

# Inflectional periphrasis in Persian

Olivier Bonami<sup>1</sup> Pollet Samvelian<sup>2</sup>

<sup>1</sup>U. Paris-Sorbonne &  
UMR 7023 “Laboratoire de Linguistique Formelle”

<sup>2</sup>U. Sorbonne Nouvelle &  
UMR 7528 “Mondes iranien et indien”

PER-GRAM Project  
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## Periphrasis as an interface phenomenon

- Periphrastic inflection is by its very nature an interface phenomenon
- Syntacticians:
  - Focus on the distribution of auxiliaries and nonfinite forms
  - Disregard paradigmatic properties of periphrases
- Morphologists:
  - Account for the integration of periphrases in paradigms
  - Ignore the syntagmatic details.
- We attempt to bring together two traditions:
  - HPSG analyses of auxiliaries
  - PFM analyses of inflection
- Structure of the talk:
  - ① Overview of Persian conjugation
  - ② The passive 'periphrase'
  - ③ The 'perfect' periphrase: data
  - ④ The 'perfect' periphrase: analysis

# Overview of Persian conjugation

## Synthetic conjugation

TAM	POSITIVE	NEGATIVE
indicative present	mi-xar-i UBD-buy.S1-2SG	ne-mi-xar-i NEG-UBD-buy.S1-2SG
indicative bounded past	xarid-i buy.S2-2SG	na-xarid-i NEG-buy.S2-2SG
indicative unbounded past	mi-xarid-i UBD-buy.S2-2SG	ne-mi-xarid-i NEG-UBD-buy.S2-2SG
subjunctive present	be-xar-i IRR-buy.S1-2SG	na-xar-i NEG-buy.S1-2SG
imperative	be-xar IRR-buy.S1	na-xar NEG-buy.S1
infinitive	xarid-an buy.S2-INF	na-xarid-an NEG-buy.S2-INF
present participle	xar-ande buy.S1-PRS.PTCP	—
past participle	xarid-e buy.S2-PRF.PTCP	na-xarid-e NEG-buy.S2-PRF.PTCP

## A PFM analysis for synthetic conjugation

- The inflectional analysis is cast in Paradigm Functon Morphology (Stump, 2001)
  - Realization rules are organized in successive blocks
  - Within a block the correct rule is the most specific rule
- For Persian conjugation, five blocks:

III	II	I	IV	V
<i>na-</i>	<i>mi-</i>	stem-selection	<i>-e</i>	<i>-am</i>
<i>ne-</i>			<i>-ande</i>	<i>-i</i>
<i>be-</i>			<i>an</i>	<i>-ad/∅</i>
				<i>-im</i>
				<i>-id</i>
				<i>-and</i>

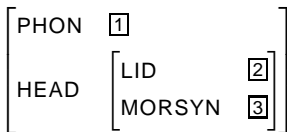
- Example: block III rules
  - $X, \sigma : \{\text{POL } -\} \longrightarrow naX$
  - $X, \sigma : \{\text{POL } -, \text{ASP } unbd, \text{MOOD } rf\} \longrightarrow neX$
  - $X, \sigma : \{\text{POL } +, \text{MOOD } irr\} \longrightarrow beX$

# Interfacing PFM with HPSG

- Instead of laying out an HPSG approach to inflection, we
  - set up a version of PFM based on typed feature structures
  - reorganize slightly the HPSG feature geometry
  - define an interface metaconstraint linking an HPSG grammar with a PFM grammar

(1) **Morphology-syntax interface** (provisional version)

A sign of type *word* meeting the description



is well-formed only if the PFM grammar licenses phonology  $\boxed{1}$  as a realization of the features  $\boxed{3}$  for the lexeme  $\boxed{2}$ .

## Five periphrastic constructions

- (2) **Passive: perfect participle + *šodan* 'become'**

In tâblo foruxte mi-šav-ad.

this painting sold UNBD-become.S1-3SG

'This painting is sold.'

- (3) **'Perfect': perfect participle + *budan* 'be'**

a. Maryam in tâblo=râ foruxte bud.

Maryam this painting=DDO sold be.S2.3SG

'Maryam had sold this painting.'

b. Maryam in tâblo=râ foruxte=ast.

Maryam this painting=DDO sold=be.PRS.3SG

'Maryam has sold this painting.'

- (4) **Future: *xâhan* 'want' + bare past stem**

Maryam in tâblo=râ xâh-ad foruxt.

