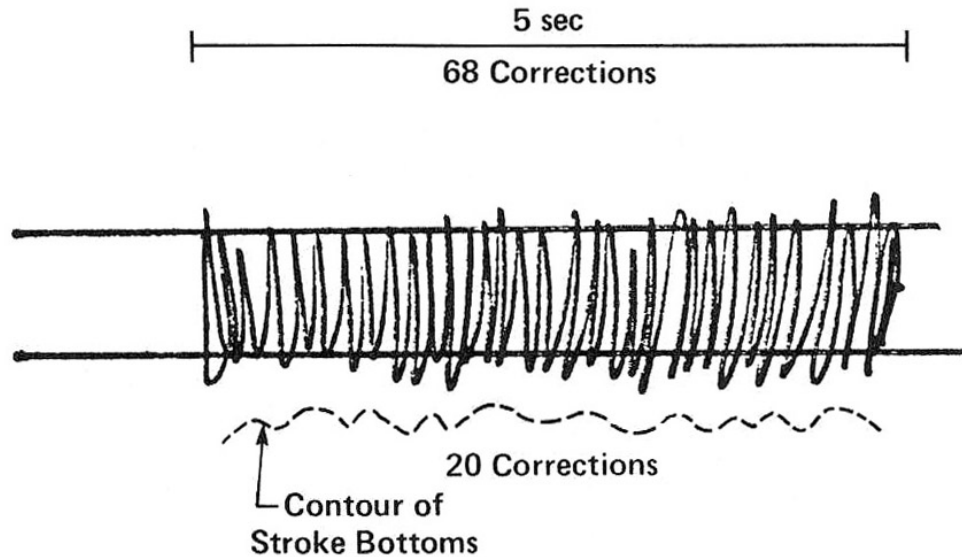


- Cycle time: 70ms
 - Can be modulated
- Typical matching time
 - Digits: 33ms
 - Colors: 38ms
 - Geometry: 50ms...
- Fundamentally serial
 - One locus of attention at a time
 - *Eastern 401, December 1972*
 - Crew focused on checking the landing gear indicator bulb,
 - Meanwhile the aircraft is losing altitude (horn, warning indicator...),
 - Aircraft crashed in the Everglades
 - see “The Human Interface” by Raskin, p25
 - *But what about driving and talking?*

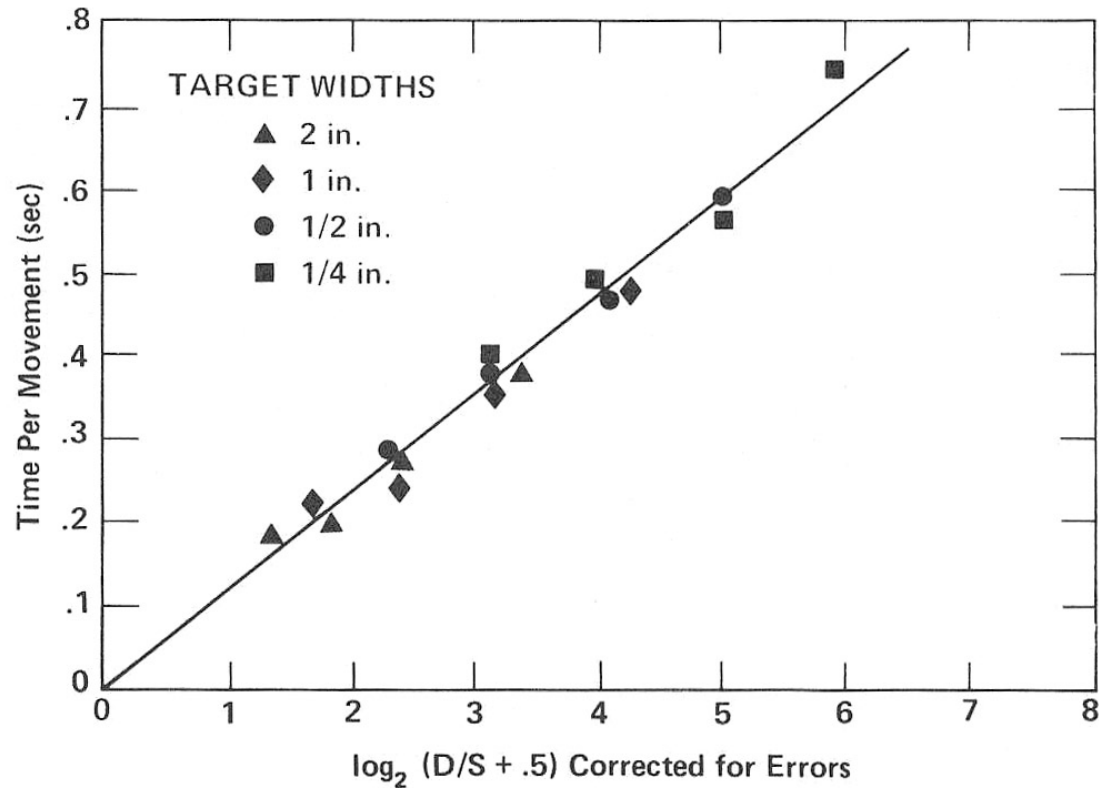
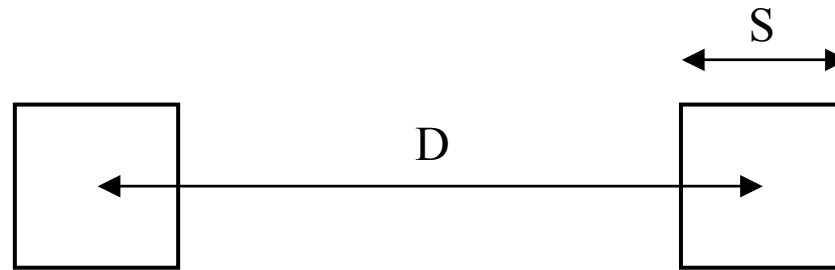
Motor Processor



