

# Modelling Cognition

SE 367 : Cognitive Science

**Group C**

# Nature of Linguistic Sign

- Linguistic sign
  - Not - Thing to Name
  - Signified and Signifier
  - The semantic breaking is arbitrary
    - Ex. The concept of eat and drink in Bengali being mapped to the same sound-image

# The Sign

- Icon
  - In the mind
  - Existence of the ‘object’ – not necessary
- Index
  - Dynamic connection to the object by blind compulsion
  - If the object ceases to exist, the index loses its significance
- Symbol
  - Medium of communication

# Symbol Grounding Problem and Symbolic Theft

- Chinese-Chinese dictionary recursion
- Symbolic representations (to be grounded)
- Non symbolic representations (sensory)
  - Iconic
  - Categorical

# Symbol Grounding Problem and Symbolic Theft

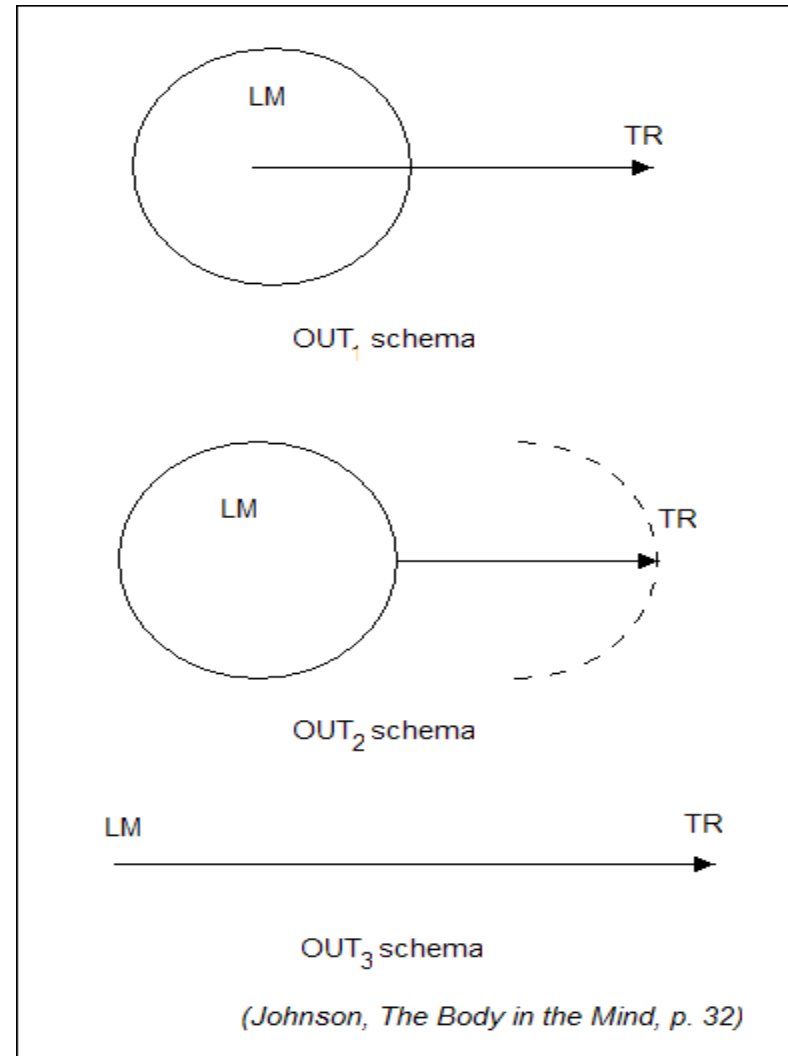
- Symbol Systems
  - Higher level cognition – semantics
- Connectionist systems
  - Capture invariant features
  - Identification and discrimination
- Sensorimeter toil
- Symbolic theft