Maryam this painting=DDO want.S1-3SG sell.S2

'Maryam will sell the painting'

- (5) **Progressive: *dâran* 'have' + finite clause**

Maryam dâr-ad in tâblo=râ mi-foruš-ad.

Maryam have.PRS-3SG this painting=DDO UNBD-sell.S1-3SG

'Maryam is selling the painting.'

# The passive 'periphrase'

## The passive: data

- Inflectional **prefixes** are carried by the auxiliary.

(6) In *tâblo foruxte ne-mi-šav-ad*.  
this painting sold NEG-UNBD-become.S1-3SG  
'This painting is not sold.'

- The relative order is flexible.

(7) In *tâblo šod robude va foruxte*.  
this painting become.S2 stolen and sold  
'It is this painting which was stolen and sold'

- **Adverbials** can intervene between *šodan* and the participle.

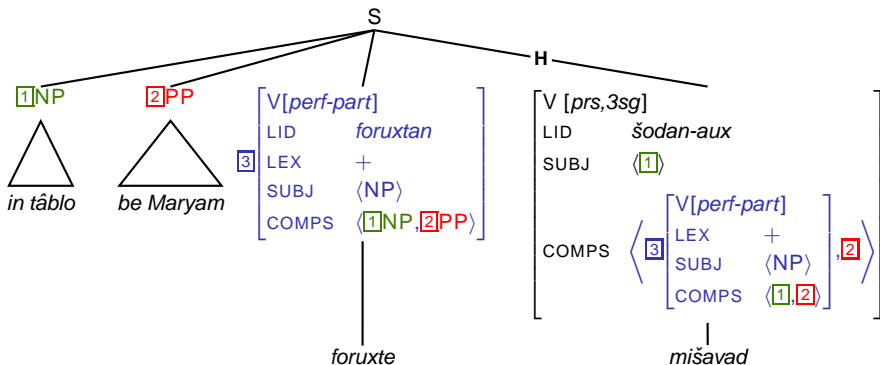
(8) In *tâblo foruxte hatman šode ast*.  
this painting sold **certainly** become be.S1.3SG  
'This painting has certainly been sold.'

- The **participle** can be extracted.

(9) *Foruxte fekr mi-kon-am [tâblo \_\_\_ šod ]*.  
sold thought UNBD-do.S1-1SG painting become.S2  
'I think that if the painting is sold (...).'

## The passive: a standard analysis

- We are clearly dealing with a combination of two words
- A standard HPSG analysis: argument composition + flat structure
- ☞ No passive participle, because participial clauses are always active.
- ☞ Nothing inflectional about this: everything happens in the syntax.



'This painting is not sold.'

# The 'perfect' periphrases: data

## Complex (so called ‘perfect’) forms

- Five series of forms based on the copula *budan*
- Only three of the series have a clear synthetic counterpart
- The copula can be a full word or a clitic

<p>simple present</p> <p><i>mi-xar-ad</i></p> <p>UNBD-buy.S1-3SG</p>	<p>complex present</p> <p><i>xarid-e=ast</i></p> <p>buy.S2-PRF.PTCP=be.PRS.3SG</p>
<p>simple bounded past</p> <p><i>xarid</i></p> <p>buy-S2</p>	<p>complex bounded past</p> <p><i>xarid-e bud</i></p> <p>buy.S2-PRF.PTCP be.S2</p>
<p>simple subjunctive</p> <p><i>be-xar-ad</i></p> <p>IRR-buy.S1-3SG</p>	<p>complex subjunctive</p> <p><i>xarid-e bâš-ad</i></p> <p>buy.S2-PRF.PTCP be.SBJV-3SG</p>
<p>—</p> <p>—</p> <p>—</p>	<p>complex unbd. past</p> <p><i>mi-xarid-e=ast</i></p> <p>UNBD-buy.S2-PRF.PTCP=be.PRS.3SG</p>
<p>—</p> <p>—</p> <p>—</p>	<p>complex perfect</p> <p><i>xarid-e bud-e=ast</i></p> <p>buy.S2-PRF.PTCP be.S2-PRF.PTCP=be.PRST.3SG</p>

## Recently morphologized forms

- The complex present and unbounded past, historically based on a clitic copula, are no more periphrastic:

- All prefixes precede the participle.

