



In search of hidden mechanisms..

Denis Mareschal

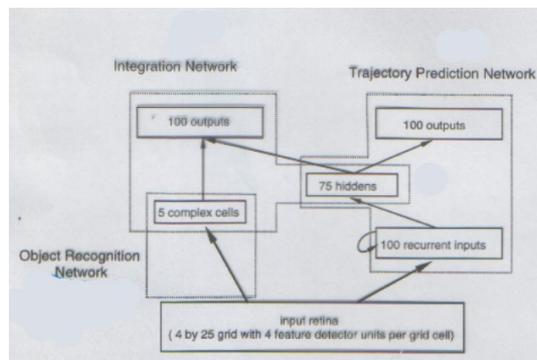
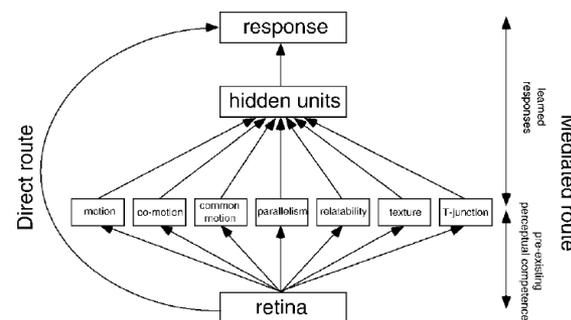
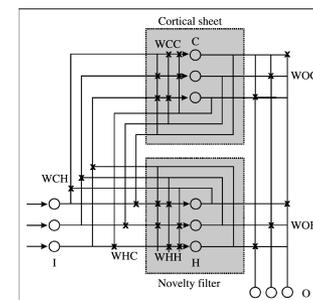
CBCD 21st Anniversary



Computational Modelling



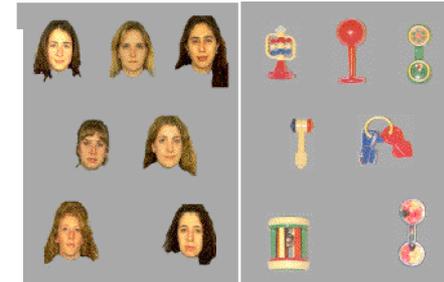
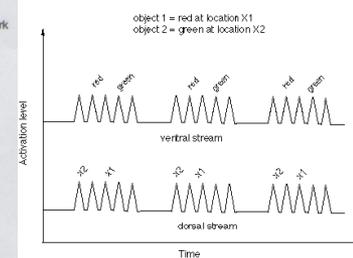
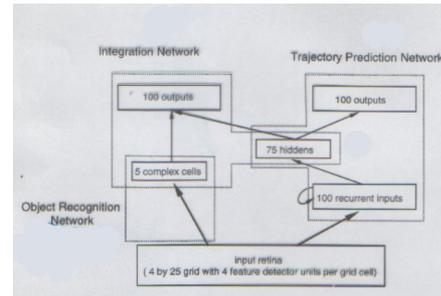
- A standard in the physical sciences and other life sciences
- They are tools for exploring the causal mechanisms of learning and development
- *Connectionist/Neural Networks* are computer models loosely based on neural information processing
- Abstraction and rule-like behaviours are *epiphenomena*



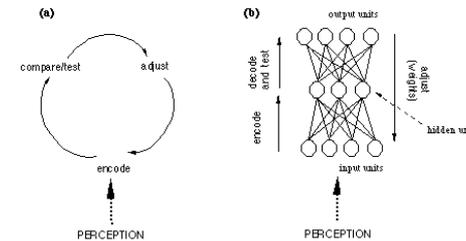
In the beginning



- Object permanence (Oxford)



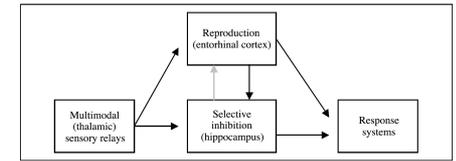
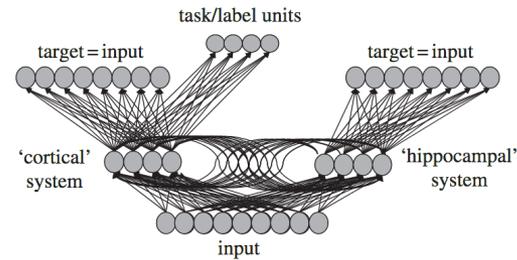
- Categories and concepts (Exeter)