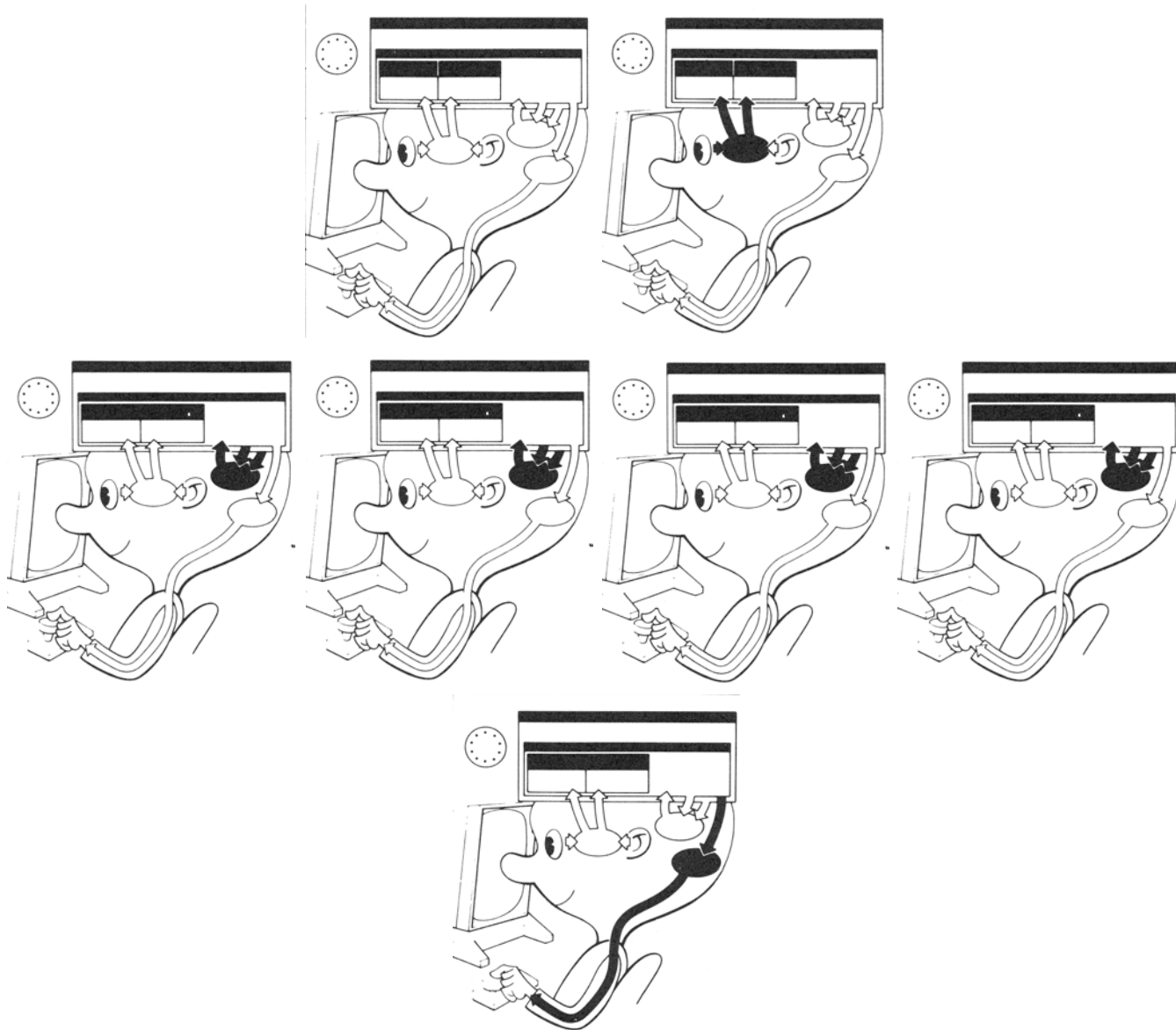
- Receive input from the cognitive processor
- Execute motor programs
 - Pianist: up to 16 finger movements per second
 - Point of no-return for muscle action