(10) Sâlhâ Maryam be madrase **ne-mi**-rafte=ast.  
years Maryam to school UNBD-gone=be.PRST.3SG  
'For years, Maryam went to school'

- The participle-auxiliary sequence can not be interrupted.

(11) \*Rafte **hatman**=ast.  
left certainly=be.PRST.3SG  
'(S)he has certainly left.'

- The participle can not be extracted.

(12) \*Mi-rafte sâlhâ Maryam be madrase=ast.  
UNBD-gone years Maryam to school=be.S1.3SG

- Morphophonological idiosyncrasies specific to these forms

(13) a. **predicative construction**      b. **complex present**  
mord'e=ast → mord'ast      mord'e=ast → mord'e:  
corpse=be.PRST.3SG      died=be.PRST.3SG  
'It is a corpse.'      '(S)he has died.'

## Truly periphrastic complex forms

- When the auxiliary is a full word, negation attaches to the participle. . .

(14) a. **Na**-rafte bud. b. \*Rafte **na**-bud.  
NEG-gone be.PST gone NEG-be.PST  
'(S)he hadn't left.'

- . . . the sequence is rigidly ordered and can not be interrupted. . .

(15) \* Maryam Omid=râ bud dide.  
Maryam Omid=DDO be.S2 seen  
(intended) 'Maryam had seen Omid.'

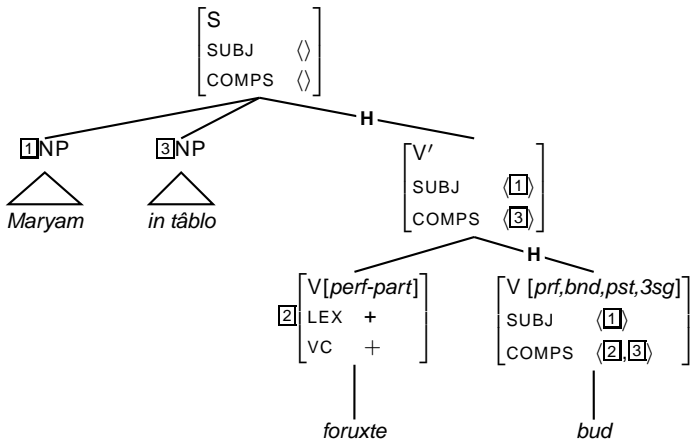
(16) \* Maryam Omid dide hatman bud  
Maryam Omid seen certainly be.S2  
(intended) 'Maryam had certainly seen Omid.'

- . . . but participle extraction is possible.

(17) **Foruxte** fekr ne-mikonam [ \_\_\_ **bâš-ad** tâblo=râ ].  
sold thought NEG-do be.SBJV-3SG painting=DDO  
'I don't think that s/he has sold the painting.'

## The syntactic structure of true periphrases

- Contrary to what happens in the passive, we assume a verbal complex.
  - ☞ The rest of the grammar is set up so that the verbal complex can not be altered except by extraction.



## True periphrases are [PERFECT +]

- The complex bounded past is the perfect form of the past.

(18) Qabl az inke Omid be-res-ad, Maryam birun  
before from that Omid SBJV-arrive.S1-3SG Maryam out  
rafte bud.  
gone be.S2  
'Maryam had left (before Omid arrived).'

- The complex subjunctive is the perfect subjunctive.

(19) a. Fekr mi-kon-am Maryam mariz bâšad.  
thought UNBD-do.S1-1SG Maryam sick be.SBJV  
'I think Maryam is sick.'

b. Fekr mi-kon-am Maryam mariz bude bašad.  
thought UNBD-do.S1-1SG Maryam sick been be.SBJV  
'I think Maryam has been sick.'

## Indirect evidential forms

- The complex unbounded past has an evidential value (???)
  - Refers to an unbounded past event.
  - Signals that the speaker only has indirect evidence for what he or she is asserting.

- (20) a. (Banâ bar gofte-ye Omid) Maryam dar sâl-e 1950 in  
According to-EZ Omid Maryam in year-EZ 1950 this  
xâne-râ mi-sâxte=ast.  
house-DDO UNBD-built=be.S1.3SG  
'According to Omid, Maryam would have been building  
this house in 1950.'
- b. Maryam dar sâl-e 1950 in xâne-râ mi-sâxt.  
Maryam in year-EZ 1950 this house-DDO UNBD-built  
Maryam was building this house in 1950.'

