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: \( X \text{ gives } Y \text{ to } Z \)
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 $\alpha$ ($\text{SyntScope}(L)\^\alpha$): a fragment of SyntS that fills valency $\alpha$ of L.

- **Semantic scope** of L in valency $\alpha$ ($\text{SemScope}(L)\^\alpha$): a fragment of SemS that fills valency $\alpha$ 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

\[ L \]

- **X** = 1 actant - usually, the subject
- **Y** = 2 actant - usually, the direct object
- **Z** = 3 actant - usually, an indirect object
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: \( L \rightarrow A \)
   
   • *The conference* [A1] *preceded* [L] *the workshop* [A2]
Three types of valency slot filling

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

   - *The conference took place [A] before [L] the workshop*
Three types of valency slot filling

3. **Discontinuous** slot filling: \( L \leftarrow \rightarrow A \)

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

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

$big\ bicycle = \text{‘big vehicle’}, \text{ but not ‘big pedals’ or ‘big feet’}$
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 maya* ‘on May 2’, etc.
- Their valency: a situation that takes place at this time: *I will come tomorrow*
- *I saw you tomorrow*
- *Ja ždal tebja 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!