

Semantics 1 – Argument structure

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Argument structure and interpretability

The linking problem

Warm up

(1) I exist

Some examples

- (2) * Ann laughed Jan.
- (3) a. Alfonso killed Joanna.
b. Alfonso died Joanna.

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b. Alfonso died Joanna.
- (4) * It is not the case that greeted Ann.
- (5) * Alfonso likes.

Some examples

- (2) * Ann laughed Jan.
- (3) a. Alfonso killed Joanna.
b. Alfonso died Joanna.
- (4) * It is not the case that greeted Ann.
- (5) * Alfonso likes.
- (6) a. It is raining.
b. * Alfonso is raining.

Some more examples

- (7) a. Joanna seemed to sleep.
- b. * Joanna seemed Alfonso to sleep.
- c. Joanna expected Alfonso to sleep.
- (8) a. Joanna is likely to dance.
- b. It is likely for Joanna to dance.
- c. * Joanna is likely for Henry to dance.

Theta criterion

(Chomsky 1981)

- (i) Each argument bears one and only one thematic role (Θ -role).
- (i) Each Θ -role is assigned to one and only one argument.

Thematic roles

- ▶ What is a Θ -role?

Characterization of the role a participant plays in the event described by the verb.

- ▶ Crucial information for *lexical semantics*.
- ▶ Two notions: verb-specific roles, generalized thematic roles.
- ▶ Kicker, kickee vs. agent, patient.
- ▶ Other generalized roles: theme, experiencer, source, goal, cause.

Implementing the Θ -criterion

- (TN) If α is a terminal node, then α is in the domain of $\llbracket \cdot \rrbracket$ if $\llbracket \alpha \rrbracket$ is specified in the lexicon.
- (NN) If α is a non-branching node, and β is its daughter node, then α is in the domain of $\llbracket \cdot \rrbracket$ if β is. In this case, $\llbracket \alpha \rrbracket = \llbracket \beta \rrbracket$.
- (FA) If α is a branching node, and $\{\beta, \gamma\}$ is the set of α 's daughters, then α is in the domain of $\llbracket \cdot \rrbracket$ if both β and γ are and $\llbracket \beta \rrbracket$ is a function whose domain contains $\llbracket \gamma \rrbracket$. In this case, $\llbracket \alpha \rrbracket = \llbracket \beta \rrbracket(\llbracket \gamma \rrbracket)$.

Principle of interpretability:

All nodes in a phrase structure tree must be in the domain of the interpretation function $\llbracket \cdot \rrbracket$.

How general is it?

- ▶ Does PI implement an exact version of Chomsky's Θ -criterion?

(9) John smokes and drinks.

(10) John and Mary smoke.

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(11) John and Mary lifted the box.

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(9) John smokes and drinks.

(10) John and Mary smoke.

(11) John and Mary lifted the box.

(12) Alfonso drove the car into the garage.

(13) Alfonso believes Joanna to smoke.

The linking problem

Problem: how do we map roles to syntactic positions?

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Wrong: $\llbracket \text{see} \rrbracket = \lambda x_e . \lambda y_e . x \text{ saw } y$

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Right: experiencer/seer \rightarrow subject, theme/seen \rightarrow direct object.

Wrong: experiencer/seer \rightarrow direct object, theme/seen \rightarrow subject.

UTAH

Traditional theory: syntax/semantics mapping principle –
Uniformity of Theta Assignment Hypothesis (Baker).

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- ▶ Verb-specific version – captured trivially by our system.
- ▶ Generalized version?

On the status of thematic roles

- ▶ Verb-specific roles a necessity. (Information a core part of verbal meaning.)
- ▶ We need a theory of theta-role assignment. Provided by type-driven Fregean semantics, no generalized roles needed (so far).
- ▶ We need a solution to the linking problem. Not provided.