## Special cases

- The complex perfect is **both** perfect **and** evidential

(21) (Az qarâr), qabl az inke Omid be-res-ad,  
apparently before from that Omid SBJV-arrive.s1-3SG,  
Maryam birun rafte bude ast  
Maryam out gone been be.s1.3SG  
'Apparently, Maryam had left before Omid arrived.'

- The complex present is **either** (present) perfect **or** (bounded past) evidential.

(22) Maryam tâze reside=ast.  
Maryam new arrived=be.s1.3SG  
'Maryam has just arrived.'

(23) (Banâ bar gofte-ye Omid) Maryam in xâne-râ dar  
According to-EZ Omid) Maryam this house-DDO in  
sâl-e 1950 xaride=ast.  
year-EZ 1950 bought=be.s1.3SG  
'According to Omid, Maryam bought this house in 1950.'

## Summing up

	PRESENT	PAST		SUBJUNCTIVE
		DIR. EV.	IND. EV.	
BOUNDED	***	bounded past	complex present	simple subjunctive
UNBOUNDED	simple present	unbounded past	cpl. unbd. past	
PERFECT	complex present	complex bnd. past	complex perfect	complex subjunctive

# The 'perfect' periphrases: analysis

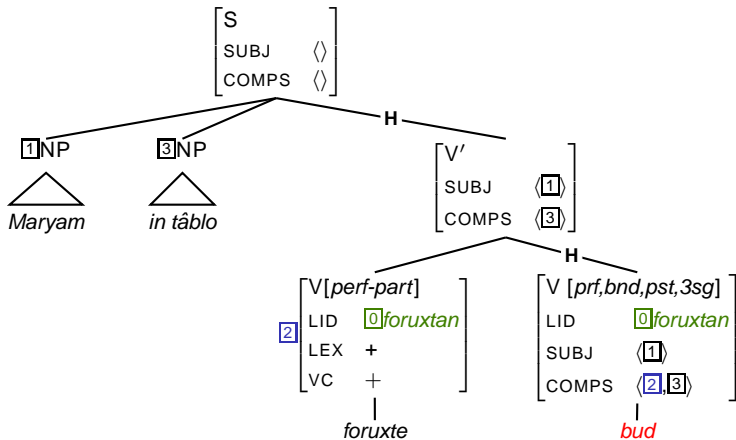
## A paradigm-based analysis

	PRESENT	PAST		SUBJUNCTIVE
		DIR. EV.	IND. EV.	
BOUNDED	***	bounded past	complex present	simple subjunctive
UNBOUNDED	simple present	unbounded past	cpl. unbd. past	
PERFECT	complex present	complex bnd. past	complex perfect	complex subjunctive

- {EVID *indir*} → newly morphologized exponents
- {PERFECT +} → rule of periphrasis
- {PERFECT +, TENSE *prst*} → refer to {TENSE *pst*, ASP *bnd*, EVID *indir*}

## Our solution: referrals + LID selection

- A perfect form of lexeme *L* is a word which:
  - borrows the phonology of a form of *budan*
  - subcategorizes for *L*'s perfect participle



## Extending realization rules

- We need a rule of referral that can also change valence requirements
- Solution: extend realization rules (*à la* ?).

(24)  $X_L, \sigma : \{\dots\} \longrightarrow X'_L$  (old style RRs)

(25)  $\begin{bmatrix} \text{PHON} & X \\ \text{LID} & Y \\ \text{ARG-ST} & Z \end{bmatrix}, \sigma : [\dots] \longrightarrow \begin{bmatrix} \text{PHON} & X' \\ \text{LID} & Y' \\ \text{ARG-ST} & Z' \end{bmatrix}$  (new RRs)

- Most RRs are not affected, e.g.

(26)  $\begin{bmatrix} \text{PHON} & X \\ \text{LID} & Y \\ \text{ARG-ST} & Z \end{bmatrix}, \sigma : \begin{bmatrix} \text{PER} & 1 \\ \text{NB} & \text{sg} \end{bmatrix} \longrightarrow \begin{bmatrix} \text{PHON} & X_{\text{am}} \\ \text{LID} & Y \\ \text{ARG-ST} & Z \end{bmatrix}$

