

On the Predicate-Argument Structure: Internal and Absorbing Scope

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Problem definition

- Given:
 - Semantic definitions of all meaningful units of the sentence in terms of more simple components
 - Syntactic structure of the sentence
- Find:
 - Semantic structure of the sentence

Valency slot filling as semantic glue

- What is a valency?
 - Obligatory participant of a situation denoted by L
 - Expressed together with L in a regular way
- Valencies are needed for combining meanings of words into larger wholes
- Discovering the predicate-argument structure of the sentence is the most important step in constructing its semantic structure.
 - Given a sentence, for each predicate, find its actants (arguments)
 - Substitute actants for the variables in the semantic definition of the predicate: *X gives Y to Z*

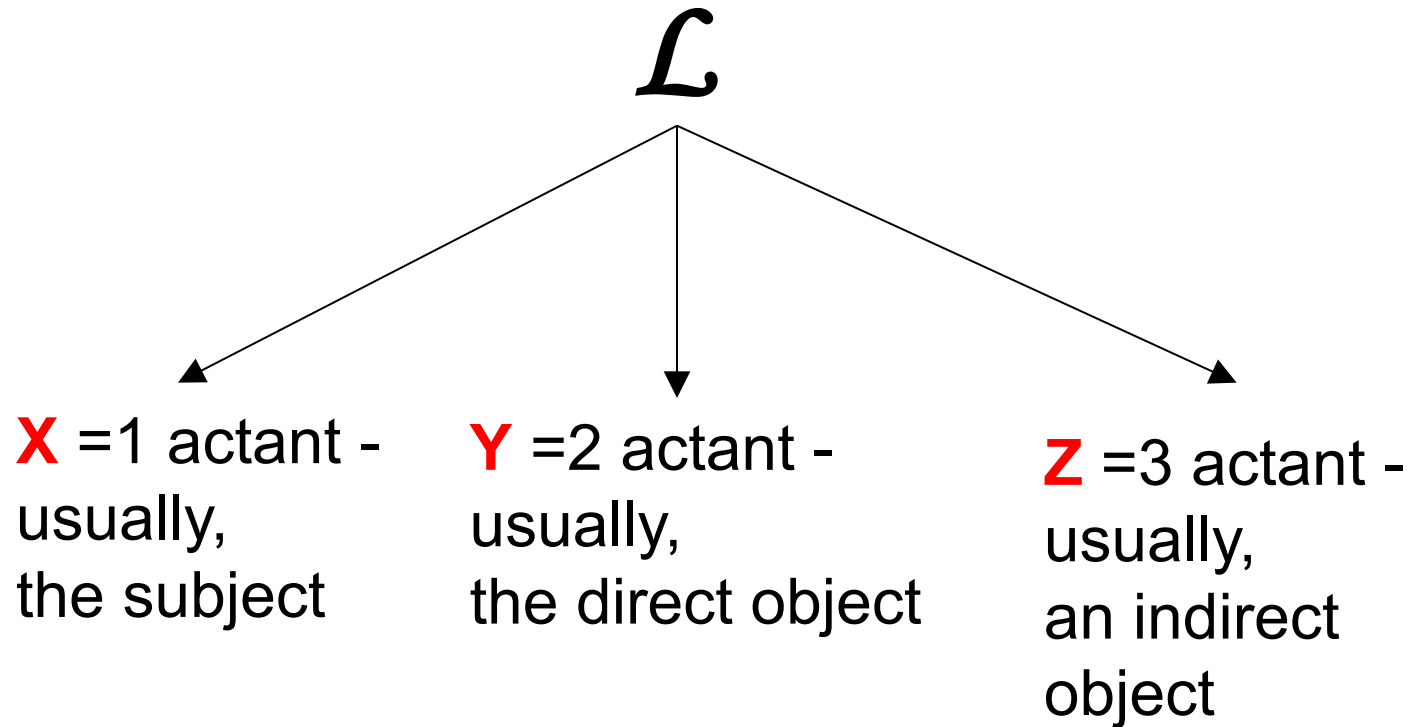
Actants at different levels

- Syntactic Structure: consists of lexical units (LU) connected by syntactic dependency relations
- In the Semantic Structure LUs are represented by their semantic definitions – simpler semantic units connected by predicate-argument relations.
- *Syntactic scope* of L in valency α ($\text{SyntScope}(L)^\alpha$): a fragment of SyntS that fills valency α of L.
- *Semantic scope* of L in valency α ($\text{SemScope}(L)^\alpha$): a fragment of SemS that fills valency α of L.
- In prototypical cases they are isomorphic.

