

The Mental Representations of Light Verbs

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QUESTION:

The Light Verb Construction gives us a window into the mental lexicon:

John takes a cup → agent=John, theme = a cup
John takes a walk → agent = John, theme=∅

THE LIGHT VERB CONSTRUCTION:

- The predicate associated with the verb fails to express its full argument structure.
- The predicate associated with the nominalization preserves its original argument structure.

Paul macht einen Spaziergang ≈ *Paul geht spazieren.*
 Paul makes a walk ≈ Paul walks.

Paul macht einen Kaffee ≠ **Paul kaffee-t.*
 Paul makes a coffee ≠ *Paul coffee-es.

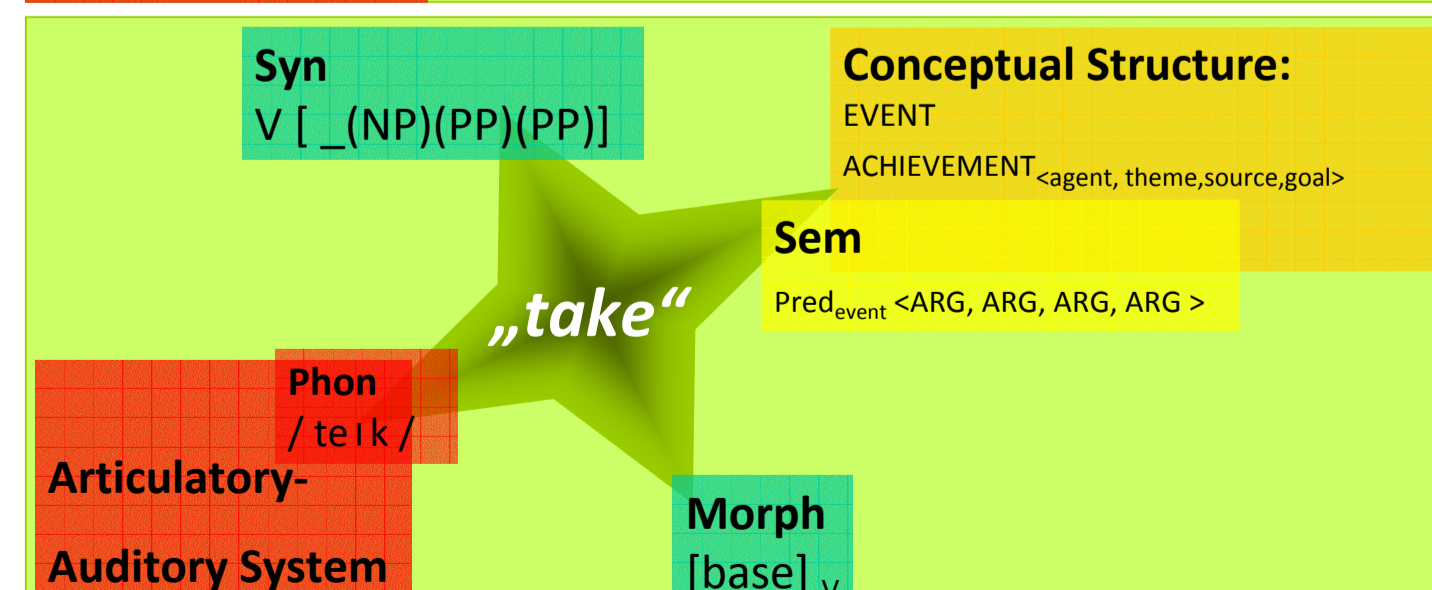
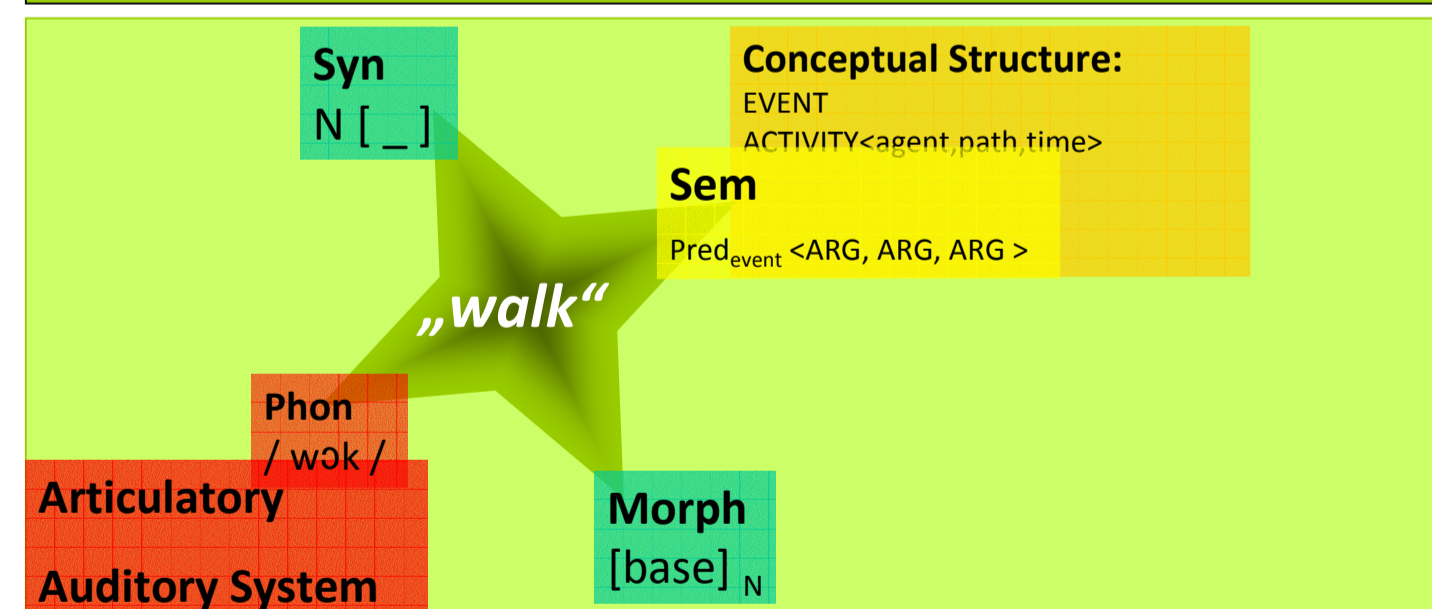
phrase structure in both examples: [DP [_{VP} V DP]]
 semantic roles: *Paul* <agent>, *Kaffee* <patient>
Paul <agent>, *Spaziergang* <∅>

