

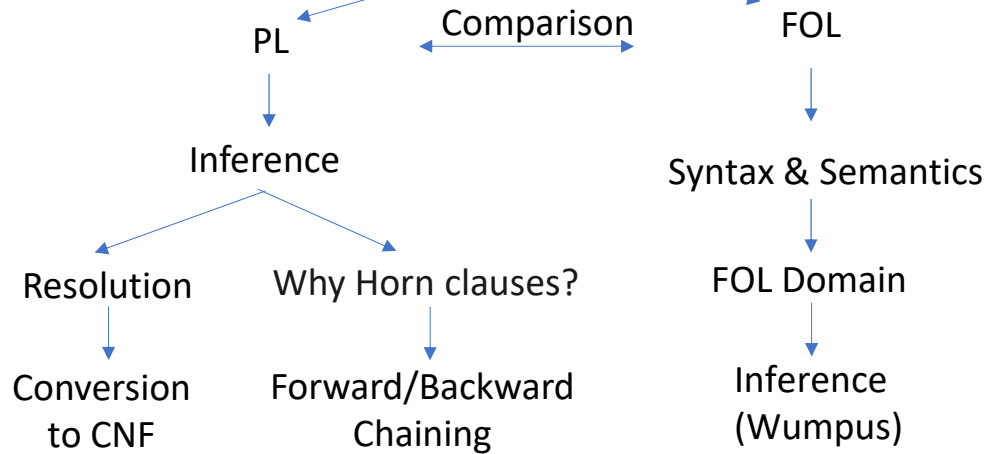
Why "logic" → Searching could not do since unobserved information
 Reasoning using knowledge-based

PL	No variable only true value	Hard identifying individuals	Inferencing is fairly easy
FOL	Relations with objects	property of individuals or relations	More complicated

Logic Agent

Example: "Wumpus"

Logic in General – Syntax, Semantics



- Constants KingJohn, 2, CU,...
- Predicates Brother, >,...
- Functions Sqrt, LeftLegOf,...
- Variables x, y, a, b,...
- Connectives $\neg, \Rightarrow, \wedge, \vee, \Leftrightarrow$
- Equality =
- Quantifiers \forall, \exists (量詞)

PL is **not expressive enough**, since it needs a huge amount of rules

FOL= + Object/Property/Relation/Predicate

PL: no power on handling groups of similar objects; every object is specified **individually**

FOL: overcome the weak expressiveness

Inference is **reading all the clues and making your best guess**

Resolution is **a complete inference algorithm**. The **resolution rule**(解析规则) forms the basis for a family of complete inference algorithms

Resolution rule has a weak point:
 → **Conjunctive Normal Form (CNF)**

resolution is not needed In many practical situations

- PL: Propositional Logic
- FOL: First-Order Logic

- real-world KB only has **Horn clauses**(霍恩子句)
- A **horn clause** is a disjunction of literals of which at most one is positive