

# Class 4: Inference

Selmer Bringsjord

May 27, 1999

- Logistics
  - Again: class pictorial roster, w/ email addresses & web sites...
  - Practice Midterm on web site<sub>w</sub>
    - \* a new practice one coming, will be on web site
  - Deadlines: Project 1 one-class extension
    - \* was 5/27 for studio audience, no 6/1
    - \* want to check behavior of functions up to chapter 14?
  - next time: resolution/review/Midterm
  - Anything else?

- Clarification of mental objects
  - return to previous class slides
  - The Wise Man Puzzle
  - Getting careful about the alphabet and grammar of  $\text{FOL}_J R$
  - using Hyperproof to do this

- Inference in the propositional calculus
  - c.j “The Lost Episode”
  - validity w/ truth tables to establish  $\models$
  - rules of inference more efficient!

- The two central equation-schemas again:
  - $\text{KB} \models \alpha$
  - $\text{KB} \vdash_i \alpha$
- Selmer's World  $\exists_{Web, Hyperproof}$

- Let's do some inferencing!
- Catching Colonel West
  - Web and *AIMA* for documentation
  - in OTTER
  - in Hyperproof

- But GMP not complete! . . .
  - Problem, e.g.:  $\forall x(\neg P(x) \Rightarrow Q(x))$
  - completeness; undecidability
    - \* Completeness: if  $\text{KB} \models \alpha$  then  $\text{KB} \vdash \alpha$ 
      - nuclear power plant emergency scenario again
    - \* Undecidability . . .
- Did curiosity kill the cat?

- an implementation of full-blown logical agent: demo