Semantic types

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COGS 543: Computational Semantics
METU, Informatics

NL ⟶ LF ⟶ Model

↓ Syntax semantics interface

↓ Model-theoretic interpretation

$D = \{d_1, d_2, \ldots\}$

$I : C_n \to Pow(D^n)$

semantic types

$T = \{e, t\}$

↓ entity ↘ truth-value.

$\alpha \in D$ are of type e.

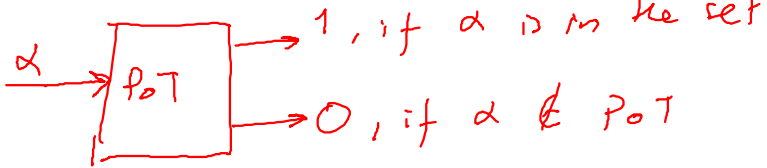
$J'_e \longrightarrow d_{327_e}$

sleeps' ⟹ $\{d_1, d_{12}, \ldots\}$

characteristic function of a set.

Set of provinces

$PoT = \{ \text{ankara}, \text{istanbul}, \text{sinop} \dots \}$



sleeps' $\Rightarrow$ $\{d_1, \ldots\}$

$\langle e,t \rangle$ mtt

$e \rightarrow t$

$d \in D$, d is of type e.

J'_e

loves' $\underset{mtt}{\Rightarrow}$ $\{\langle d_1, d_2 \rangle, \langle d_8, d_5 \rangle, \ldots\}$

$\lambda x \lambda y^{t}.\ loves' x y$

$e \rightarrow (e \rightarrow t)$

$S \setminus NP : \lambda x.\ sleeps' x$

$e \rightarrow t \equiv \langle e,t \rangle$

Type (loves) = $\langle e, \langle e, t \rangle \rangle$

1. e and t are types
2. if α and β are types, so is $\langle \alpha, \beta \rangle$.
3. Nothing else is a type

e, t ✓

$\langle e, t \rangle$ ✓

$\langle t, t \rangle$ ✓

$\langle\langle t, t \rangle, e \rangle$ ✓

$\langle\langle t, t \rangle, \langle e, \langle e, t \rangle\rangle\rangle$ ✓

$\langle e, t \rangle$ et

$\langle e, \langle e, t \rangle\rangle$ $e(et)$

$\langle\langle e, t \rangle, t \rangle$ $((et)t)$

$\langle\langle t, t \rangle, \langle e, t \rangle\rangle$ $tt(et)$