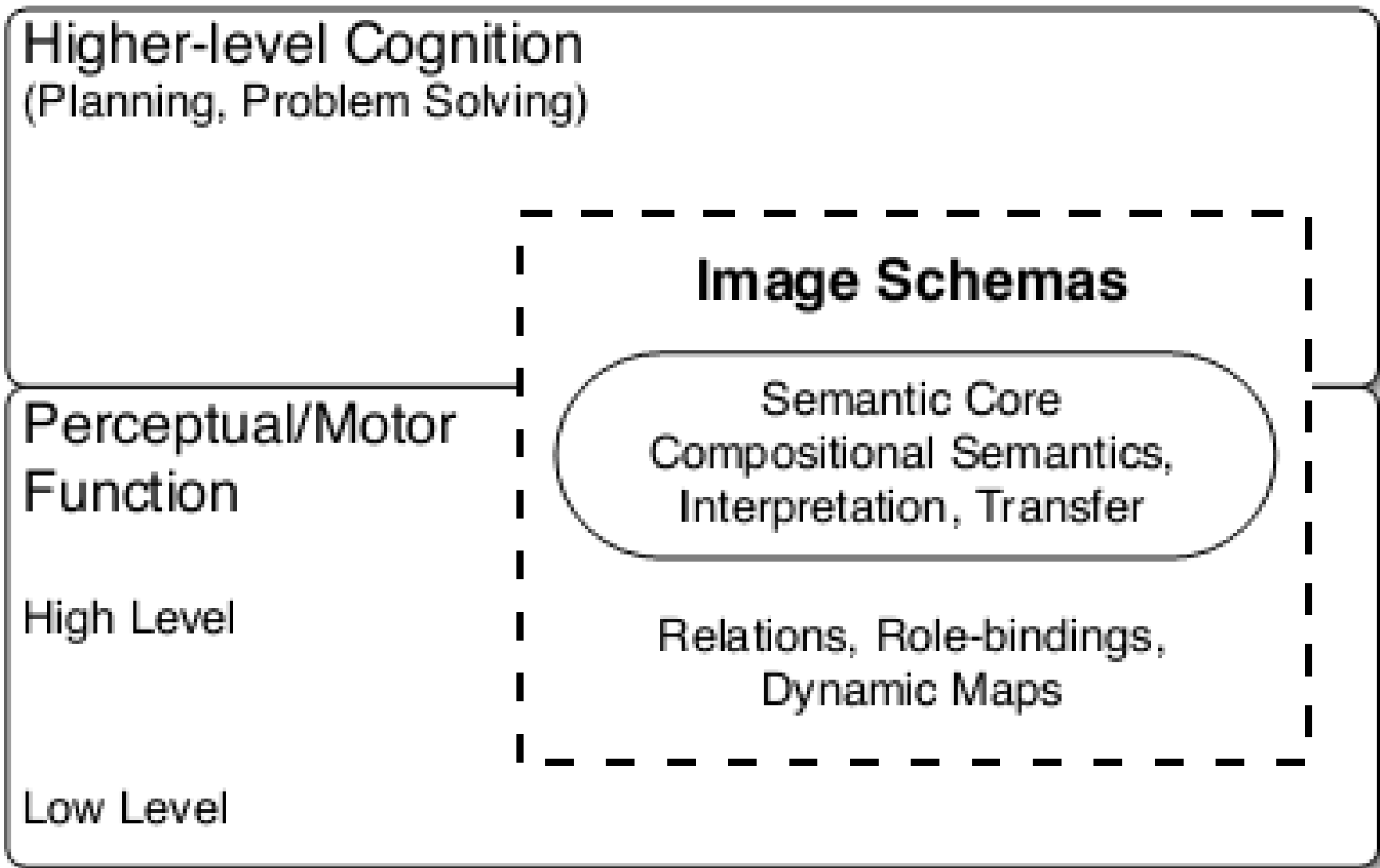
# A Computer Program ?

- Computer Program –Searle
  - Chinese Room
  - Missing semantics
  - Compatibility of programs with any hardware –  
contrary to the human mind
  - Simulation vs. Duplication

# Image Schema

- A condensed description of perceptual experience for the purpose of mapping spatial structure onto conceptual structure.