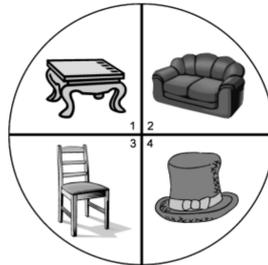
The early days



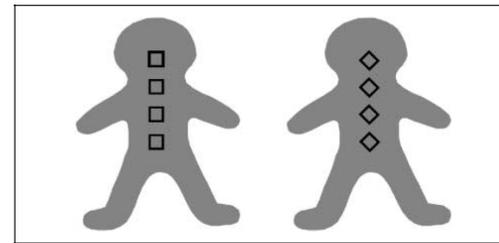
- Complementary learning systems



- Control of knowledge

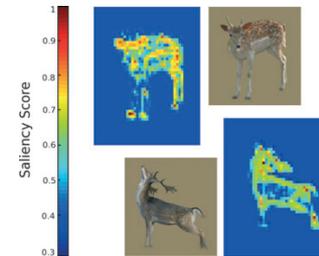
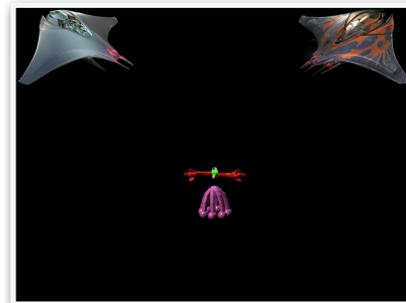
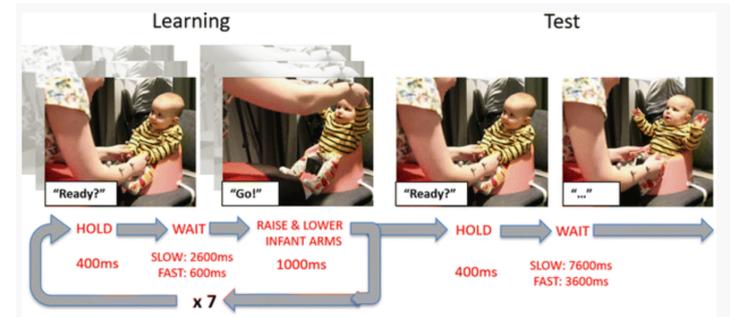
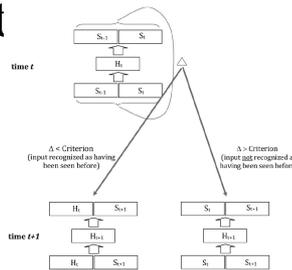
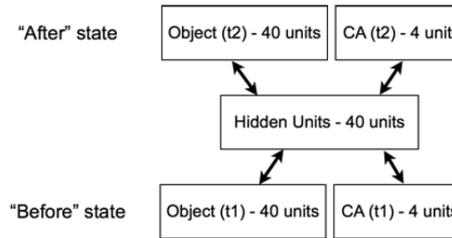


- Re-entrant processing



Somewhere in the middle

- Analogy (and metaphor)
- Cue integration work
- Sequence learning (TRACX)
- Embodied time percept
- Visual Saliency
- Multisensory learning



And now...



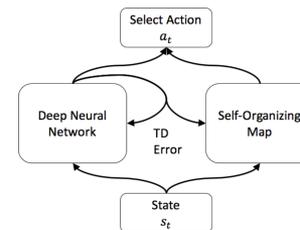
- Educational neuroscience



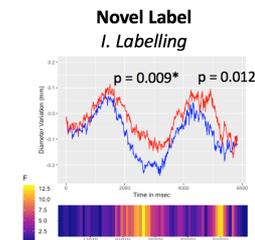
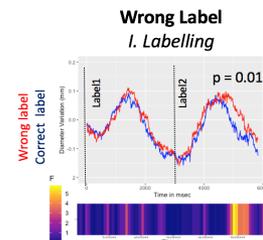
- Embodied action planning



- Multiple interacting systems

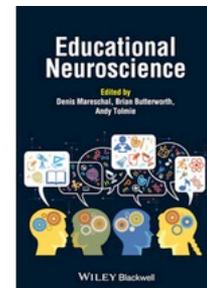
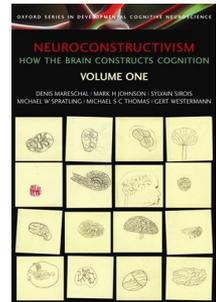


- Continuing on concepts and object knowledge



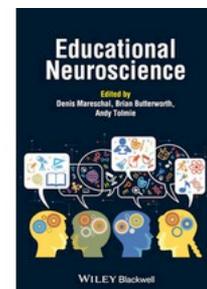
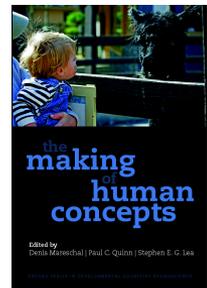
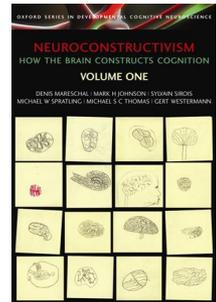
The future...

- Toddlerlab
- Wide ranging programme, recognising diverse ages and longer developmental periods
- Maintaining *mechanisms* of change at the core of the programme
- Continuing to work with *wonderful people*



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- Toddlerlab
- Wide ranging programme, recognising diverse ages and longer developmental periods
- Maintaining *mechanisms* of change at the core of the programme
- Continuing to work with *wonderful people who challenge your thinking*



THANK YOU!