

Artificial Intelligence Reading Club

Chapter 08 The Architecture of Human-Like General Intelligence

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① Elements(structure): 7 architectures

② Interactive way: Cognitive Synergy

1. Architecture Diagram for Human-Like General Intelligence

- 1 Aaron Sloman's CogAff architecture + emotion, language and reinforcement
- 2 The LIDA architecture
- 3 The architecture diagram of the Psi model of motivated cognition
- 4 James Albus's three-hierarchy model of intelligence
- 5 Deep learning networks
- 6 The OpenCog

1. Architecture Diagram for Human-Like General Intelligence

Possible objections

(1) Like a kind of Frankenstein monster

it's just piecing together aspects of different theories in a way that violates the theoretical notions underlying all of them!

(2) There is nothing new

all the ingredients presented have been given before elsewhere.

HIGH LEVEL MIND ARCHITECTURE

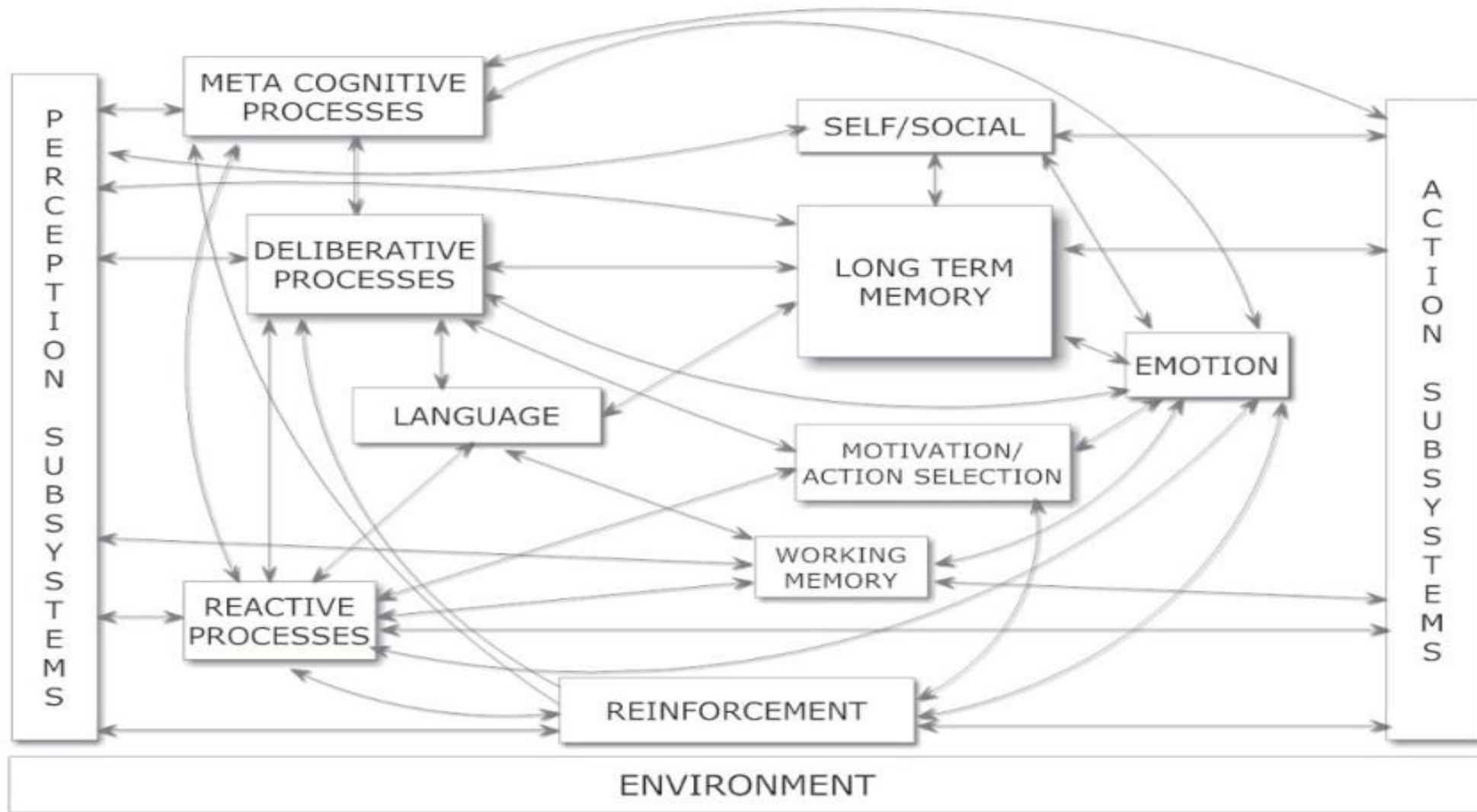


Fig. 8.1 High-Level Architecture of a Human-Like Mind

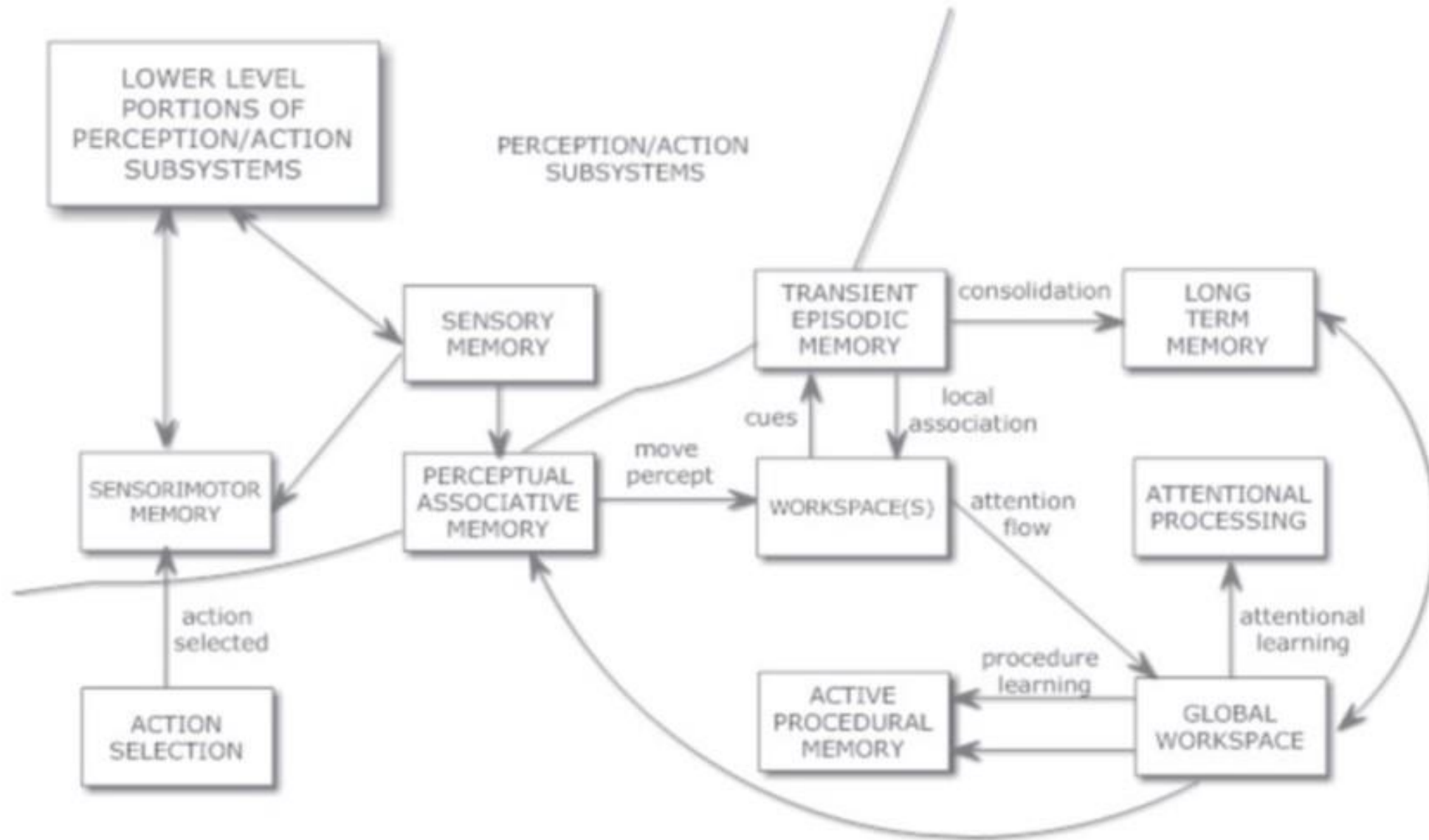


Fig. 8.2 Architecture of Working Memory and Reactive Processing, closely modeled on the LIDA architecture