compositional problem:

no 1:1-correspondence between semantic and syntactic arguments!

PROPOSAL (I):

THE LEXICAL ITEM: AN INTERFACE SYSTEM



PROPOSAL (II): ARGUMENT SHARING

integration of verbal predicate's and nominal's arguments.

...rooted in syntax and semantics

...triggered by mismatch between semantic roles and syntactic arguments
 ...a "recycling" process: no new semantic roles.



THREE SOLUTIONS:

Non-Compositional:

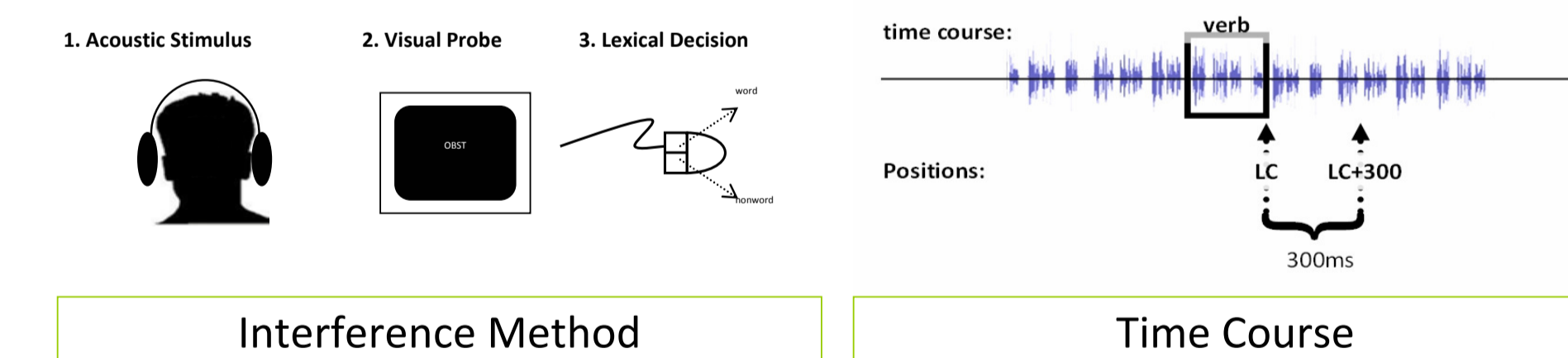
Compositional:

- Syntax-driven
- Syntax&CS

→ need to dissociate syntax and semantics!

