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Allomorphy in Persian Past Stems

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Abstract

Since Persian has some puzzling cases with regard to the past simple stems (i.e the stems Type II), this study focuses on the morphological treatment of the allomorphy of these verbs. This has been a long-standing issue in morphology addressed in various analyses till now. The one which is going to be described in the current article seems to work approximately well within Optimality Theory. With the evidence of phonological conditioning, the distribution of various morphs appears not to be entirely morphological in character. This study proposes an Output-Oriented morphology in which morphological processes are encoded in FIAT constraints, a type of constraint, and interact with the familiar Faithfulness constraints of Optimality Theory.

Keywords: Optimality theory, output-oriented morphology, faithfulness, FIAT constraint.

Introduction

The morphological behavior of the past morpheme for making past stems in Persian is the significant problem of this study. It must be taken into account that this topic has been a controversial issue in morphology for a long time; however, achieving a general consensus among linguists on this matter is slightly difficult[1-6]. The importance of the problem under study, the alternations of the past morpheme, lies in the nature of the approach utilized in this research. In the realm of Optimality Theory (OT), blurred phenomena are explained by positing non Input-Output Correspondence (non IO-Correspondence) relations, such as Output-Output Correspondence[7-11]. Output-Output Correspondence (OO-Correspondence) as a new version of OT is assumed to deal with the morphological phenomena in which the similarity between output candidates and the comparison form which is not the Input but the Base will be demanded. Therefore, OO-Correspondence is applied in order to deal with the alternations of past morpheme which is the central feature of this study. Following Kager, in allomorphic model, OO-Correspondence is responsible to create identity between Base and affixed forms[11]. Based on what MacBride presented, morphological generalizations are encoded in the constraints of the FIAT family[12]. Following him, the morphemes referenced by FIAT-STRUC constraints do not need a specific level of underlying representation and this is thought of as another property of FIAT-STRUC constraints which is in total agreement with OO-Correspondence to deal with the case of allomorphy[13, 14].

Methodology

Data Allomorphic Patterns: To clarify the patterns of stems Type II, a rough rule-based analysis is carried out in this study to indicate the case of allomorphy in such verbs. After adding different allomorphs for making these verbs, some morpho-phonological rules will be applied. Some Iranian linguists such as Pishro tried to explain the nature of such rules, but these rules based on what Ghomeshi asserted appears not to be rule-governed[4,11]. Since there exists a good number of such rules and some of which just apply to a few numbers of verbs, it is assumed that the nature of such rules is fairly chaotic. Besides, following Kager, two assumptions of generative phonology including rewrite rules and applying such rules in a serial derivation are outside the domain of OT[9,15,16]. Therefore, such rules were not considered in this analysis.

What matters in this study is just the case of allomorphy of stems Type II. It must be taken into account that this analysis is a considerably simplified view of the different allomorphs for making these verbs in contemporary Persian. Recall that in the vast majority of cases, due to highly productive use of **-id** rather than other allomorphs in this group, there are some examples in each pattern in which the use of relevant allomorph can be replaced by **-**id. Additionally in each pattern, some existing exceptions are introduced which are of no central concern to this study.

In the following, eight patterns are presented in which different allomorphs are added to the imperative root.

The First Pattern: The first pattern in which /d/is added to the imperative roots ending in/r/,/n/ without any morpho-phonological changes.

$$r/n \rightarrow]\, d \qquad (1)$$

Exceptions: pazir: paziroft *"accepeted"*,gir: gereft *"took"* negar: negarist *"looked"*, bin:did *"saw"*, sho:shod *"became"*, ɔā:ɔāmad *"came"*

Applying -id instead of -d: sor:sorid, *"slipped"*, par:parid, *"leaped"*, bor:borid *"cut"*, bār:bārid *"rained"*.

In such a rule, /d/ is known as one of the allomorphs for making stems Type II. Also, it must be born in mind that the imperative roots ending in /r/,/n/ can be captured in other patterns which will be introduced in the current section.

