Knowledge Representation

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- From Physical Symbol system hypothesis we have the following insight on knowledge representation:
  - *Symbol patterns represent significant aspect of problem domain*
- Knowledge representation and search form the core of ‘symbolic’ AI

Knowledge Dilemma

- An AI system must contain a lot of knowledge if it is to handle anything but trivial toy problems
- But as the amount of knowledge grows, it becomes harder to access the appropriate things when needed, so more knowledge must be added to help
- But now there is even more knowledge to manage, so more must be added, and so forth

Representation Scheme

- The function of a representation scheme is to capture the essential features of a problem domain and make that information accessible to a problem solving procedure
- A representation scheme should:
  - Be adequate to express all the necessary information
  - Support efficient execution of the resulting code
  - Provide a natural scheme for expressing the required knowledge

Knowledge Representation Schemes

- Generally representation schemes may be divided into two broad categories:
  - Explicit Representation schemes (Logic schemes: predicate calculus, graphical schemes: semantic networks, structured schemes: scripts, frames)
  - Implicit Representation schemes (Neural networks, genes in genetic algorithm)