

Lab 6—Polar Questions and Relative Clauses

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1 The Facts of Farsi

Farsi creates yes/no questions by placing the question particle *aya* before a declarative clause.

- (1) *aya shirin ketabra xarid*
QUESTION Shirin book-ACC bought-3-SG-PAST
'Did Shirin buy the book?'

Farsi creates declarative relative clauses by introducing them with the complementizer *ke*.

- (2) *goftam ke shirin ketabra xarid*
said-1-SG-PAST that Shirin book-ACC bought-3-SG-PAST
'I said that Shirin bought the book.'

Farsi creates embedded polar interrogative clauses simply by introducing a question-particle headed clause with *ke*.

- (3) *porsidan ke aya shirin ketabra*
asked-I-SG-PAST whether Shirin book-ACC bought-3-SG-PAST
xarid

'I asked whether Shirin bought the book.'

Note that the verbs *goftan* 'say' and *porsidan* 'ask' take clauses as their complements.

2 Syntax

I implemented both the question particle and complementizer as heads that take a single clausal complement. Figure (1) shows the new head hierarchy that reflects the fact that these new types are like verbs in that they can head the root of a sentence.

Only particles of type matrix can head a sentence. Currently in the lexicon *aya* is the only polar_question_particle and *ke* is the only complementizer.

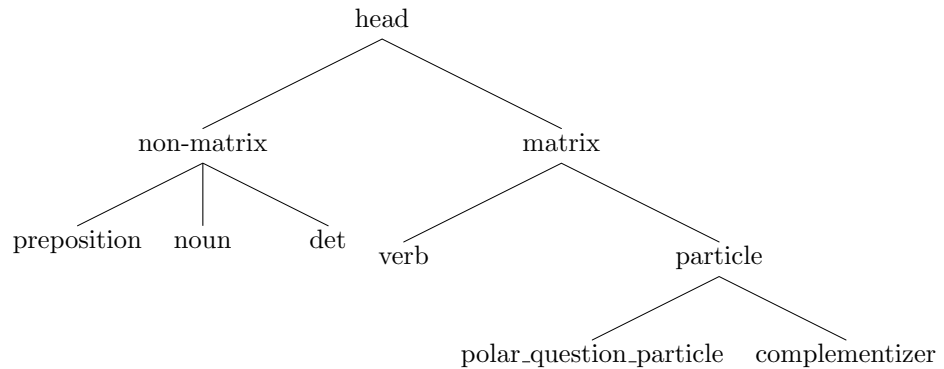


Figure 1: Head type hierarchy

Currently in my grammar, question particles, complementizers, prepositions, clausal complement verbs like *goftan*, and auxiliary verbs like *tavanestan* ‘be able’ precede their complements, while transitive, ditransitive, and compound verbs follow their complements. I couldn’t come up with well-motivated natural classes into which to divide these two types of verbs, so I simply added a `HEAD_FINAL` feature to the verb head type and applied head complement rules appropriately. This seems like a bit of a hack.

Table (1) shows that sentences I used to verify that I was getting the correct syntactic behavior.

3 Semantics

I had to make changes to `matrix.tdl` to get the semantics for my questions to work. My Farsi polar question sentences needed to pass up semantic information from the daughters of a questions particle head comp rule, but the matrix had specified that `basic-head-comp-phrase` its `C-CONT.RELS` and `C-CONT.HCONS` difference lists were empty. I defined a more basic rule, `basic-comp-phrase`, that removed this restriction, and allowed questions to inherit from this instead of `basic-head-comp-phrase`. See `basic-head-comp-phrase` in `matrix.tdl` for details.

Sentence (4) is a matrix declarative sentence.

- (4) *shirin ketabra xarid*
 Shirin book-ACC bought-3-SG-PAST
 ‘Shirin bought the book.’

It has the following MRS.