## The periphrasis rule

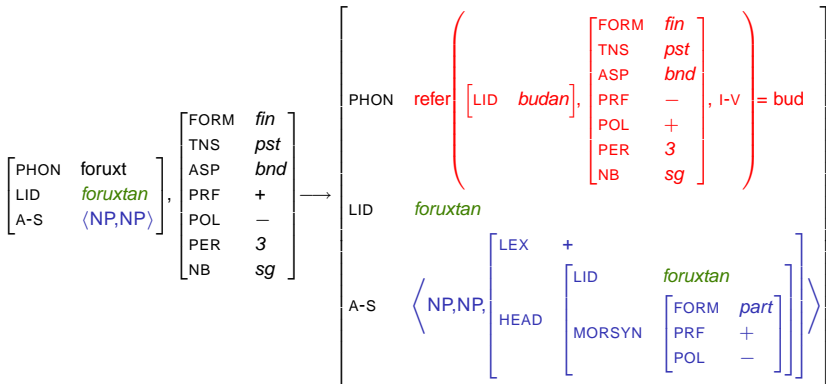
- Remember: a perfect form of lexeme  $L$  is a word which:
  - borrows the phonology of a form of *budan*
  - subcategorizes for  $L$ 's perfect participle

$$\begin{bmatrix} \text{PHON} & X \\ \text{LID} & Y \\ \text{A-S} & Z \end{bmatrix}, \sigma : [\text{PRF} \quad +] \longrightarrow$$

$$\begin{bmatrix} \text{PHON} & \text{refer} \left( \begin{bmatrix} \text{LID} & \text{budan} \end{bmatrix}, \sigma \setminus \begin{bmatrix} \text{PRF} & - \\ \text{ASP} & \text{bnd} \\ \text{POL} & + \end{bmatrix}, \text{I-V} \right) \\ \text{LID} & Y \\ \text{A-S} & Z \oplus \left\langle \begin{bmatrix} \text{LEX} & + \\ \text{HEAD} & \begin{bmatrix} \text{LID} & Y \\ \text{MORSYN} & \sigma \setminus [\text{FORM} \quad \text{part}] \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

# Consequences: negation

- When we apply the rule to a negative form, negation gets realized on the participle:



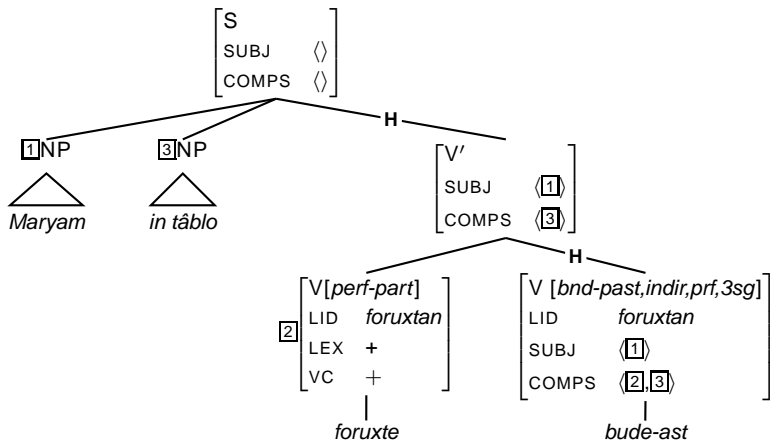
## Consequences: the present perfect

- The present perfect is obtained by a rule of referral to the indirect bounded past
  - Since the periphrasis rule is an ordinary rule of exponence, it interacts with the rule for the present perfect in the standard way
- ☞ The more specific rule wins.

