Overview of Distributed Cognition

The logic of empirical science

- A hypothesis IMPLIES observations
  - H → O
  - Underlying mechanism → behavior

A weak inference

H → O
O

The only strong inference

H → O
Not O

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What are the mechanisms underlying human cognition?

- PSSH → Human cognition?
- Brain Science → Human cognition?
- Supersized mind → Human cognition?
- Cognitive ecosystems → Human cognition?

The attribution problem in Cognitive Science

What is the supervenience base for human behavior?

“The Computer was made in the image of the human.” (Simon & Kaplan, 1990).
Brain and Body

1. The brain provides soft-assembled control of the body.

Symbolic tools for thinking

2. Nav as comp
3. Nav practice
3. Material symbols

Brain, Body, and World

2. The brain provides soft-assembly of mind from resources in brain, body, and world.

Other material tools for thinking

3. Nav practice
4. World incorporated
6. Cog Impartiality
Retreat to the Brain
5. The “mark of the cognitive” and Where the powerful regularities are.

Emergent Cognitive Properties
Ch 4: SODC
Ch 5: Communication
1. social learning

Cultural practices orchestrate the interactions of brain, body, and culturally organized world to produce high-level cognition

Teaching
Ch 6: Context of learning

Enculturating the Supersized Mind
A cultural flip on Andy Clark’s Extended Mind flip
Clark delivers the Extended Mind
• What organizes the extended mind?
  – Clark’s trapdoor into the future

Clark’s retreat
• ... in rejecting the vision of human cognitive processing as organism bound, we should not feel forced to deny that it is (in most, perhaps all, real-world cases) organism centered. It is indeed primarily the biological organism that, courtesy especially of its potent neural apparatus, spins and maintains (or more minimally, selects and exploits) the webs of additional structure that then form parts of the machinery that accomplishes its own cognizing. [fn 18]

18. “This is not to deny, of course, that much of the spinning is done by social groups of organisms spread out over long swaths of history” (p. 243)

Clark’s retreat (continued)
• ... it is the biological human organism that spins, selects or maintains the webs of cognitive scaffolding that participate in the extended machinery of its own thought and reason.[fn 19] Individual cognizing, then, is organism centered even if it is not organism bound. (p. 123)

19. “One difference [from spider webs] is that in the case of the webs of cognitive scaffolding, it is often the human organism acting in concert with existing webs of scaffolding that spins, selects, or maintains new layers of scaffolding, resulting in the powerful process that Sterelny (2004) dubs “incremental downstream epistemic engineering”

The “mark of the cultural”? • Adams and Aizawa argued for the “mark of the cognitive” (StM, Ch5).
• Clark argued against that notion.
• The “mark of the cultural” is everywhere
• Any pattern that relies on or coordinates with resources created by or used by others
• The enculturation of the supersized mind

What does a brain represent?
• Nervous systems do not form representations of the world, they can only form representations of interactions with the world.
• Nervous systems never interact directly with the world.
• The interaction is always mediated by the body.
• The body is always implicitly present in mental representations.
Where do human brains do what they do?

• For humans the world in which brain and body are situated is cultural.

How do human brains get organized?

• The brain (with the help of cultural practices) can form functional units that represent interactions with cultural patterns,
• These are functional units that can maintain coordination with cultural patterns.
• And functional units that can, via emulation, imagine those interactions and that coordination.

How do human brains achieve high-level cognitive processes?

• Under the guidance of yet other cultural practices, the human brain can form higher-level functional units that establish coordination among other forming and already formed functional units.

What is the human brain?

• The human brain is a special super flexible medium in which the historical residues of culture can interact.
• Many of those residues are emergent patterns or inanimate objects that do not interact in the world.
• However, via our internal representations of our embodied interactions with these things they CAN interact.
• The brain provides a medium in which undomesticated patterns and inanimate objects can enter into dynamic interactions.