The Second Pattern: The second pattern in which /ād/ is added to the imperative roots ending in /t/, without any morpho-phonological changes.

t →] ād (2)

Exceptions: ne:nehād *"put"*, de:dād *"gave"*, Applying -id instead of -ād: parast: parastid *"adorned"*

The Third Pattern: The third pattern in which /ud/, is inserted to the imperative roots ending in /ā/, with somemorpho-phonological changes.

ā →] ud (3)

Exceptions: pirā:pirāst *"beautified"*, ɔārā: ɔārāst *" embellished"*, virā:virāst *"edited"*, For all verbs, -ud can be replaced by -id in this pattern.

The Forth Pattern: The forth pattern in which /t/ is added to the imperative roots ending in /f/ without any morpho-phonological changes.

f →] t (4)

Exceptions: kosh: kosht *"killed"*, seresh:seresht *"molded"*

The Fifth Pattern: The fifth pattern in which /ft/ is added to the imperative roots ending in /b/without any morpho-phonological changes.

b →] ft (5)

Exceptions: pazir: paziroft *"accepeted"*,gir: gereft *"took"*, ro: raft *"went"*, gu,goft *"said"*

Applying -id instead of -ft: āshub:āshubid *"machinated"*, tāb:tābid *"twisted"*, khāb:khābid *"slept"*, rub:rubid *"swept"*, kub:kubid *"beat"*

The Sixth Pattern: The sixth pattern in which /kht/is inserted to the imperative roots ending in /z/ with some morpho-phonological changes.

z →] kht (6)

Exceptions: khiz:khāst *"rose"*, afrāz:afrāsht *"raised"*, forush: forukht *"sold"*, shenās:shenākht *"knew"*, gosal:gosikht *"ruptured"*.

Applying -id instead of -kht: āmorz:āmorzid *"absolved"*, āmiz:āmizid *"mingled"*, arz:arzid *"costed"* , tāz:tāzid *"galloped"*, angiz:angizid*"aroused"*

The Seventh Pattern: The seventh pattern in which /sht/is inserted to the imperative roots ending in /s/, /r/ with somemorpho-phonological changes.

s/r →] sht (7)

Exceptions: afrāz:afrāsht *" raised"*, gard:gasht *"turned"*

Applying -id instead of -sht: pus:pusid *"putrefied"*, tars:tarsid *"feared "*, bus:busid *"kissed"*, pors:porsid *"asked"*, ris:risid *"spun"* , lis:lisid *"licked"*

The Eighth Pattern: The eighth pattern in which /st/ is inserted to the imperative roots ending in /n/, /e/,/o/,/ū/, /i/ with some morpho-phonological changes.

/n/, /e/, /o/, /ū/, /i/→] st (8)

Exceptions: band: bast *"closed"*, peivand:peivast *"joined"*, gosal: gosast *" ruptured"*, nagar: negarist *"looked"*

Applying -id instead of -st: ju:juyid *"found"*, je:jehid *"jumped "*, re:rehid *"to be saved "*, kā:kāhid *"diminised"*

As it is illustrated above, the presentation of these patterns is intentionally simplified in this analysis. The following section explores how these patterns are applied in FIAT-STRUC constraints to deal with the case of allomorphy.

Results and Discussion

In this study, the input for stems Type II may consist of an imperative root bearing the syntactic features corresponding to past. This is encoded in a FIAT-STRUC constraint which is given below:

PAST:] $_{stem}$i

A form bearing the syntactic feature PAST contains the segment [i] following a stem boundary.

It must be taken into account that this constraint, PAST:] $_{stem}$i, is satisfied only if [i], and not [e] or [u]or some other segments appears after a stem boundary in a sense that any deviation in the output results in the violation of the constraint, in other words, a FIAT-STRUC constraint like PAST:] $_{stem}$i is only satisfied when it is exactly matched in an output.

