3.4 Case study, Wumpus World

Model: A model is a description of the world where every relevant sentence has been assigned truth or falsehood. A model may correspond roughly to a valid line in the truth table.
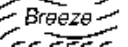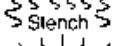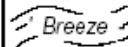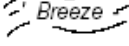
Inference : $\alpha \vdash \beta$ to say that β can be derived from α by inference,

$$\frac{\alpha}{\beta}$$

Entailment : KB $\models \alpha$ means that one thing follows from another

If M(α) is the set of all models of , then
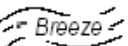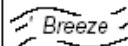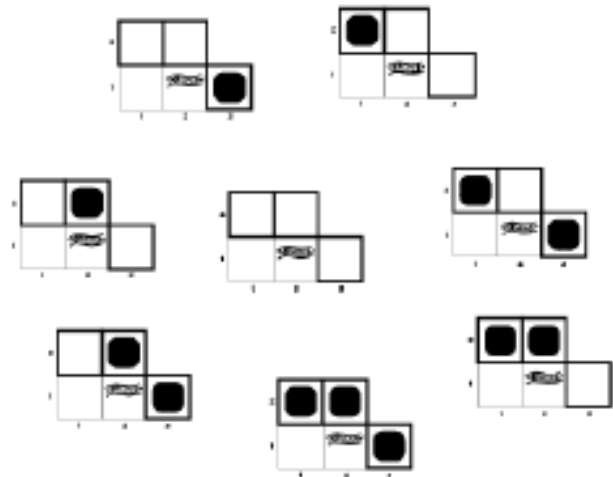
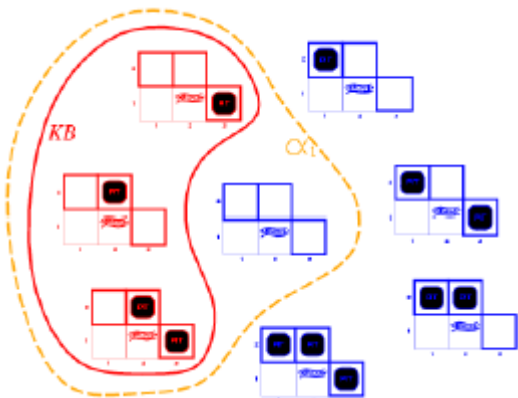$$\textbf{KB} \models \alpha \text{ iff } \textbf{M(KB)} \subseteq \textbf{M}(\alpha)$$

Entailment in the wumpus world, Consider possible models for *KB* assuming only pits

$\alpha1$ = "There is no pit in (1,2)"	$\alpha2$ = "There is no pit in (2,2)"
KB $\models \alpha1$ i.e. *M(KB)* $\subseteq$ *M($\alpha1$)*	We cannot conclude $\alpha2$ i.e. *M(KB)* $\not\subseteq$ *M($\alpha2$)*

Soundness : *i* is sound if whenever $KB \vdash_i \alpha$, it is also true that $KB \models \alpha$
Completeness: *i* is complete if whenever $KB \models \alpha$, it is also true that $KB \vdash_i \alpha$