Basic linguistic mappings

(i) names, definite NPs (DPs) — elements/individuals $a, b, c, \ldots$

$[\![\text{Ted}]\!] = t$

(ii) nouns, adjectives, intransitive verbs — sets of individuals $A, B, C, \ldots$

$[\![\text{dance}]\!] = \{x\text{: } x \text{ dances}\}$

(iii) transitive verbs — sets of ordered pairs $\mathcal{A}, \mathcal{B}, \mathcal{C}, \ldots$

$[\![\text{like}]\!] = \{\langle x, y\rangle\text{: } y \text{ likes } x\}$

Basic compositions

(i) simple predication — S → DP VP; VP → V or VP = *is* + AdjP

S is true iff $[\![\text{DP}]\!] \in [\![\text{VP}]\!]$

$[\![\text{Ted dances}]\!]$ is true iff $t = [\![\text{Ted}]\!] \in [\![\text{dance}]\!] = \{x\text{: } x \text{ dances}\}$

(ii) transitive VP — $\text{S} \rightarrow \text{DP}_1 \text{ VP}; \text{VP} \rightarrow \text{V DP}_2$

S is true iff $\langle [\![\text{DP}_2]\!], [\![\text{DP}_1]\!] \rangle \in [\![\text{VP}]\!]$

$[\![\text{Ted likes the shawarma}]\!]$ is true iff
$\langle s, t\rangle = \langle [\![\text{the shawarma}]\!], [\![\text{Ted}]\!] \rangle \in [\![\text{like}]\!] = \{\langle x, y\rangle\text{: } y \text{ likes } x\}$

(iii) definite descriptors — DP → D NP

$[\![\text{D NP}]\!]$ = contextually salient individual d s.t. $d \in [\![\text{NP}]\!]$

$[\![\text{the shawarma}]\!]$ = contextually salient shawarma s in set $[\![\text{shawarma}]\!]$

Quantifiers

Notes
. The quantification determiner used (*all, some, no,...*) determines the relevant relationship to check for the sets denoted by $[\![\text{N}]\!]$ and $[\![\text{VP}]\!]$
. There is usually some domain restriction (determined by the context)
. Simple predication is not used in this case of S → DP VP

(i) *All* N VP is true iff $[\![\text{N}]\!] \subseteq [\![\text{VP}]\!]$, such that $[\![\text{N}]\!]$ consists of the contextually salient individuals that have that property.

(ii) *Some* N VP is true iff $([\![\text{N}]\!] \cap [\![\text{VP}]\!]) \neq \varnothing$

(iii) *No* N VP is true iff $([\![\text{N}]\!] \cap [\![\text{VP}]\!]) = \varnothing$