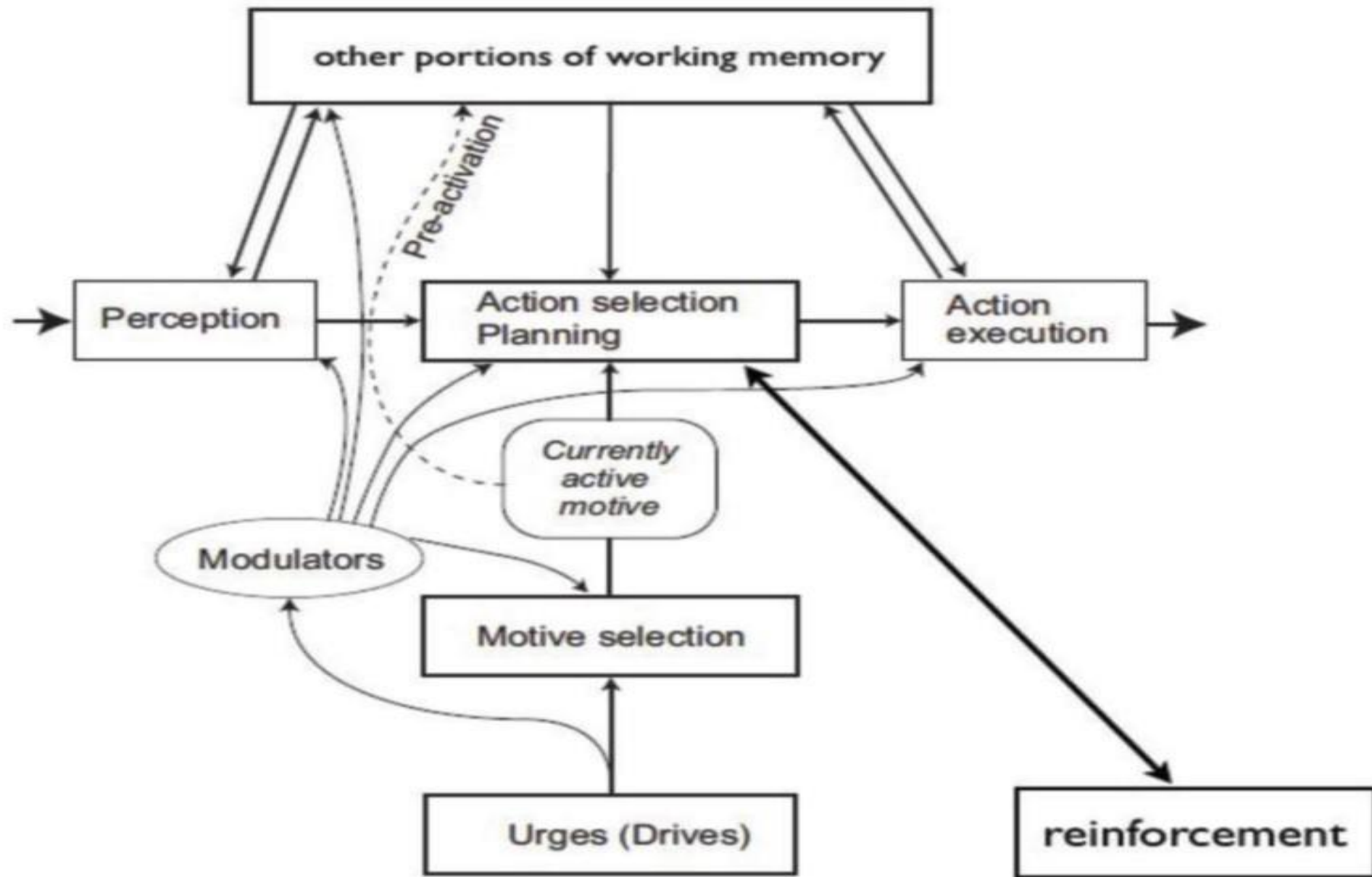


Fig. 8.3 Architecture of Motivated Action

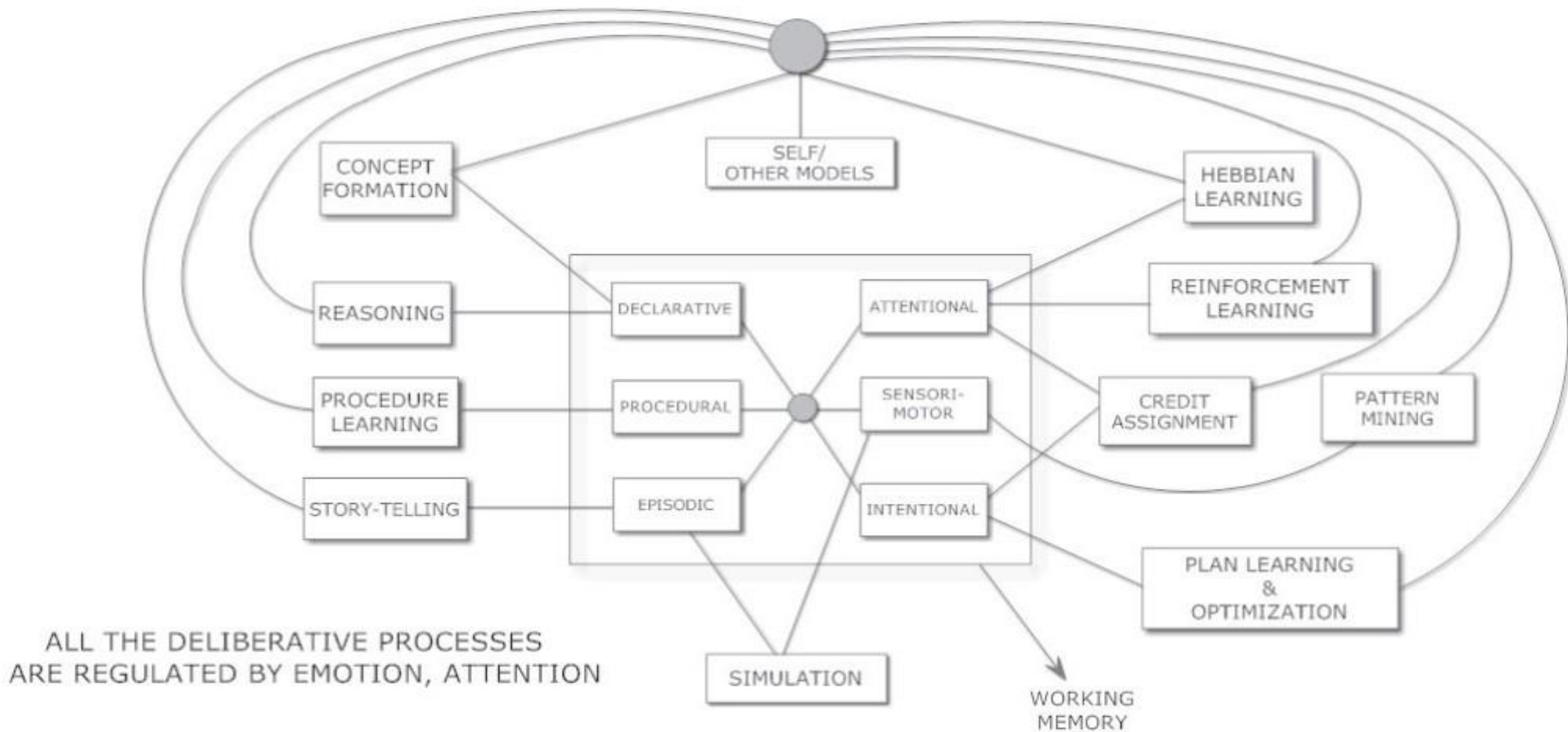


Fig. 8.4 Architecture of Long-Term Memory and Deliberative and Metacognitive Thinking

