Supersizing the Mind

Appendix
- Otto & Inga
  - Otto's notebook and Inga's memory, on par?
- Epistemic actions
- Cognition and consciousness

Introduction
- Brainbound vs. Extended
- Consider the terms used to describe embodiment on p. xxvi: are these weak are strong terms? What assumptions follow from this description?
- Can mind be seen as separable from the world?

Chapter 1 (A brief introduction to almost everything)
- Joint-angle control system vs. Passive dynamics
- Ecological control
- The Principle of Ecological Balance
- Nontrivial causal spread and the Mississippi alligator
- Inhabited interactions (Dourish)
- Ecological psychology (Gibson)
- Ballard's block-copying task
- Principle of Ecological Assembly (p.13)
- Coupling (ex: catching a fly ball)
- Information self-structuring and the role of timing
- Continuous reciprocal causation, dynamical systems
- 34 characteristics of embodied cognition and why it matters to human cognition
- Deixis

Chapter 2
- Where, according to Haugeland, are 'genuine interfaces' found?
- Is Stelarc's third hand, the monkey's robot arm, or TVSS a part of mind?
- What does Clark's presentation of these examples have to do with the Principle of Parity and the negotiable body (see Appendix & p. 77)?
- Incorporation vs. use
- Three grades of embodiment

Chapter 3
- How do labels, tags, and language sculpt attention and structure the environment in which (or with which) cognitive activity occurs?
- Hybrid thoughts
- Metacognition
- Self-made minds

• What does Clark mean when he says, “Language is another way of seeing the world, another kind of vision!” ?

Chapter 4
• Niche construction
• Cognitive niche construction
• What are the three ways in which Kirsh (1995b) proposes that humans use space intelligently, and how do they work?
• Cumulative downstream epistemic engineering (Sterelny)
• Do we have Pleistocene minds? Why? (Sterelny)
• The Parity Principle (p.77)

Chapter 5
• The mark of the cognitive
• Non-derived & amodality
• Where to bound the unit of analysis?

Chapter 6
• Hypothesis of Extended Cognition (HEC)
• Hypothesis of Embedded Cognition (HEMC)
• What are the implications of HEC and HEMC?
• Goldin-Meadow, gesture as an extended process of thought
• Anarchic self-stimulation
• Autonomous coupling
• Hypothesis of Organism-Centered Cognition (HOC)

Chapter 7
• Change blindness as evidence for radical embodiment?
• Motor emulator circuits
• The anti-Cartesian bandwagon (p.154)
• Surrogate situations (p.154)
• Asymmetry arguments vs. Complementarity (see, e.g. 153,165166)

Chapter 8
• Noë: seeing is like painting, perception is active, SSM (p.170)
• Three virtues of SSM
• Dual-stream models, aka ‘Dual’ (p.181)
• SSM vs. Dual (is Dual still active?)
• Interpretations of D.F. (p.182) by Dual, SSM
• A thought piece: Do particular bodies create different perceptual experience, or can the identical perceptual experience arise in different bodies via, perhaps, a common organizational strategy? (p.193).

Chapter 9

- Three ways in which embodiment seems to matter for mind and cognition
- Hypothesis of Cognitive Impartiality, Hypothesis of Motor Deference
- Machine functionalism, body neutrality (p. 198, 203)
  - Can you build a robot that does cognition?
- ST vs EMT
- Distributed functional decomposition (DFD)
- The role of the body in cognition
- XOR robot
  - How is XOR computed? What is the role of the body?
- Quantifying embodiment via information theoretics (Lungarella & Sporns): Mutual Information, Integration, Complexity

Chapter 10

- Dawkin's flip
- How is distributed cognition like Dawkin's flip?
- What is the flip Clark suggests regarding embodied, action, cognitive extension?
- What does Clark mean by "mind as mashup"?

102A Central Themes:

Distributed Cognition:

- "The subfield of cognitive science called "distributed cognition" does not study any particular kind of cognition; it is an approach to the study of all cognition. It assumes that cognitive processes are always distributed in some way. Rather than assuming a boundary for the unit of analysis a priori, distributed cognition follows Bateson's (1972) advice and attempts to put boundaries on its unit of analysis in ways that do not leave important things unexplained or unexplainable." (Hutchins 2006)

Embodiment is the premise that the particular bodies we have influence how we think. The rapidly growing literature in embodiment is summarized in Wilson, (2002), Gibbs (2006), and Spivey (2007)

- According to the embodied perspective, cognition is situated in the interaction of body and world, dynamic bodily processes such as motor activity can be part of reasoning processes, and offline cognition is bodybased too.
- Embodiment assumes that cognition evolved for action, and because of this, perception and action are not separate systems, but are inextricably linked to each other and to cognition.

Enaction:

- Enaction is the idea that organisms create their own experience through their actions.

- Organisms are not passive receivers of input from the environment, but are actors in the environment such that what they experience is shaped by how they act.
- Maturana and Varela (1987) introduced the notion of "structural coupling" between an organism and its environment. This describes the relations between action and experience as they are shaped by the biological endowment of the creature.
- Applying the enaction concept to perception, Noë (2004) says that perception is something we do, not something that happens to us. Thus in considering the way that perception is tangled up with the possibilities of action
- O'Regan and Noë (2001) introduced the idea of sensorimotor contingencies. In the activity of probing the world, we learn the structure of relationships between action and perception (thus the title of Noë's recent book, Action in Perception (Noë, 2004).
- These relationships capture the ways that sensory experience is contingent upon actions. Each sensory mode has a different and characteristic field of sensorimotor contingencies. (Hutchins 2009)

Cognitive Ecology: "Humans inhabit a cognitive ecology that contains many sorts of cognitive resources. Some of these are physical objects, some are cultural practices, and some are mental models. Cognitive effects emerge from the interaction of persons with the rich cultural content of the cognitive ecology."

Hypothesis of Extended Mind
- According to this view...human cognitive processing literally extends into the environment surrounding the organism, and human cognitive states literally comprises wholes do their proper parts elements in that environment.
    - The elements in a cognitive environment are *part of* the process (not shaped by, dependent on...) but <u>IS the interaction between the internal and the external resources</u>, for the hypothesis of extended mind.
- Implicit syllogism in Chapter 1:
    - the body plays an important role in cognition
    - the boundaries of the body are negotiable
    - therefore (maybe) the boundaries of cognition are also negotiable