- syntax = immediate (LC);
- semantics = slower to develop (LC+300)

APPROACH: REAL-TIME COMPREHENSION



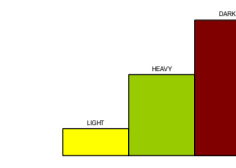
SAMPLE EXPERIMENTAL TRIAD

- Light:**
 Weil der Student seiner Kommilitonin vor dem Seminar **eine Zusammenfassung gab**, spendierte sie ihm letzte Woche einen Kaffee.
Because the student gave an abstract to his fellow student before class, she bought him coffee last week.
- Heavy:**
 Weil der Student seiner Kommilitonin vor dem Seminar **eine Zusammenfassung abschrieb**, spendierte sie ihm letzte Woche einen Kaffee.
Because the student copied an abstract to his fellow student before class, she bought him coffee last week.
- Dark:**
 Weil der Student seiner Kommilitonin vor dem Seminar **einen Kugelschreiber gab**, spendierte sie ihm letzte Woche einen Kaffee.
Because the student gave a pen to his fellow student before class, she bought him coffee last week.

PREDICTIONS:

Non-Compositional:

RT at both LC and at LC+300:



- RTs should be inversely proportional to frequency.

Compositional:

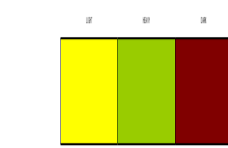
syntax-driven:

RT at LC



syntax-driven:

RT at LC+300:



- Lexical ambiguity of the verb should provoke processing cost at LC, but not at LC+300

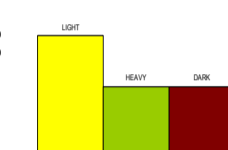
syntax&semantics:

RT at LC:



syntax&semantics:

RT at LC+300:



- No effect at LC (syntactically, all three conditions are the same)
- LVCs harder to process at LC+300: Argument Sharing is semantic