## Locating schemas in a cognitive architecture



# Image Schema Language

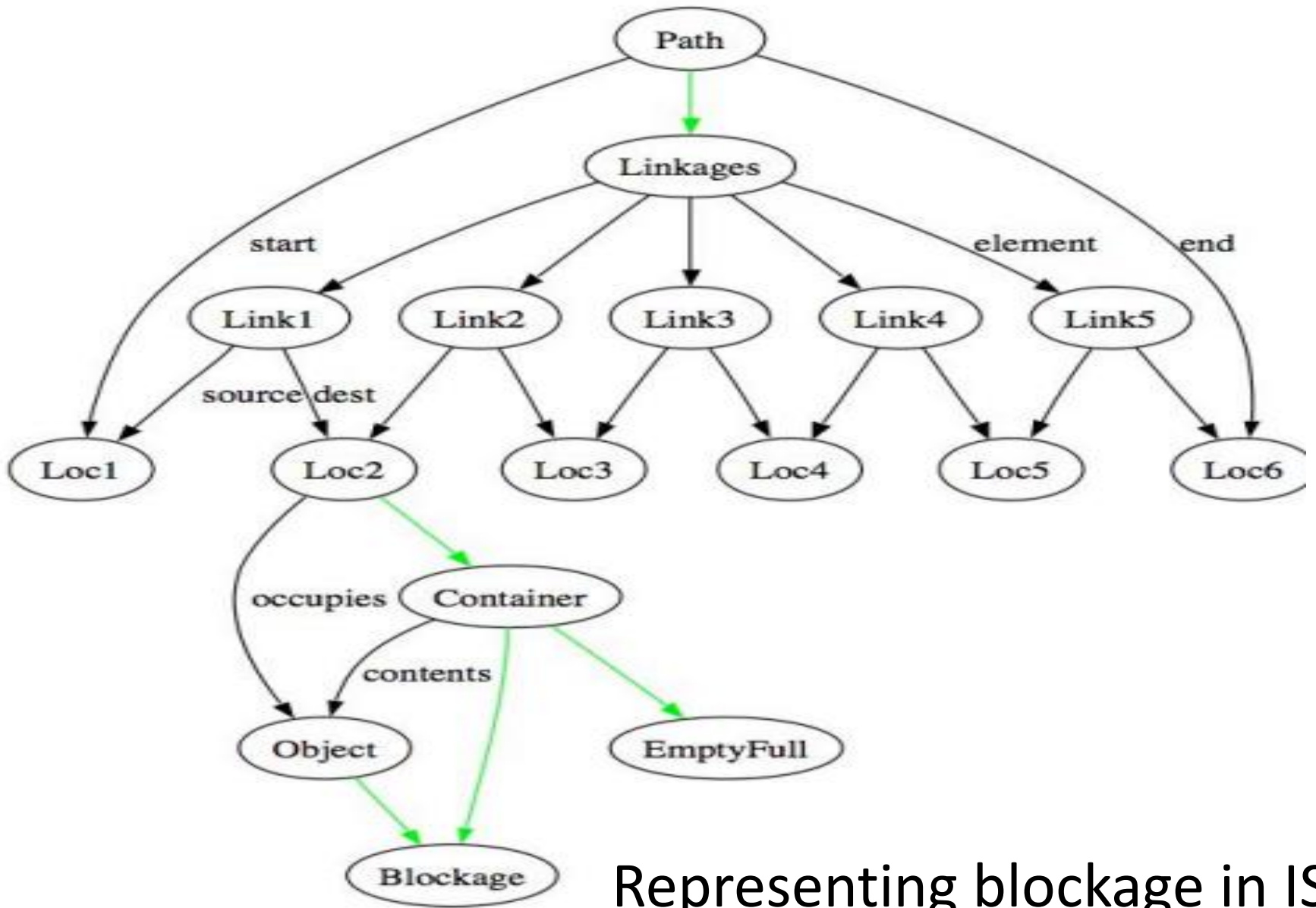
- Implementing image schemas gives us insight about how they can function as a semantic core for reasoning.
- ISL Image schemas
  - Static schemas
  - Dynamic schemas
  - Action schemas

# Image Schema Language

- Schemas for verb-like concepts need
  - role bindings and associated axioms
- Many image schemas require quantitative and procedural components as well as a symbolic/declarative component.

# Chess Pattern

- Path
  - A set of locations
- Queen can traverse the path
  - Path as a set of directional linkages
- No location can be occupied by more than one piece at a time
  - Location as a container with a capacity of 1
- Blockage



## Representing blockage in ISL

# Chess Pattern

- “Black queen has the White king in check”
- “When an opponent’s piece puts your king in check, you can counter by moving another piece into its path.”

Thank You