

# Word and Verb Nets for Semantic Processing

## Understanding Verbs and the Verbal Complex

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Last week:

- introduction to basics of verbal semantics
- introduction to computational resources (VerbNet, PropBank, FrameNet, WordNet)

This week: **Challenges from South Asia**

- Understanding the Verbal Complex (Verbs vs. Auxiliaries vs. Modals vs. Light Verbs)
- Different types of intransitives
- Predications of “reduced” transitivity
- Complex predicates (various types)

- Day 6
  - Lexical resources in action
  - The Verbal Complex
- Day 7: Intransitives and Verbs of “Reduced” Transitivity
- Day 8: V-V Complex Predicates  
(assignment handed out)
- Day 9: N-V, Adj-V and P-V Complex Predicates
- Day 10: Working through examples together

- Putting Lexical Resources to Work: Computational Grammars
- Particularly: Urdu LFG ParGram Grammar
- Understanding the Verbal Complex
  - Auxiliaries: Tense, Aspect and Passive
  - Modals: can, want, must, etc.
  - Verbs and Light verbs

# Examples in Grammars

For deep parsing purposes, it is very important to know

- the type of the verb
- what types of arguments it takes
- what else it is compatible with (e.g., particles as in *I washed up/\*down the dishes*).

Example: Lexicon from the deep English and German Pargram grammars

If you want to see more LFG grammars in action, go here:

<http://iness.uib.no/xle-web/xle-web>

# Different Types of Intransitives

Urdu case marking is sensitive to what kind of intransitive verb it is — English is not.

"Nadya went."

```
[PRED      'go<[1:Nadya]>'
  [PRED    'Nadya'
  CHECK    [_LEX-SOURCE morphology, _PROPER known-name]
SUBJ      [NTYPE [NSEM [PROPER [NAME-TYPE first_name, PROPER-TYPE name]]]
           [NSYN proper
           1[CASE nom, GEND-SEM female, HUMAN +, NUM sg, PERS 3]
CHECK     [_SUBCAT-FRAME V-SUBJ]
TNS-ASP  [MOOD indicative, PERF --, PROG --, TENSE past]
63[CLAUSE-TYPE decl, PASSIVE -, VTYPE main]
```

# Different Types of Intransitives

"nAdiyah gaI"

```

[PRED      'jA<[1:nAdiyah]>'
  SUBJ     [PRED      'nAdiyah'
            NTYPE     [NSEM [PROPER [PROPER-TYPE name]]]
                    [NSYN proper]
            SEM-PROP  [SPECIFIC +]
            1[CASE nom, GEND fem, NUM sg, PERS 3]
            CHECK     [_VMORPH [_MTYPE infl]
                      [_RESTRICTED -, _SUBCAT-FRAME V-SUBJ, _VFORM perf]
            LEX-SEM   [AGENTIVE -]
            TNS-ASP  [ASPECT perf, MOOD indicative]
            20[CLAUSE-TYPE decl, PASSIVE -, VTYPE main]

```

# Different Types of Intransitives

"Nadya spoke."

```
[PRED      'speak<[1:Nadya]>'
  [PRED    'Nadya'
    CHECK  [_LEX-SOURCE morphology, _PROPER known-name]
  SUBJ     [NTYPE [NSEM [PROPER [NAME-TYPE first_name, PROPER-TYPE name]]]
            [NSYN proper
              1 CASE nom, GEND-SEM female, HUMAN +, NUM sg, PERS 3
            ]
    CHECK  [_SUBCAT-FRAME V-SUBJ]
  TNS-ASP  [MOOD indicative, PERF --, PROG --, TENSE past]
63] CLAUSE-TYPE decl, PASSIVE -, VTYPE main]
```



# Different Types of Intransitives

"nAdiyah nE b0lA"

```
[PRED      'b0l<[1:nAdiyah]>'
  [PRED      'nAdiyah'
   CHECK     [_NMORPH obl]
  SUBJ     [NTYPE     [NSEM [PROPER [PROPER-TYPE name]]]
            [NSYN proper]
            SEM-PROP [CONTROL internal, SPECIFIC +]
            1[CASE erg, GEND fem, NUM sg, PERS 3]
  CHECK     [_VMORPH [_MTYPE infl]
            [_GEND masc, _NUM sg, _RESTRICTED -, _SUBCAT-FRAME V-SUBJ, _VFORM perf]
  LEX-SEM  [VERB-CLASS unerg]
  TNS-ASP  [ASPECT perf, MOOD indicative]
  23[CLAUSE-TYPE decl, PASSIVE -, VTYPE main]
```

# Different Types of Transitives

For certain things (like causativization) it is important to know in Urdu whether a verb is *ingestive* or not (e.g., 'eat', 'drink').

