

Def: Parent $\equiv \exists \text{ child. } T$
 Parent \sqsubseteq LingBeig

likely constr

Parent $\sqsubseteq \forall \text{ child. LingBeig}$

not possible in DL:
 HOL: $\neg \text{subcl}(c, \text{LingBeig})$
 $\forall x, y, c: \text{child}(x, y) \wedge \text{isa}(x, c) \rightarrow \text{isa}(y, c)$
 c isa species

\Rightarrow that will not be possible in OWL

isa between class and 2nd order "class"

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$\perp \sqsupseteq \text{cat} \sqcap \text{dog}$

$\hat{=} \forall x: (\text{cat}(x) \wedge \text{dog}(x)) \rightarrow \perp(x)$

$\hat{=} \text{no such } x \text{ can exist}$

$\hat{=} \text{"Denial"}$

Childless $\equiv \forall \text{child. } \perp$

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Consider an φ that is a dog
 $\left\{ \begin{array}{l} c \text{ that is a cat} \\ e \text{ that is known to be a cat or a dog} \end{array} \right.$

dog \perp cat ?

\Rightarrow always consider a single interpretation!

$\models \varphi : \begin{array}{l} \bar{I}_1 = \{ \text{dog}(d), \text{cat}(c), \text{dog}(e) \} \\ \bar{I}_2 = \{ \text{dog}(d), \text{cat}(c), \text{cat}(e) \} \end{array}$

$\bar{I}_1(\text{dog} \perp \text{cat}) = \{ d, c, e \}$
 $\bar{I}_2(\text{dog} \perp \text{cat}) = \{ d, c, e \}$

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