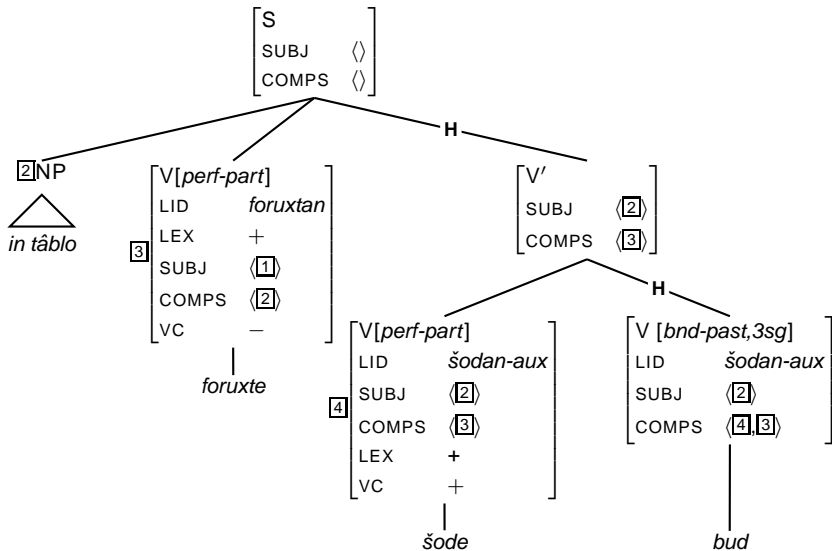
$$\begin{array}{l}
 \left[ \begin{array}{ll}
 \text{PHON} & \boxed{1} \\
 \text{LID} & \boxed{2} \\
 \text{ARG-ST} & \boxed{L}
 \end{array} \right], \sigma : \left[ \begin{array}{ll}
 \text{TNS} & \textit{prs} \\
 \text{PRF} & +
 \end{array} \right] \longrightarrow \\
 \\
 \left[ \begin{array}{ll}
 \text{PHON} & \textit{refer} \left( \left[ \begin{array}{ll}
 \text{PHON} & \boxed{1} \\
 \text{LID} & \boxed{2} \\
 \text{ARG-ST} & \boxed{L}
 \end{array} \right], \sigma \setminus \left[ \begin{array}{ll}
 \text{ASP} & \textit{bnd} \\
 \text{PRF} & - \\
 \text{EVID} & \textit{ind}
 \end{array} \right], \text{I-V} \right) \\
 \text{LID} & \boxed{2} \\
 \text{ARG-ST} & \boxed{L}
 \end{array} \right]
 \end{array}$$

## Consequences: evidential and perfect

- The periphrasis rule predicts that a perfect indirect past form should be the corresponding non-perfect indirect past form of *budan* subcategorizing for a participle
- This is precisely the description of a complex perfect form



## Consequences: passive and perfect



'This painting has been sold.'

## Summing up

- Apparent discontinuous lexical items are reduced to a single item and a valence requirement (à la ?)
- What is filling the paradigm cell is a word after all (contra ?)
- “Competition between morphology and syntax” (e.g. ??) is competition between affixal exponence and exponence as valence
- No need for a special auxiliary lexeme with a defective distribution
- We make the correct predictions on combinations of periphrastic constructions
- ☞ We do not claim that this is the correct analysis for all purported cases of periphrasis.
- ☞ In Persian each of the 5 different cases calls for a different type of analysis.

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# Appendix

## Architectural consequences

### (26) **Morphology-syntax interface** (final version)

A sign of type *word* meeting the description

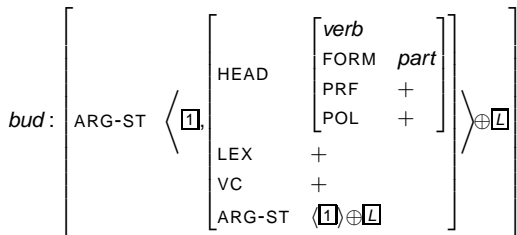
PHON	1	
ARG-ST	2	
HEAD	LID	3
	MORSYN	4

is well-formed only if the PFM grammar licenses phonology 1 and argument structure 2 as a realization of the morphosyntactic features 4 for the lexeme 3.

- The description of the phonology of words is left to the PFM component: the HPSG grammar has nothing to say about this.
- The modelling of lexical (lexeme-word, lexeme-lexeme) relations must be modified to make sure that ARG-ST values are properly constrained.
- Alternatively we can use an auxiliary feature distinct from ARG-ST in the morphology.

## Why not argument composition for the perfect

- Natural move within HPSG: assume an argument composition analysis



- But this will not account for the integration of periphrastic forms in paradigms, unless
  - we treat the auxiliary *budan* as inflectionally abnormal: PRF + feature despite PRF – inflection.
  - we assume competition between morphology and syntax (à la Poser 1992), or we simulate paradigm integration by treating *budan* as defective for all nonperfect forms and for the present perfect.
  - we stipulate in some way that the passive auxiliary can not take the perfect auxiliary as its complement.
  - ...

## The future: data

- The two parts look like word parts, not true words
  - The auxiliary is in an otherwise unattested form, resembling a present but without the unboundedness marker *mi-*
  - The auxiliated form is a bare (past) stem.

(27) Maryam Omid=râ xâh-ad did.  
Maryam Omid=DDO can.S1-3.SG see.S2  
'Maryam will see Omid.'

