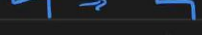
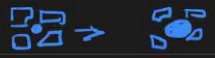
Lecture 12 Spacial Cognition

→ Close eyes and point to Cathedral of Learning — yeap quite close
→ Draw the route from Hunt Library to Starbucks — whoops oversimplified

#1 Maps and Diagrams

* We construct space based on limited info
* Schematisation — simplifying things to better make sense of them
  - Rotation 
  - Alignment — stick things to grid 
  - Landmark centrality — landmark play larger role 
  - Distance distortions — diminishing returns 
  - Hierarchical / categorical 

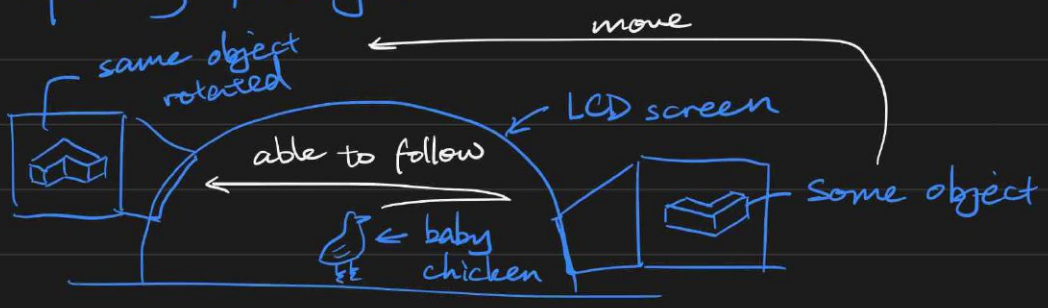
#2 Navigation

* See what animals do first
  - Ant — randomly walk to look for food, goes direct back when found calculates relative to hive every step!
  - Bee — communicates length with dance. distance of dance move ∝ actual distance (magnitude ∝ amount of food)
  - Artic tern — travel around world but in ~100m precision using magnetic field.
  - Homing pigeons — internal clock and position of sun to calculate direction
  - Clark's Nutcracker — use landmark to remember up to 10000 seeds for winter
  - Turns out human mostly use landmarks ← VR experiments

#3 Spacial Representation

Is spacial rotation ability innate?

Imprinting paradigm!



Chicken still recognise rotated object, but it takes longer for them to recognise the more it's rotated.

#4 Proprioception — or how one relates to one's own body.

→ Close eyes, stretch out arms, try put them together

3 Systems

* Sensorimotor system — where body parts are. Mapping of body parts to areas in brain much like visual perception
  - If things break down...
    → Phantom limb syndrome — amputees think missing limb still there because corresponding neurons are still in brain
    → Somatoparaphrenia — delusion of no longer feeling limb as your own. They can move but no feedback

* Vestibular System — body orientation relative to Earth
Essentially those liquid and hair cells in ear.
- If goes wrong ...
  → Open eyes and want to throw up
  → Being still but feel like moving everywhere

* Visual & Auditory System — body position relative to things in the world
  → Try drawing things with eyes closed
  ... or writing with eyes closed hmm

#5 Zero Gravity ? Hmm
- No proprioceptive feedback?
- Inner ear all directions?
- Eyes — mixed ?