The following allomorphs for making stems Type II are the reflexes of nine distinct FIAT-STRUC constraints triggered by the same syntactic property. The symbol **":]** *"* marks the relevant stem boundaries.

PAST:] $_{stem}$dA verb belonging to stems Type II ends with [d]

PAST:] $_{stem}$id A verb belonging to stems Type II ends with [id]

PAST:] $_{stem}$ād A verb belonging to stems Type II ends with [ād]

PAST:] $_{stem}$ud A verb belonging to stems Type II ends with [ud]

PAST:] $_{stem}$t A verb belonging to stems Type II ends with [t]

PAST:] $_{stem}$ft A verb belonging to stems Type II ends with [ft]

PAST:] $_{stem}$khtA verb belonging to stems Type II ends with [kht]

PAST:] $_{stem}$shtA verb belonging to stems Type II ends with [sht]

PAST:] $_{stem}$st A verb belonging to stems Type II ends with [st]

As MacBride points out, "Allomorphy can arise either through under specification of elements in the PHON, or through the action of multiple FIAT-STRUC constraints"[10]. Thereupon, in the case of stems Type II, allomorphy is entirely produced by the action of FIAT-STRUC constraints.

In this analysis, it is assumed that the default case of these verbs consists of an imperative root plus **-**d which has got different types of allomorphs. As it is indicated in the below table, MAX-BO, and DEP-BO stand for MAX and DEP between the Base and the Output.

Here, imperative root boundaries and stem boundaries are distinguished by different kinds of brackets (square brackets for root boundaries and curly brackets for stem boundaries.

The FIAT-STRUC constraint is violated if PAST:] d is not exactly matched; therefore, PAST:] d constraint is satisfied just if the string is matched perfectly. Here, (b), (c), and (d) all violate this constraint equally because they partially match.

Regarding that the phonological structure in a FIAT-STRUC constraint does not have any underlying representation, the allomorphs encoded in FIAT-STRUC constraints compete and interact with each other and with Output-Output Faithfulness.

Table-1
Chart of violations

Base {[khānd]} Input: ϕ	**DEP-BO**	**MAX-BO**	**PAST :] d**
a. {[khān]d}			
b.{[khān]ud}	*		*
c. {[khān]ād}	*		*
d. {[khān]id}	*		*

In the tableaux below, it is assumed that the imperative root is the Base for stems Type II in a sense that outputs are evaluated with the imperative root as the Base.

Besides, it has to be pointed out that by virtue of adding allomorphs to some imperative roots, a couple of minor vowel changes are made which are assumed as unspecified point not considered in the inputs of this analysis. Here, the square brackets ″ [ ] ″ marks root boundaries and stem boundaries are shown by curly brackets ″ { } ″.

As indicated in the above tables, the relationships are determined by the interaction and competition between IO-Faith, OO-Faith, and FIAT constraints. Nothing prevents multiple FIAT-STRUC constraints from having the same syntactic property. If two constraints have the same SYN and are not simultaneously satisfiable, then the highest-ranked should always be satisfied.

In such case, markedness constraints do not have any role in selecting among multiple possible exponents of a syntactic property.

Table-2
tekān/tekānd ″shake″

Base{[tekā]nd} Input: ϕ	**IO-FAITH**	**DEP-BO**	**IDENT-BO**	**MAX-BO**	**PAST:]d**	**PAST:]ud**	**PAST:]id**	**PAST:]st**
a. {[tekān]d}						*	*	*
b. {[tekān]ud}		*	* !		*		*	*
c. {[tekān]id}		*	* !		*	*		*
d. {[tekān]st}		** !	**	*	*	*	*	

Table-3
ist/istād ″stand″

Base{[istā]d} Input: ϕ	**IO-FAITH**	**DEP-BO**	**IDENT-BO**	**MAX-BO**	**PAST:]ād**	**PAST:]ud**	**PAST:]id**	**PAST:]d**
a. {[ist]ād}						*	*	*
b. {[ist]ud}		*!	*		*		*	*
c. {[ist]id}		*!	*		*	*		*
d. {[ist]d}			*!	*	*	*	*	

