


PHIL/PSYCH 256
INTRODUCTION TO
COGNITIVE SCIENCE
Week 9: Consciousness




Paul Thagard

1

Emotions: Practical Applications

Critical thinking: Should we be non-emotional?

1. Yes: avoid distortions such as motivated inference, hate mongering.
2. No: emotions needed for motivation, reward assessment.
3. Solution: integrate emotional motivation with evidence-based thinking.



2

Emotions: Practical Applications


Politics

- fMRI being used to investigate reactions to candidates, e.g. amygdala, insula, striatum
- Drew Westen: Political Brain
- New York Times, Nov. 11 Op Ed

Neuromarketing

Design: make things beautiful and thus more useful

Relationships: love, trust, oxytocin



3


Philosophy of Consciousness

- Dualism: consciousness = soul.
 - Qualia: qualitative experiences
- Materialism:
 - Identity: consciousness = brain process
 - Functionalism: consciousness = computational
 - Mysteron: consciousness is incomprehensible
- Idealism: the universe is conscious

4

Dualism

- David Chalmers
- Zombie argument: I can imagine a being just like us physically but without consciousness.
- So brains are not essential to consciousness.



5

Discussion

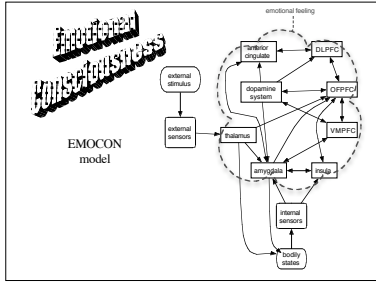
- Can cognitive science explain consciousness in terms of representation, computation, and/or brain processes?

6

Understanding Consciousness

- Representations of representation
- Neuronal integration, as in EMOCON model.
- Temporal coordination
- Molecular basis: anesthesia.
- Multilevel mechanisms

7



Flanagan: Prospects for a scientific theory of consciousness

- Someday there may be a coherent theory of consciousness, as there is for memory.
- Single brain property: 40-hertz oscillations. Plus others to be discovered.
- Our common sense concept of consciousness may need revision.
- Relate consciousness to both psychological and neurological phenomena.

9

Key Points

- Dualists claim that consciousness is non-material.
- Neural explanations of consciousness are being developed based on representation and interacting brain areas.

10

The Body and World Challenges

- Embodiment: Thinking depends on our bodies interacting with the world.
- Embedded: Interacting with the world reduces the need for representation and computation.

11

Body & World Challenges

- Being-in-the-world: Heidegger, Dreyfus, Winograd
- Robotics and embedded computation: Brooks, Mackworth
- Situated action: Suchman, Lave
- Body & direct perception: Gibson, Lakoff
- Intentionality (aboutness): Searle

12

Discussion Question

- How important is your body and its interactions with the world to your thinking?

13

Searle's Chinese Room

14

15

Responses to Searle

- The person in the room would not produce natural language.
- The analogy only applies to the simplest computers.
- A robot with the capacity to interact with the world and learn from its experience would have meaning and intentionality.

16

Mackworth on Situated Agents

- AI has restrictive assumptions about beliefs
- Need cognitive integration: tight coupling of perception, reasoning, and action.
- Situated robots are real physical systems interacting with the world.
- Dynamic perception tracks the world.
- Situated agents are multiple (social).

17

Key points

- Intelligent agents need to be embodied and embedded in the world.
- But they still need representation and computation for intelligence.

18