Put it together: Fitts' law (tapping task)

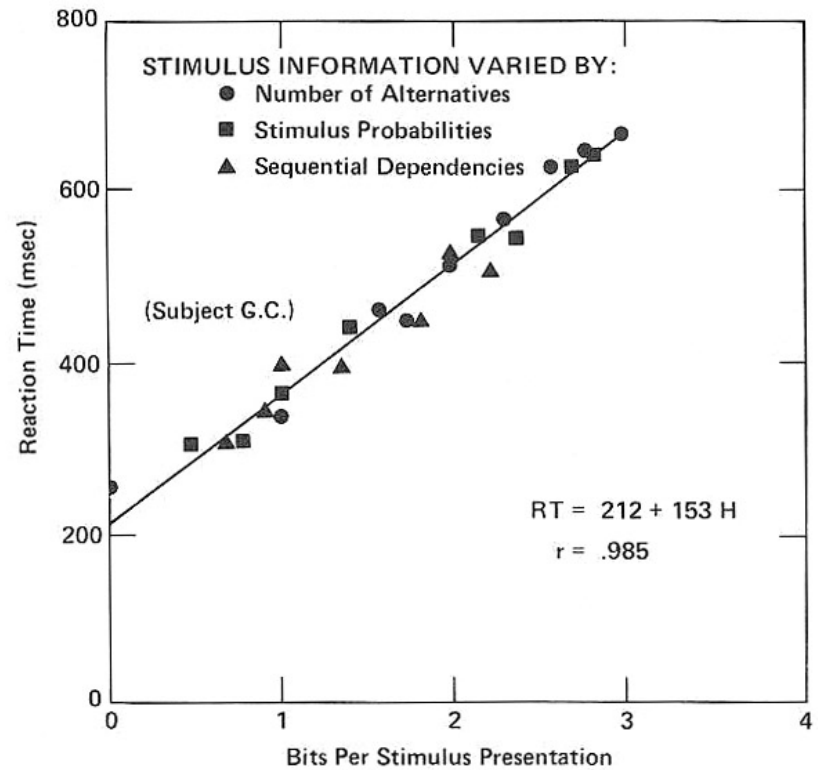
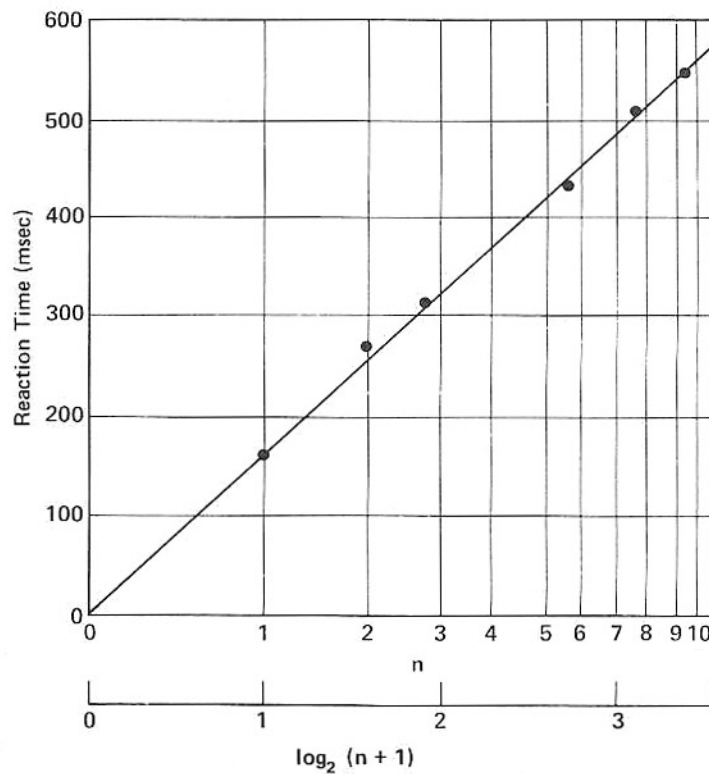


Put it together: Are A and B letters?



Hick's law

- Cost of taking a decision



Scope and Caveats

Questions?