Table-4
āzmā/āzmud ″examine″

Base {[āzmā]ud} Input: [āzmud]	**IO-FAITH**	**DEP-BO**	**IDENT-BO**	**MAX-BO**	**PAST:]ud**	**PAST:]ād**	**PAST:]id**	**PAST:]d**
a. {[āzm]ud}			*	*		*	*	*
b. {[āzm]ād}	*!	*	**	*	*		*	*
c. {[āzm]id}	*!	*	**	*	*	*		*
d. {[āzm]d}	*!		**	**	*	*	*	

Table-5
bāf/bāft ″weave″

Base {[bāf]t} Input: ϕ	**IO-FAITH**	**DEP-BO**	**IDENT-BO**	**MAX-BO**	**PAST:]t**	**PAST:]d**	**PAST:]id**
a. {[bāf]t}						*	*
b. {[bāf]d}		*	*!	*	*		*
c.{[bāf]id}		**!	**	*	*	*	

Table-6
tāb/tāft ″twist″

Base {[tāb]ft} Input: [tāft]	**IO-FAITH**	**DEP-BO**	**IDENT-BO**	**MAX-BO**	**PAST:]ft**	**PAST:]t**	**PAST:]d**	**PAST:]id**
a. {[tā]ft}						*	*	*
b. {[tāb]t}	*!		*	*	*		*	*
c. {[tāb]d}	*!	*	**	*	*	*		*
d. {[tāb]id}	*!	**	**	*	*	*	*	

Table-7
sūz/sūkht″burn″

Base {[sūz]kht} Input: [sūkht]	**IO-FAITH**	**DEP-BO**	**IDENT-BO**	**MAX-BO**	**PAST:]kht**	**PAST:]t**	**PAST:]d**	**PAST:]id**
a. {[sū]kht}			*	*		*	*	*
b. {[sūz]t}	*!		*	*	*		*	*
c. {[sūz]d}	*!	*	**	*	*	*		*
c. {[sūz]id}	*!	**	**	*	*	*	*	

Table-8
kār/kāsht ″plant″

Base{[kār]sht} Input: [kāsht]	**IO-FAITH**	**DEP-BO**	**IDENT-BO**	**MAX-BO**	**PAST:]sht**	**PAST:]t**	**PAST:]d**	**PAST:]id**
a. {[kā]sht}			*	*		*	*	*
b.{[kār]t}	*!		*	*	*		*	*
c.{[kār]d}	*!	*	**	*	*	*		*
d.{[kār]id}	*!	**	**	*	*	*	*	

Table-9
shekan/shekast ″break″

Base {[shekan]st} Input: [shekst]	**IO-FAITH**	**DEP-BO**	**IDENT-BO**	**MAX-BO**	**PAST:]st**	**PAST:]t**	**PAST:]d**	**PAST:]id**
a. {[sheka]st}			*	*		*	*	*
b. {[shekan]t}	*!		*	*	*		*	*
c. {[shekan]d}	*!	*	**	*	*	*		*
d. {[shekan]id}	*!	**	**	*	*	*	*	

It must be taken into account that the logical necessity for explicating the relevant data brings SYN:PHON schema into play where morphological generalizations are encoded by FIAT-STRUC constraints; however, applying such schema leads to an considerable proliferation of parochial constraints.

Conclusion

This article was an attempt to display morphological processes encoded in FIAT-STRUC constraints which compete and interact with each other and with Faithfulness constraints to deal with allomorphy. Multiple affixes with the same syntactic property are encoded in potentially incompatible FIAT-STRUC constraints.

As it was observed, FIAT-STRUC constraints just demand the presence of specific phonological structures in the output which combined with the effect of Input-Output Faithfulness constraints and Output-Output Faithfulness constraints to account for the cases of phonologically conditioned allomorph selection.

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