Gluing Meanings and Semantic Structures

John J. Lowe University of Oxford
john.lowe@ling-phil.ox.ac.uk http://users.ox.ac.uk/~shug1472/

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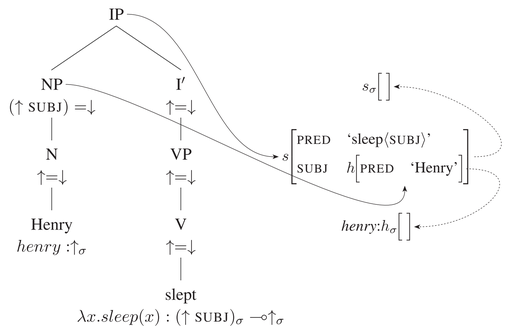
1. Introduction

1. Glue: meanings are paired with instructions for composition.
2. These instructions refer to semantic structures.
3. Dalrymple (2001): a meaning constructor like $henry : \uparrow_\sigma$ associates the meaning $henry$ with the semantic structure $\uparrow_\sigma$.
4. All semantic structures are of type e or t.
5. Complex meanings are associated not with one structure, but an implication (usually) between structures.

(1) Henry slept.

(2) a. $henry : \uparrow_\sigma$

b. $\lambda x.sleep(x) : (\uparrow \text{SUBJ})_\sigma \multimap \uparrow_\sigma$



2. S-structures for I-structure

- Dalrymple and Nikolaeva (2011): use s-structures to hold discourse-relevant features.
- Reflects intuition that information structure is closely related to semantic structure.
- S-structure feature DF is basis of i-structure categorization.
- Having features in s-structure potentially opens up new avenues for analysing semantic and discourse phenomena.

(3) $john$: [ANIMATE +, HUMAN +, STATUS IDENTIFIABLE, ACTV ACTIVE, DF TOPIC]

3. Problems

1. Only simple meanings are directly associated with single structures.
2. More complex meanings, like verbal meanings, are not directly associated with any single structure in which features could be represented.

The problem with i-structure has always been one of granularity:

1. King (1997): f-structure is too coarse, so use c-structure.
2. But c-structure is too coarse: different parts of a single word's meaning can have different i-structure status (Mycock, 2009).
3. DN11 base i-structure categorization on s-structure, but too coarse: all meaning constructors associated with a word must be categorized identically (5 is impossible).

Event semantics:

(4) Q. What did Anna do?
A. Anna hit Norman.

(5) [TOPIC {**anna**, **event**}, FOCUS {**hit**, **norman**}]

Distinguishing tense and aspect:

(6) a. $\lambda x.\lambda e.sleep(e) \wedge experiencer(e,x) : (\uparrow \text{SUBJ})_\sigma \multimap (\uparrow_\sigma \text{EV}) \multimap \uparrow_\sigma$
b. $\lambda P.\lambda t.\exists e.P(e) \wedge \tau(e) \prec t : ((\uparrow_\sigma \text{EV}) \multimap \uparrow_\sigma) \multimap ((\uparrow_\sigma \text{RT}) \multimap \uparrow_\sigma)$
c. $\lambda P.\lambda t'.\exists t.P(t) \wedge t \subseteq t' : ((\uparrow_\sigma \text{RT}) \multimap \uparrow_\sigma) \multimap ((\uparrow_\sigma \text{PT}) \multimap \uparrow_\sigma)$
d. $\lambda P.\exists t.P(t) : ((\uparrow_\sigma \text{PT}) \multimap \uparrow_\sigma) \multimap \uparrow_\sigma$

(7) a. Henry did sleep.
b. Henry has slept.
c. Henry will sleep.
d. Henry will have slept.

(8) [PRED ‘sleep⟨SUBJ⟩’, TENSE FUTURE, ASPECT PERFECTIVE, SUBJ [PRED ‘Henry’]]

(9) Q. Have you found it?
A. I *had* found it (but I lost it again).

(10) Q. Have you read my paper?
A. I *will* have read it by tomorrow.

4. Proposal

• 'Split' meaning constructors into two parts: one expresses the meaning and associates it with a single, uniquely labelled semantic structure; the other converts the glue expression of the first into one of the 'usual' sort. So (11) is the composition of (12a) and (12b).
• Use $(\uparrow_\sigma \text{REL})$ as the uniquely labelled structure for the basic lexical meaning of all words.

