Why"logic"→ Searching could not do since unobserved information

⟹ Reasoning using knowledge-based

Inference is reading all the clues and making your best guess

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

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

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

	PL	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

PL ⟷ Comparison ⟷ FOL

PL → Inference → Resolution → Conversion to CNF

Inference → Why Horn clauses? → Forward/Backward Chaining

FOL → Syntax & Semantics → FOL Domain → Inference (Wumpus)

resolution is not needed In many practical situations
- ➢ 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

- Constants KingJohn, 2, CU,...
- Predicates Brother, >,...
- Functions Sqrt, LeftLegOf,...
- Variables x, y, a, b,...
- Connectives ¬, ⇒, ∧, ∨, ⇔
- Equality =
- Quantifiers ∀, ∃ (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