Prototypical valency filling

- SyntScope:
 - SyntScope(L) depends on L in the dependency structure;
 - SyntScope(L) is connected to L directly (and not through some intermediate words).
- SemScope:
 - SemScope is isomorphic to SyntScope.
 - The word meaning is impermeable to predicate-argument relations.

Prototypical SyntScope



Valency words

- The range of valency words is not restricted to verbs and nouns, which are prototypical valency bearers.
- Also *adverbs, adjectives, prepositions, conjunctions, particles*.
- *to precede* and *before* denote the same situation with 2 obligatory participants
 - *The conference preceded the workshop*
 - *The conference was before the workshop*
- Difference: how these arguments are connected to the predicate.

Three types of valency slot filling

1. **Active** slot filling: $L \longrightarrow A$

- *The conference [A1] preceded [L] the workshop [A2]*

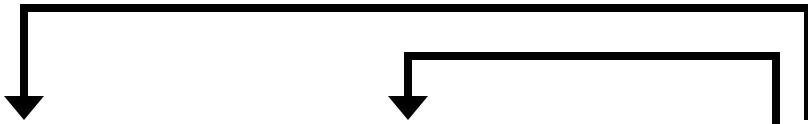
Three types of valency slot filling

2. **Passive** slot filling: $A \longrightarrow L$

- *The conference took place [A] before [L] the workshop*

Three types of valency slot filling

3. **Discontinuous** slot filling: $L \leftarrow \text{-----} \rightarrow A$



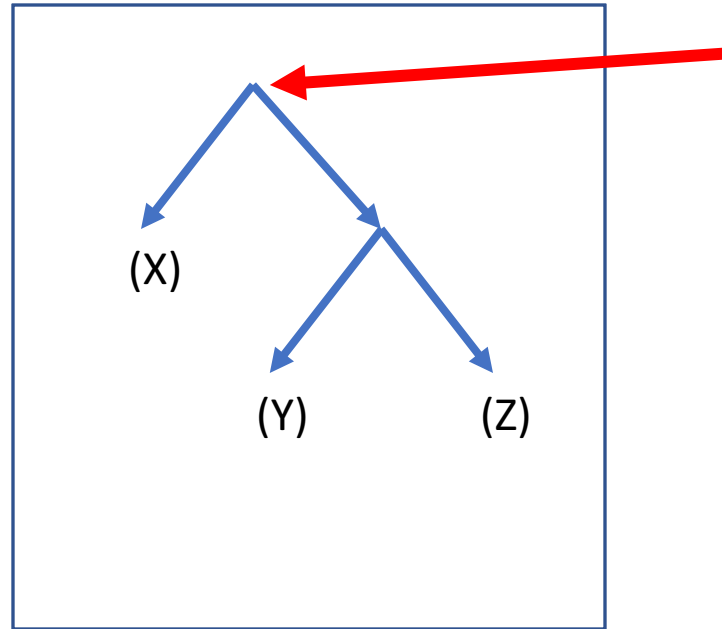
By habit [L], John [A] borrowed \$100 from Mary

Cf. John has-a-habit-of borrowing money from Mary

Prototypical SemScope

- Isomorphism between SyntScope and SemScope: : if SyntScope = A, SemScope = 'A'.
 - *The boy is sleeping*
 - SyntScope = *boy*, SemScope = 'boy'
- Impermeability of lexeme borders for predicate-argument relations.
 - The contact point for external predicates is normally the topmost component of the definition (usually, genus proximum).