RESULTS

Licensing Position (LC): LIGHT = DARK = HEAVY

RT_L vs. RT_H vs. RT_D : $F(2, 816) = 0.08, p=0.91$

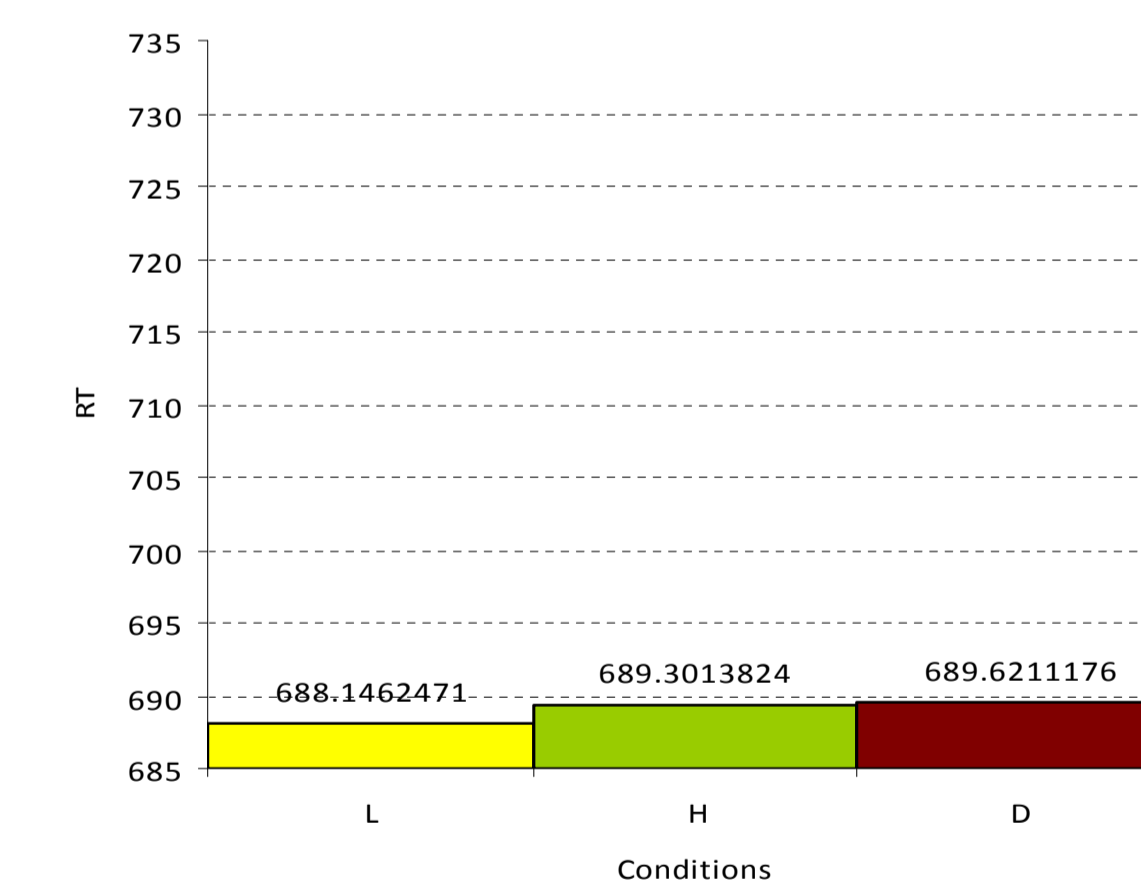
LC+ 300 msec: LIGHT >> DARK/HEAVY

RT_L vs. RT_H vs. RT_D : $F(2, 798) = 3.23, p= 0.04$

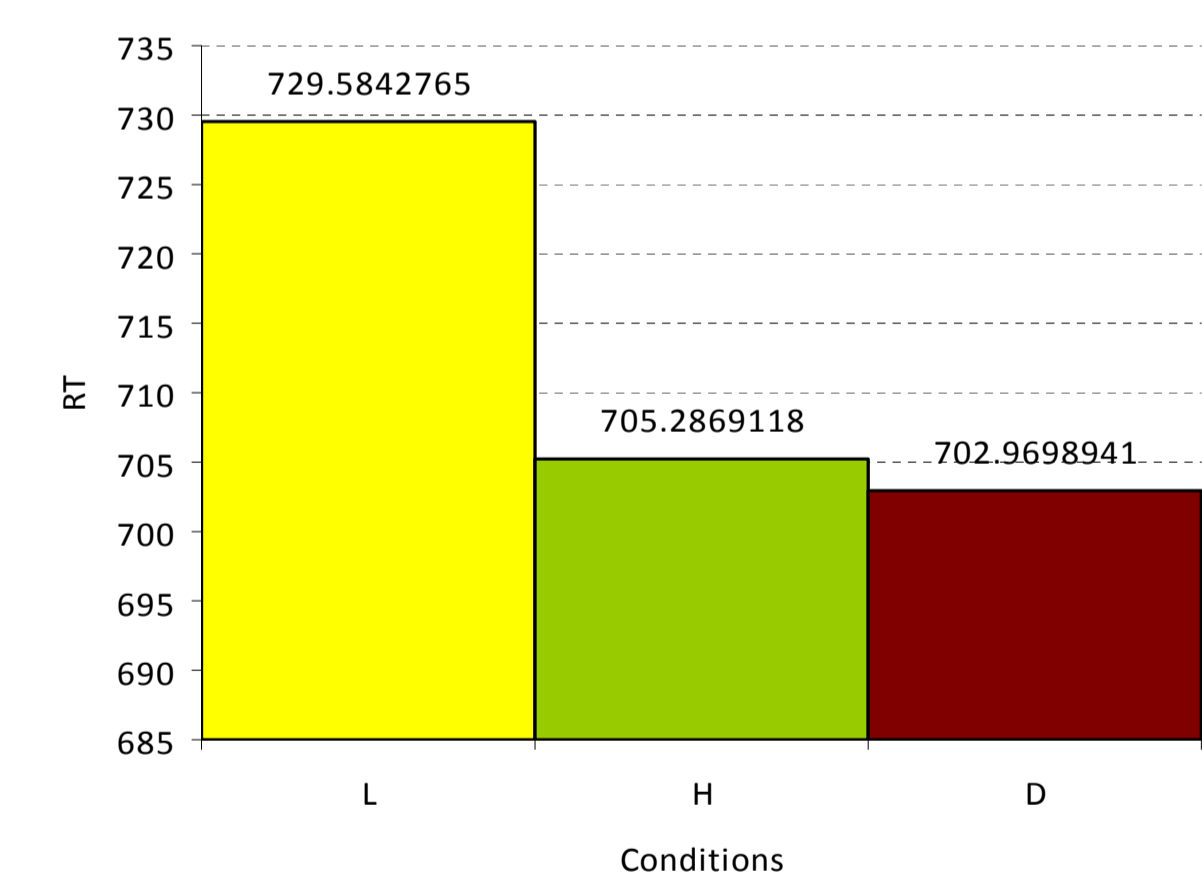
RT_L vs. RT_H : $F(1, 532) = 4.64, p= 0.03$

RT_L vs. RT_D : $F(1, 532) = 4.87, p= 0.03$

LC: Aggregated Means



LC+300: Aggregated Means



CONCLUSIONS

Composite argument structure in light verb constructions results from a **compositional process: argument sharing**.

Argument Sharing is an organizing principle in the **mental lexicon**: Our results support a **lexical representation** that dissociates syntactic and semantic information, and a **process of composition** that integrates these independent kinds of information.