(11) $\lambda x.sleep(x) : (\uparrow \text{SUBJ})_\sigma \multimap \uparrow_\sigma$

(12) Meaning constructors for 'sleep':

a. $\lambda x.sleep(x) : (\uparrow_\sigma \text{REL})$
b. $\lambda P.P : (\uparrow_\sigma \text{REL}) \multimap (\uparrow \text{SUBJ})_\sigma \multimap \uparrow_\sigma$

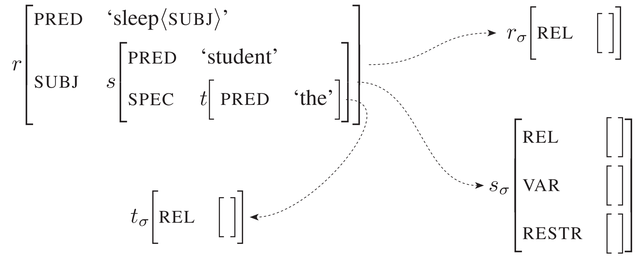
(13) Meaning constructors for 'student':

a. $\lambda x.student(x) : (\uparrow_\sigma \text{REL})$
b. $\lambda P.P : (\uparrow_\sigma \text{REL}) \multimap (\uparrow_\sigma \text{VAR}) \multimap (\uparrow_\sigma \text{RESTR})$

(14) Meaning constructors for definite article:

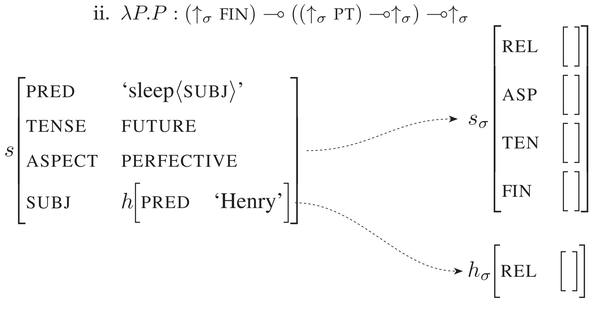
a. $\lambda P.\lambda Q.\iota x.P(x) \wedge Q(x) : (\uparrow_\sigma \text{REL})$
b. $\lambda P.P : \forall \alpha.(\uparrow_\sigma \text{REL}) \multimap (((\text{SPEC} \uparrow)_\sigma \text{VAR}) \multimap ((\text{SPEC} \uparrow)_\sigma \text{RESTR})) \multimap ((\text{SPEC} \uparrow)_\sigma \multimap \alpha) \multimap \alpha$

(15) The student slept.



Multiple meanings per word/f-structure: have as many uniquely labelled s-structures as necessary. So for 4-way division of verbal meaning, $(\uparrow_\sigma \text{REL})$ represents basic lexical meaning, $(\uparrow_\sigma \text{ASP})$ represents aspect, $(\uparrow_\sigma \text{TEN})$ represents tense, and $(\uparrow_\sigma \text{FIN})$ represents finiteness. For a two-way division, only two of these would be needed.

(16) a. i. $\lambda x.\lambda e.sleep(e) \wedge experiencer(e,x) : (\uparrow_\sigma \text{REL})$
ii. $\lambda P.P : (\uparrow_\sigma \text{REL}) \multimap (\uparrow \text{SUBJ})_\sigma \multimap (\uparrow_\sigma \text{EV}) \multimap \uparrow_\sigma$
b. i. $\lambda P.\lambda t.\exists e.P(e) \wedge \tau(e) \prec t : (\uparrow_\sigma \text{ASP})$
ii. $\lambda P.P : (\uparrow_\sigma \text{ASP}) \multimap ((\uparrow_\sigma \text{EV}) \multimap \uparrow_\sigma) \multimap (\uparrow_\sigma \text{RT}) \multimap \uparrow_\sigma$
c. i. $\lambda P.\lambda t'.\exists t.P(t) \wedge t \subseteq t' : (\uparrow_\sigma \text{TEN})$
ii. $\lambda P.P : (\uparrow_\sigma \text{TEN}) \multimap ((\uparrow_\sigma \text{RT}) \multimap \uparrow_\sigma) \multimap (\uparrow_\sigma \text{PT}) \multimap \uparrow_\sigma$
d. i. $\lambda P.\exists t.P(t) : (\uparrow_\sigma \text{FIN})$
ii. $\lambda P.P : (\uparrow_\sigma \text{FIN}) \multimap ((\uparrow_\sigma \text{PT}) \multimap \uparrow_\sigma) \multimap \uparrow_\sigma$



• These proposals effectively resolve the granularity problem, permitting not only all words, but even sub-parts of words' meanings, to be distinguished in s-structure, and therefore categorized separately at i-structure.

References

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