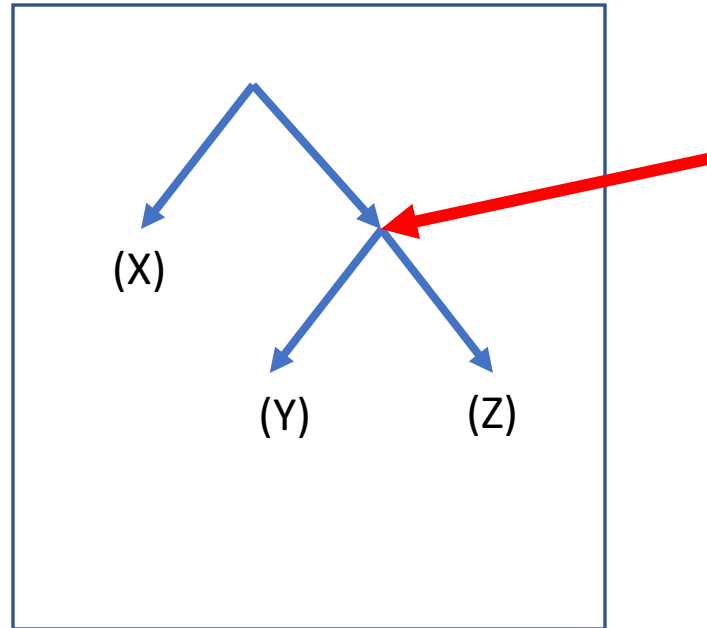
Contact point: the topmost element
(genus proximum)



Bicycle: 'a vehicle with two wheels that you ride by pushing its pedals with your feet'.

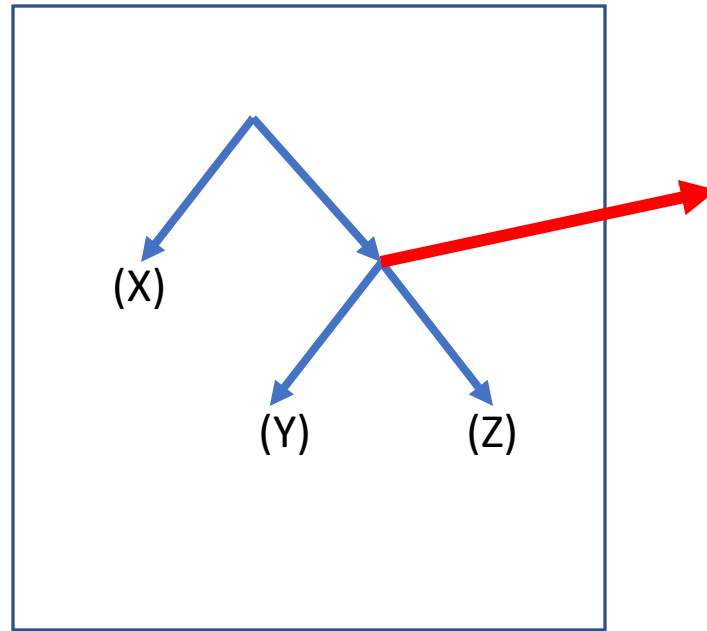
big bicycle = 'big vehicle'

No border crossing from the outside



big bicycle = 'big vehicle', but not 'big pedals' or 'big feet'

No border crossing from the inside



sobljudat' 'observe' – *narušat'* 'violate'

Non-prototypical SemScope

- Two types of non-prototypical SemScope
 - Internal scope
 - Absorbing scope
- These phenomena require that LUs be decomposed into simpler semantic units.
- Often, one cannot describe the way meanings are put together without disposing of the detailed semantic definition of each word.