"Nadya ate an apple."

```

[PRED      'eat<[1:Nadya], [82:apple]>'
  [SUBJ    [PRED      'Nadya'
            CHECK    [_LEX-SOURCE morphology, _PROPER known-name]
            NTYPE    [NSEM [PROPER [NAME-TYPE first_name, PROPER-TYPE name]]
                      [NSYN proper
1 [CASE nom, GEND-SEM female, HUMAN +, NUM sg, PERS 3
  [OBJ     [PRED      'apple'
            CHECK    [_LEX-SOURCE morphology]
            NTYPE    [NSYN common]
            SPEC     [DET [PRED      'a'
                          [DET-TYPE indef]]
82 [CASE obl, NUM sg, PERS 3
CHECK    [_SUBCAT-FRAME V-SUBJ-OBJ]
TNS-ASP [MOOD indicative, PERF --, PROG --, TENSE past]
57 [CLAUSE-TYPE decl, PASSIVE -, VTYPE main

```

# Different Types of Transitives

"nAdiyah nE sEb kHAYa"

```
[ PRED      'kHA<[1:nAdiyah], [23:sEb]>'
  [ PRED      'nAdiyah'
    CHECK      [_NMORPH obl]
  ]
SUBJ      [ NTYPE      [ NSEM [ PROPER [ PROPER-TYPE name ] ] ]
           [ NSYN proper ]
           SEM-PROP [ SPECIFIC + ]
           1 [ CASE erg, GEND fem, NUM sg, PERS 3 ] ]
  [ PRED      'sEb'
    NTYPE      [ NSEM [ COMMON count ] ]
               [ NSYN common ]
           23 [ CASE nom, GEND masc, NUM sg, PERS 3 ] ]
CHECK      [ _VMORPH [_MTYPE infl]
           [ _RESTRICTED -, _SUBCAT-FRAME V-SUBJ-OBJ, _VFORM perf ] ]
LEX-SEM    [ AGENTIVE +, VERB-CLASS ingestive ]
TNS-ASP    [ ASPECT perf, MOOD indicative ]
56 [ CLAUSE-TYPE decl, PASSIVE -, VTYPE main ] ]
```

- Before we can understand more about different verb classes in South Asian languages in general, we must understand all the items in the verbal complex.
- This tends to be a challenge for people who do not have advanced linguistic knowledge.
- But without this knowledge, any lexical resources you build will be faulty and therefore not very useful.

# The Verbal Complex

- South Asian languages tend to be head-final.
- This means that the verb is generally at end of the clause, along with all the other elements a verbal complex can contain:
  - Auxiliaries for tense: usually a form of 'be', sometimes 'go' for the future
  - Auxiliaries for aspect: e.g., perfect (*He had eatan*), or continuation (usually some form of 'stay', 'go' 'walk') or progressive (usually some form of 'stay' or 'live').
  - Passive auxiliary: often from the verb for 'go'
  - Aspectual verbs: 'begin', 'complete'
  - Modals: can, must, need
  - Light verbs (to be done separately)

- Auxiliaries often tend to have the same form as a main verb in the language.
- This is because historically auxiliaries tend to be derived from verbs.
- One verbal form can take on many roles (just as people can be simultaneously a sister and a student and a teacher) — do not let this confuse you!

- Tense Auxiliaries: present, past, future
- Aspectual Auxiliaries: perfect, imperfect, progressive
- Aspectual Verbs: begin, finish
- Modals: can, must, need
- Passive Auxiliary: agent argument not subject, but oblique or adjunct

We will now go through examples in the following papers on Urdu to develop an understanding of the verbal complex.

- Butt, Miriam and Jafar Rizvi. 2010. Tense and Aspect in Urdu. In P. Cabredo-Hofherr and B. Laca (eds.) *Layers of Aspect*, 43-66. Stanford: CSLI Publications.
- Bhatt, Rajesh, Tina Bögel, Miriam Butt, Annette Hautli, and Sebastian Sulger. 2011. Urdu/Hindi Modals. *On-line LFG 2011 Proceedings*, Hong Kong. Pages 47-67.



## Understanding Structures Across Languages

Translate some lines of Jane Austen's *Pride and Prejudice*

(<http://www.gutenberg.org/cache/epub/1342/pg1342.txt>)  
into each of the languages of the summer school.

Go through the original and translated examples in order to identify the main verbs, any auxiliaries, any modals, any passive auxiliaries.