PERCEPTUAL SUBSYSTEMS

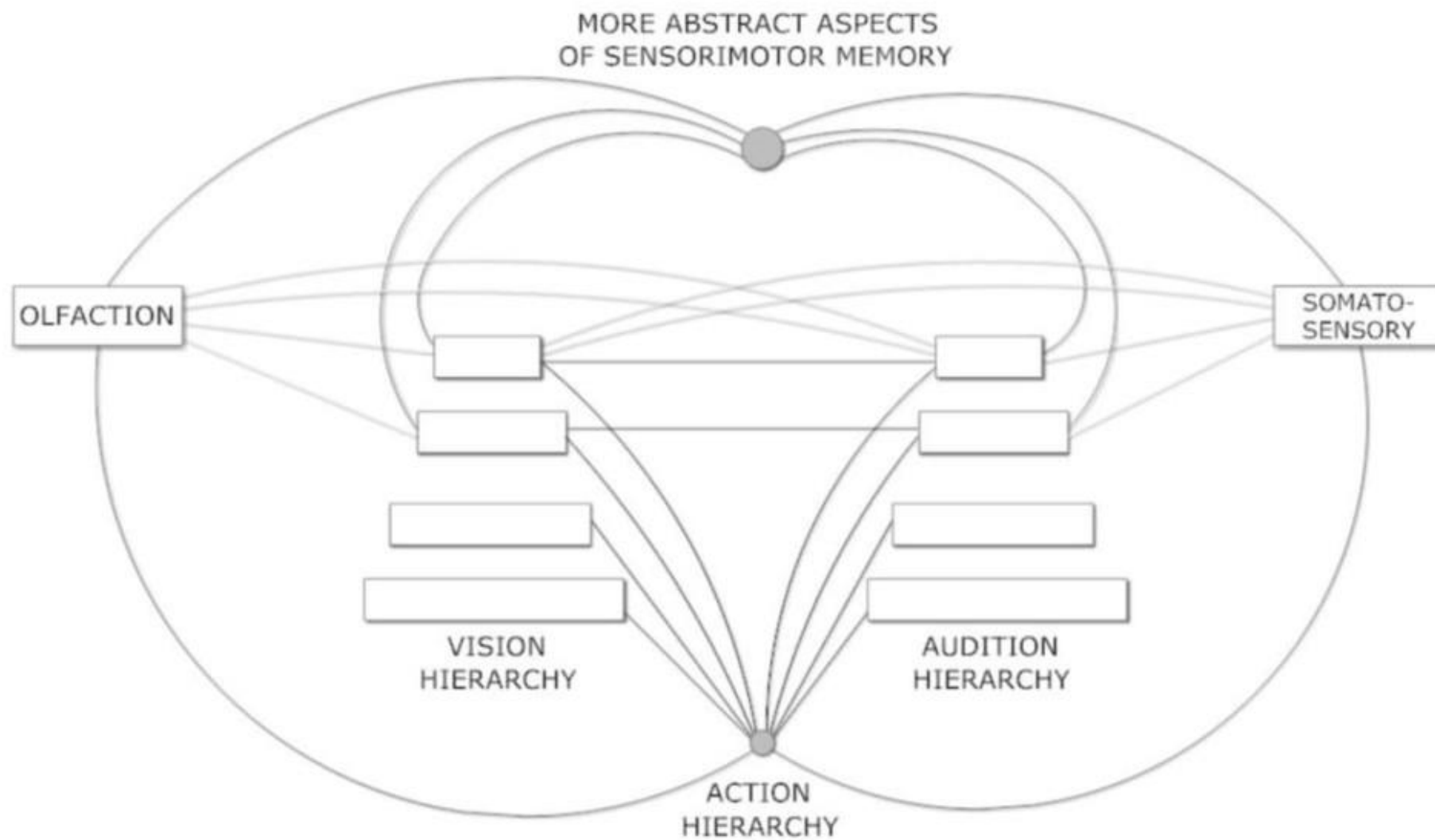


Fig. 8.5 Architecture for Multimodal Perception

ACTION AND REINFORCEMENT SUBSYSTEM

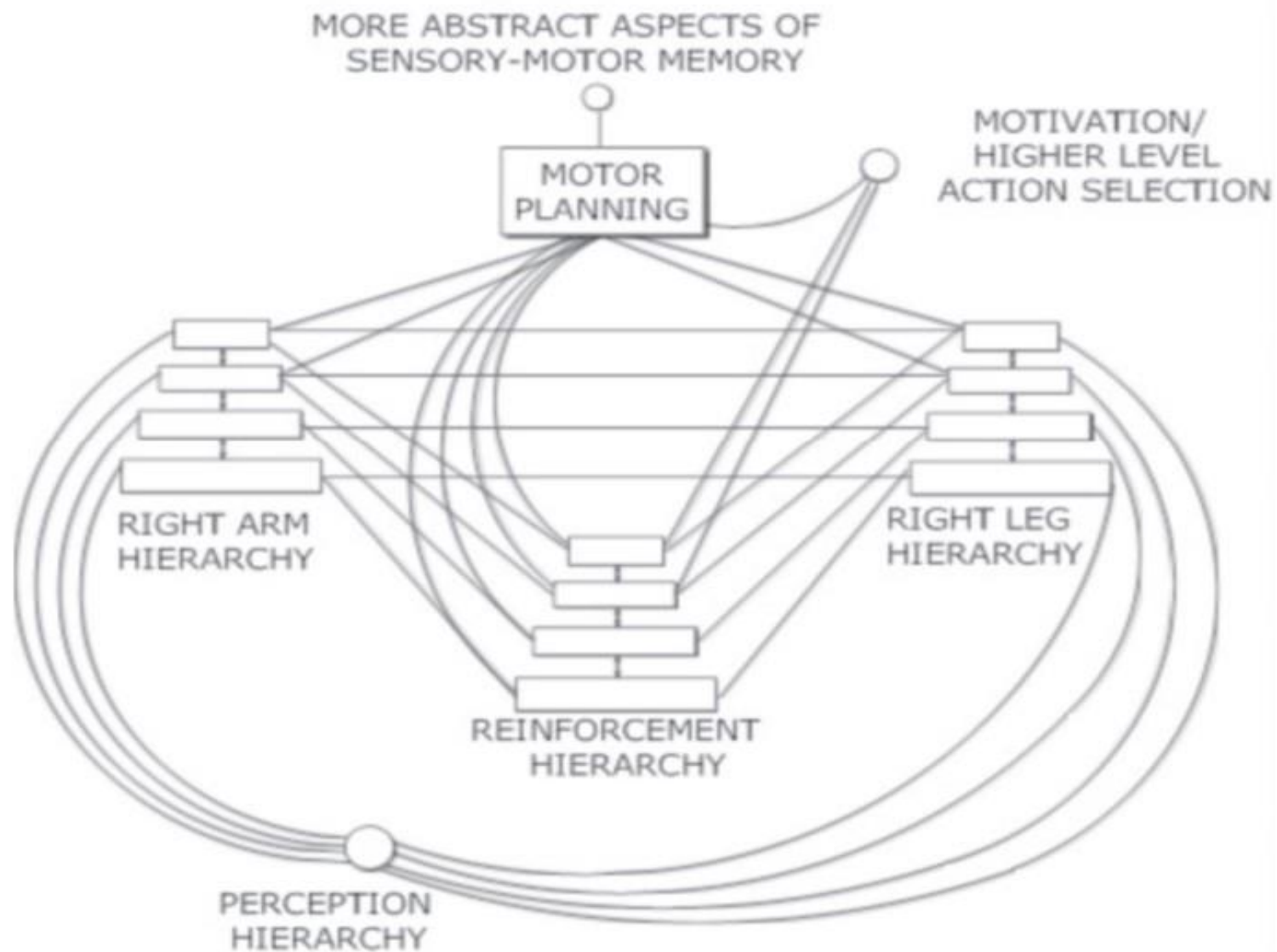


Fig. 8.6 Architecture for Action and Reinforcement

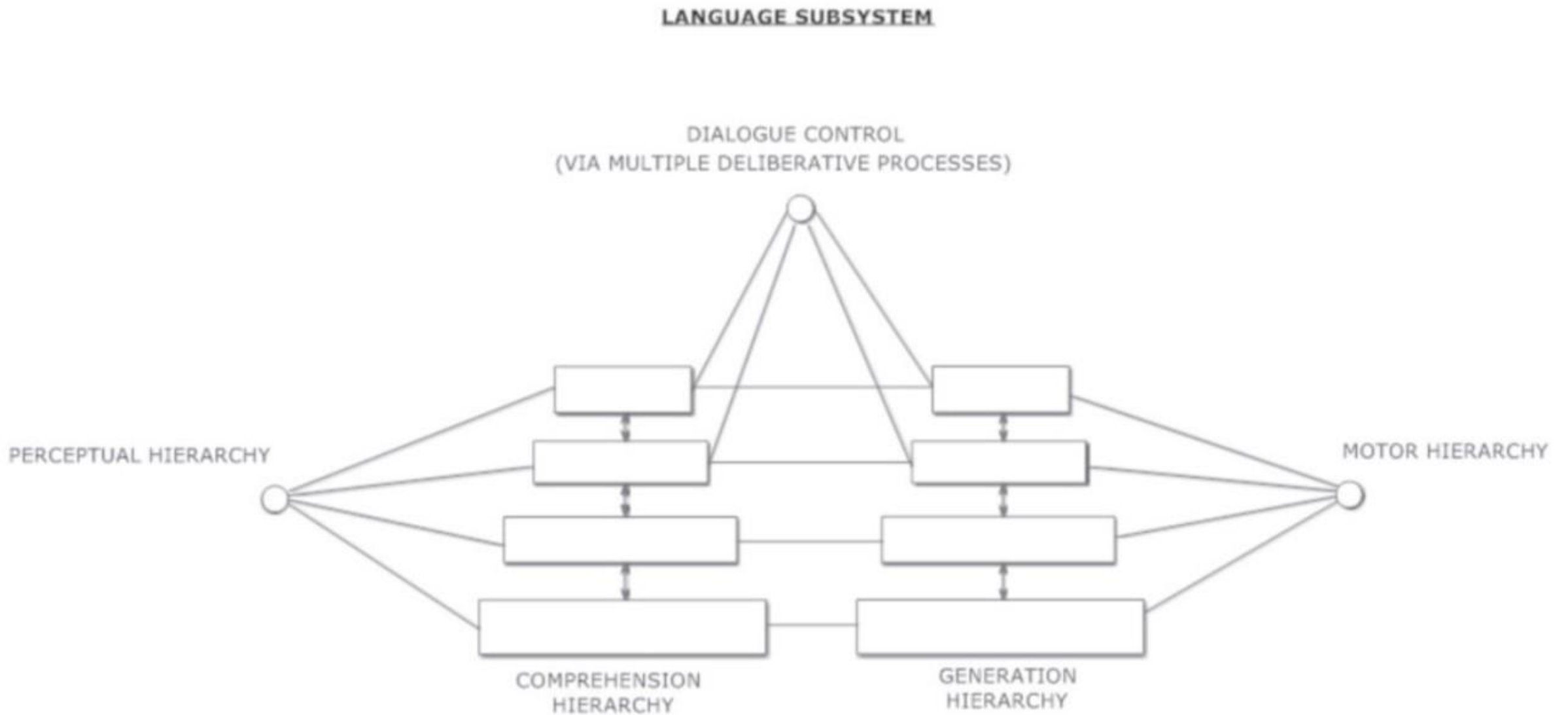


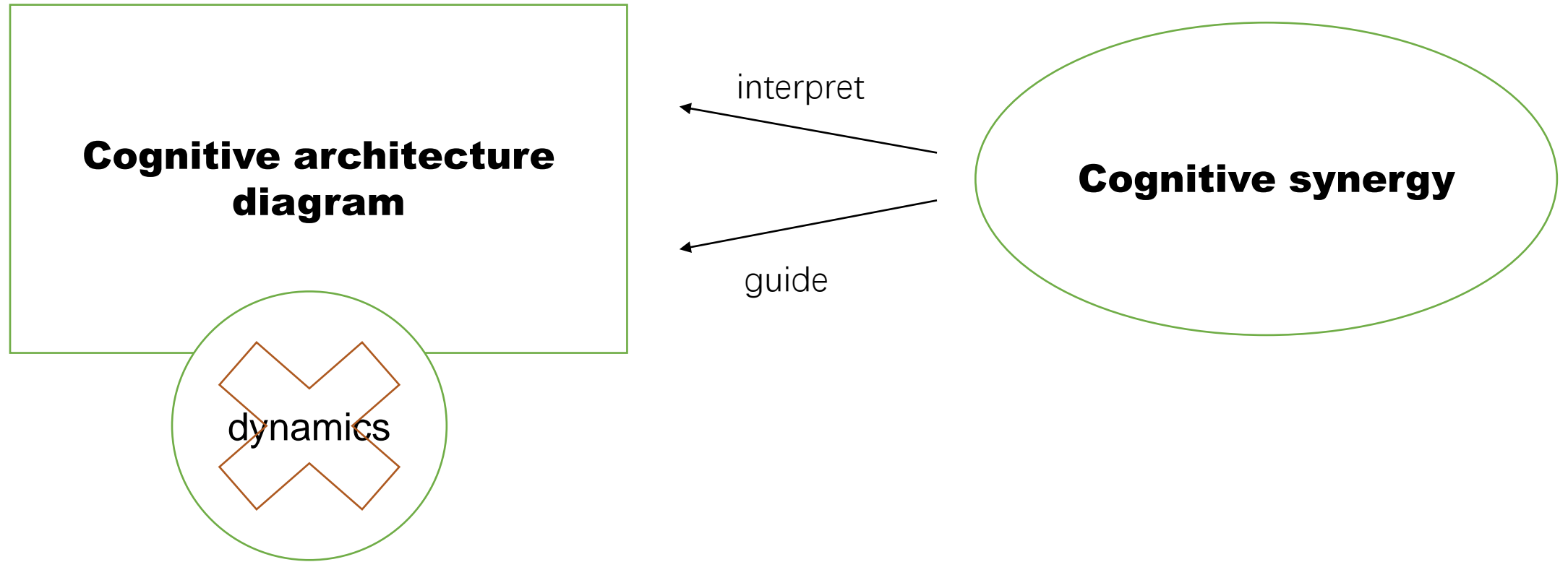
Fig. 8.7 Architecture for Language Processing

1. Architecture Diagram for Human-Like General Intelligence

What is the use of this diagram?

- (1) Gives basic idea to newcomers
- (2) used as a tool for cross-correlating different AGI architectures
- (3) give a means of relating the various AGI designs to each other
- (4) connect AGI and cognitive psychology to neuroscience

2. Cognitive Synergy



2. Cognitive Synergy

The essential idea of cognitive synergy

- 1) Intelligence may be understood as the capability to achieve complex goals in certain environments.
- 2) Intelligent system requires a “multi-memory” architecture in certain goals or environments.
- 3) Such a system must possess a knowledge creation mechanism, called “cognitive processes”.
- 4) **Have the capability to recognize its lack of information** and dynamically and interactively draw information from others.
- 5) Enable the knowledge creation mechanisms to perform much more effectively in combination than they would if operated non-interactively.

Thank you for your time!