- Negation occurs before the auxiliary

(28) a. Maryam Omid=râ na-xâh-ad did.  
Maryam Omid=DDO NEG-can.S1-3SG see.S2  
'Maryam will not see Omid.'

b. \*Maryam Omid=râ xâh-ad na-did.  
Maryam Omid=DDO can.S1-3SG NEG-see.S2

- The verb sequence can not be interrupted.

(29) \*Maryam Omid=râ xâh-ad hatman did.  
Maryam Omid=DDO can.S1-3.SG certainly see.S2

## The future: more data & analysis

- The order is rigid.

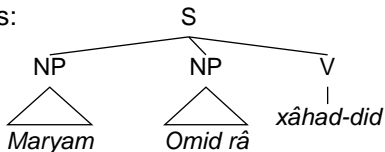
(30) a. \*Maryam Omid-râ did xâh-ad  
Maryam Omid-DDO see.S2 can.S1-3.SG

- Neither verb can be fronted.

(31) a. \*Xâh-ad Maryam Omid=râ did.  
can.S1-3.SG Maryam Omid=DDO see.S2

b. \*Did Maryam Omid=râ xâh-ad.  
see.S2 Maryam Omid=DDO can.S1-3.SG

- The analysis fitting the data most closely is a compounding analysis:



## The progressive: data

- Combines a finite form of the verb *hastan* 'have' with a second finite verb.

(32) Maryam dâr-ad            in    tâblo=râ            mi-foruš-ad.  
Maryam have.PRS-3SG this painting=DDO UNBD-sell.S1-3SG  
'Maryam is selling the painting.'

- Closely resembles a head-finite complement construction.

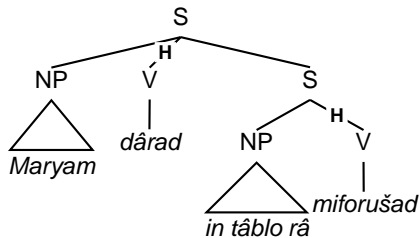
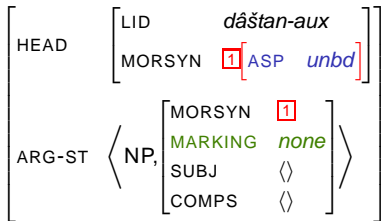
(33) Maryam mi-dân-ad            (ke) Omid in    ketâb=râ    be  
Maryam IPF-know.S1-3.SG that Omid this book=DDO to  
Sârâ **dâd**.  
Sara give.S2  
'Maryam knows that Omid gave this book to Sara.'

- NB: subjects of finite clauses can be controlled in Persian.

(34) Maryam mi-xâh-ad            (ke)    be sinemâ be-rav-ad.  
Maryam IPF-want.S1-3.SG (that) to theatre IRR-go.S1-3.SG  
'Maryam wants to go to the movies.'

# The progressive: analysis

- Analysis: the progressive auxiliary
  - takes a finite clause **without a complementizer** as complement
  - is defective: **only has unbounded aspect forms**
  - **identifies its morphosyntactic features with those of its complement**



'Maryam is selling this painting.'

# Comparing 'periphrastic' constructions

- Degrees of periphrasis on a morphosyntactic scale

Analytic combination	ordinary head-complement structures	passive
Quasi-analytic	head complement structure, some distributional idiosyncrasies	progressive
<b>True periphrasis</b>	<b>limited syntactic flexibility, paradigm integration</b>	<b>complex forms (nonclitic copula)</b>
Quasi-synthetic	no syntactic flexibility two lexemes involved	future
Synthetic combination	ordinary synthetic morphology	complex forms (clitic copula)

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- Criteria from (???)
  - **Intersectivity**: If a construction expresses grammatical properties that are expressed elsewhere in the synthetic paradigm, then it is periphrastic.
  - **Noncompositionality**: If some features of elements of the construction are in contradiction with features of the construction as a whole, then the construction is periphrastic.
  - **Distributed exponence**: If exponence of features of the construction is distributed on the elements of the construction, then the construction is periphrastic.
  - **Underexhaustivity**: If the head of the construction lacks certain forms that other lexemes in the same category have, then the construction is periphrastic.

construction	intersect.	noncomp.	diss. exp.	underexh.
perfect	+	-	+	+
passive	-	+	-	-
progressive	?	-	-	+