Internal scope: *zavtra* ‘tomorrow’ type adverbials

- *zavtra* ‘tomorrow’, *vo vtornik* ‘on Tuesday’, *vtorogo maja* ‘on May 2’, etc.
- Their valency: a situation that takes place at this time: *I will come tomorrow*
- **I saw you tomorrow*
- *Ja ždal tebjā zavtra (a ty prišel segodnja)*. (=‘I expected you tomorrow (and you came today)’).
- *X expects Y* = ‘X believes that Y is going to happen or arrive, because X has been told that it will’ (COBUILD)
- Other verbs and adverbials:
 - *The rise in temperature was promised only at the end of the week*

Internal scope: *na zavtra* ‘for tomorrow’ type adverbials

- *na zavtra* ‘for tomorrow’, *na vtornik* ‘for Tuesday’, *na vtoroe maja* ‘for May 2’, etc.
- *On priglasil ee na zavtra* (=‘he invited her for tomorrow’)
- *Čto vy predlagaete na segodn'a?* (=‘what do you propose for today?’)
- Both *tomorrow* and *for tomorrow* adverbials place an event in a time interval.
- Difference in scope.
- Adverbials of the *zavtra* type usually have an external scope, and only with some verbs can have an internal one.
- The *na zavtra* adverbials, on the contrary, have an internal scope and do not allow for an external one.

Internal scope: intensifiers and *accent*

- We speak of an internal scope when a word semantically affects an internal component of the meaning of lexeme *L*.
- **If word A semantically affects word B, then the meaning of B should contain a component for A to act upon.**
- This can help find an adequate semantic definition.
- *Accent* (LDOCE): ‘the way someone pronounces the words of a language, showing which country or which part of a country they come from’.
- *The man spoke English with a Russian accent.*
- *The man spoke English with a strong (slight) Russian accent.*
- Revised definition: *X accent of Y in language Z* = ‘peculiarities of the pronunciation of person Y in language Z that distinguish it from the standard pronunciation of the speakers of Z and are typical for the representatives of language, group or region X’.

Absorbing scope: inchoative

- In Russian, there is a large group of verbs whose meaning contains the inchoative component. For example: *zasmejat'sja* ('begin to laugh'), *zatrepetat'* ('begin to tremble'), *zaigrat'* ('begin to play'), *zapet'* ('begin to sing'), *zasnut'* ('begin to sleep'), *zainteresovat'sja* ('begin to be interested'), etc.
- *P began* =
 - (a) 'before moment t not- P was true';
 - (b) 'after t P is true'.
- Let us show that under certain conditions, the internal inchoativity can scope over external predications

Adverbial is a part of Rheme

- *Zakončiv školu, [Volodya]_{Th} [vserjez zadumalsja o politike]_{Rh}*

‘after graduating from high school, [Volodya]_{Th} [began to seriously think about politics]_{Rh}’

- ‘before moment *t* Volodya did not think about politics’;
 - ‘after *t* he thinks about politics’; ‘he thinks about politics seriously’.
- **‘seriously’ does not make part of the scope of beginning**
 - Let’s change the communicative status of the adverbial.

Adverbial alone constitutes the Rheme

- *Zakončiv školu, [Volodya zadumalsja o politike]_{Th}
[vserjez]_{Rh}.*

‘after graduating from high school, [Volodya began to think about politics]_{Th}[seriously]_{Rh}’

- **The meaning of the sentence has changed!**
- The situation that did not take place before *t* and takes place after *t* is not simply ‘think about politics’ but ‘think about politics seriously’.
- The situation is highly noteworthy: a rhematic component of the sentence «is absorbed» by the scope of an intraword predicate (‘begin’).

Conclusions

- Valency filling is the main instrument of combining word meanings together to obtain the meaning of the whole sentence.
- Filling verbal valencies is the prototypical case.
- However, a broader class of valency-bearing words has to be taken into account. They make our idea of how the valencies are filled much more diverse.
- Syntactic and semantic scopes should be distinguished because fragments of SyntS and SemS filling the same valency can be non-isomorphic.
- We demonstrated two types of such non-isomorphism: *internal semantic scope* and *absorbing semantic scope*.
- Of special interest is the interaction between the meanings expressed lexically and grammatically.

Thank you for listening!