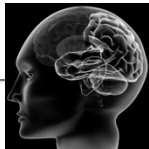


PHIL/PSYCH 256
 INTRODUCTION TO
 COGNITIVE SCIENCE
 Week 10: Consciousness



PLEASE PUT AWAY ALL
 ELECTRONIC DEVICES

1

Philosophy of Consciousness

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

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Dualism

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



3

Discussion

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

4

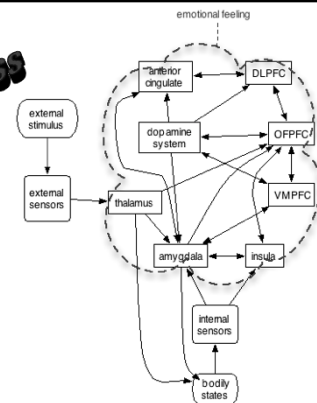
Understanding Consciousness

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

5

**Emotional
 Consciousness**

EMOCON
 model



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.

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Key Points

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

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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.

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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

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Embodiment Theses

- Moderate (Gibbs): Language and thought are inextricably shaped by embodied action.



- Extreme (Dreyfus): Embodiment refutes the computational-representational approach to mind.

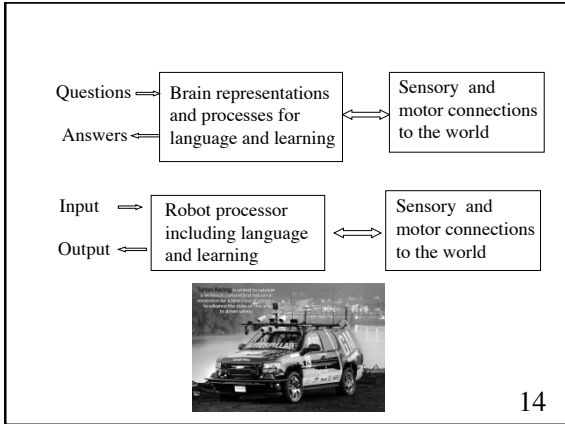
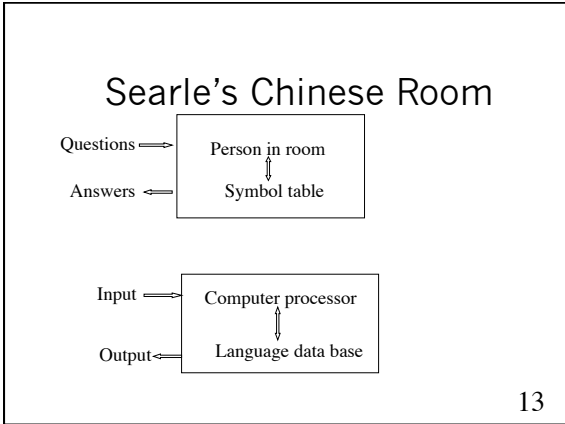


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Discussion Question

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

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