<h1,e2:SEMSORT:TENSE:ASPECT:MOOD,

Sentence	Description
aya shishera xordam	‘Did I eat glass?’
goft ke shishera xordam	‘He said that I eat glass.’
porsid ke aya shishera xordam	‘He asked whether I eat glass.’
*shishera aya xordam	Question particle in the wrong location
*shishera xordam aya	Question particle in the wrong location
*porsid aya ke shishera xordam	Question particle in the wrong location
*porsid ke shishera aya xordam	Question particle in the wrong location
*porsid ke shishera xordam aya	Question particle in the wrong location
*goft shishera xordam	Missing complementizer
*porsid aya shishera xordam	Missing complementizer
*ke goft shishera xordam	Complementizer in the wrong location
*goft shishera ke xordam	Complementizer in the wrong location
*goft shishera xordam ke	Complementizer in the wrong location
*ke porsid aya shishera xordam	Complementizer in the wrong location
*porsid aya ke shishera xordam	Complementizer in the wrong location
*porsid aya shishera ke xordam	Complementizer in the wrong location
*porsid aya shishera xordam ke	Complementizer in the wrong location

Table 1: Regression Tests

```
{h3:_shirin_n_rel(x4:SEMSORT:THIRD:SG:BOOL),
h5:def_q_rel(x4, h7, h6),
h8:_book_n_rel(x9:SEMSORT:THIRD:NUMBER:BOOL),
h10:def_q_rel(x9, h12, h11),
h13:_buy_v_rel(e2, x4, x9),
h1:proposition_m_rel(h14)},
{h6 qeq h3,
h11 qeq h8,
h14 qeq h13}>
```

Sentence (1) is a matrix polar question. It has the following MRS.

```
<h1,u2:SEMSORT,
{h3:predsort(u2),
h4:_shirin_n_rel(x5:SEMSORT:THIRD:SG:BOOL),
h6:def_q_rel(x5, h8, h7),
h9:_book_n_rel(x10:SEMSORT:THIRD:NUMBER:BOOL),
h11:def_q_rel(x10, h13, h12),
h14:_buy_v_rel(e15:SEMSORT:TENSE:ASPECT:MOOD, x5, x10),
h16:proposition_m_rel(h17),
h1:question_m_rel(h16)},
{h7 qeq h4,
h12 qeq h9,
```

h17 qeq h14}>

These two sentences have the correct message and proposition semantics. The semantics of embedded clauses still has bugs in it.

Sentence (2) contains an embedded declarative clause. It has the following MRS.

```
<h1,e2:TENSE:ASPECT:MOOD:SEMSORT,
{h1:_say_v_rel(e2, x3+:SEMSORT:FIRST:SG, h4),
h1:predsort(e5:SEMSORT:TENSE:ASPECT:MOOD),
h6:_shirin_n_rel(x7:SEMSORT:THIRD:SG:BOOL),
h8:def_q_rel(x7, h10, h9),
h11:_book_n_rel(x12:SEMSORT:THIRD:NUMBER:BOOL),
h13:def_q_rel(x12, h15, h14),
h16:_buy_v_rel(e5, x7, x12),
h1:proposition_m_rel(h17),
h4:proposition_m_rel(h1),
h18:message_m_rel(h1),
h1:proposition_m_rel(h1)}},
{h9 qeq h6,
h14 qeq h11,
h17 qeq h16,
h1 qeq h1}>
```

Sentence (3) contains an embedded polar question. It has the following MRS.

```
<h1,e2:TENSE:ASPECT:MOOD:SEMSORT,
{h1:_ask_v_rel(e2, x3+:SEMSORT:FIRST:SG, h4),
h1:predsort(u5:SEMSORT),
h6:predsort(u5),
h7:_shirin_n_rel(x8:SEMSORT:THIRD:SG:BOOL),
h9:def_q_rel(x8, h11, h10),
h12:_book_n_rel(x13:SEMSORT:THIRD:NUMBER:BOOL),
h14:def_q_rel(x13, h16, h15),
h17:_buy_v_rel(e18:SEMSORT:TENSE:ASPECT:MOOD, x8, x13),
h19:proposition_m_rel(h20),
h1:question_m_rel(h19),
h4:proposition_m_rel(h1),
h21:message_m_rel(h1),
h1:proposition_m_rel(h1)}},
{h10 qeq h7,
h15 qeq h12,
h20 qeq h17,
h1 qeq h1}>
```

The semantics for the subordinate clauses in (2) and (3) is correct, however, the semantics for the matrix clauses in both is wrong.