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ROOT-AFFIX ASYMMETRIES IN IRANIAN BALOCHI DIALECTS: AN OPTIMALITY THEORY APPROACH

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Abstract

This article attempts to identify the root-affix asymmetries in three Iranian Balochi dialects (IBDs) (Mirjaveh Sarhaddi Balochi (MSB), Sarawani Balochi (SB) and Lashari Balochi (LB)). All inflectional and derivation affixes found in IBDs are examined against the Babyee's (2005) hypotheses. In addition, the analyses of these asymmetries are represented based on Optimality Theory, comparative tableau (Prince 2000). The data have been collected during a research fieldwork in Sistan and Baluchistan province of Iran. The research findings illustrate that there are phoneme restrictions in the phonological structure of affixes, indeed, affixes select the set of less marked phonemes in comparison with roots, also the morpheme shapes in affixes are simple, while roots allow the consonant clusters both in initial and final positions, no complex onsets or codas are seen in the syllable structure of affixes. Moreover, in the constraint rankings, the faithfulness constraint namely FAITH ROOT is considered as an undominated constraint to support the idea that roots intend to have more contrasts.

Keywords

affixes, roots, asymmetries, Optimality Theory, constraints, phoneme restrictions

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ASIMETRÍAS EN EL RADICAL-AFIJO EN DIALECTOS BALOCHI DE IRÁN:
UN ENFOQUE DESDE LA TEORÍA DE LA OPTIMIDAD

Resumen

Este artículo intenta identificar las asimetrías de afijos radicales en tres dialectos balochi iraníes (Mirjaveh Sarhaddi Balochi (MSB), Sarawani Balochi (SB) y Lashari Balochi (LB)). Todos los afijos de inflexión y derivación que se encuentran en los dialectos balochi iraníes (IBDs) se examinan según las hipótesis de Babyee (2005). Además, los análisis de estas asimetrías se basan en la Teoría de la Optimidad (Prince 2000). Los datos se han recopilado a través de un trabajo de campo realizado en la provincia de Irán de Sistán y Baluchistán. La investigación muestra que existen restricciones fonológicas en la estructura de los afijos; de hecho, los afijos seleccionan el conjunto de fonemas menos marcados en comparación con los radicales; las formas de morfemas en los afijos son simples, mientras que los radicales permiten los grupos consonantes tanto en posición inicial como final; y no se ven inicios codas complejas en la estructura de las sílabas de los afijos. Además, en las clasificaciones de restricciones, la restricción de fidelidad, a saber, FAITH ROOT, se considera una restricción no dominante para respaldar la idea de que las raíces pretenden tener más contrastes.

Palabras clave

afijos, radicales, asimetrías, Teoría de la Optimidad, restricciones, restricciones fonológicas

1. Introduction

Roman Jakobson (1965) observes that affixes and roots show asymmetric patterning; in fact, affixes and particularly inflectional affixes have a selected and limited set of phonemes in comparison with roots. Moreover, he believes that more marked segments are absenting affixes (as cited in Bybee 2005: 166). This issue can be explained by the grammaticalization theory as proposed by Hopper & Traugott (2003). Based on this theory, phonemes constituent the affixes are more reduced phonologically and then less marked. Furthermore, Bybee's investigation on the number of languages shows that segments in affixes are less complex and not necessarily less marked (Bybee 2005).

Moreover, Bybee (2005: 172-173) presents four possible formulations of Jakobson's (1966) hypothesis which concern the number of phonemes, the degree of markedness

and the notion of complexity as well as the systematic absence of the set of phonemes in affixes comprising as below:

Hypothesis 1: The number of distinct phonemes used in the inflectional verbal affixes of a language is smaller than the number that could be expected to occur by chance.

Hypothesis 2: The phonemes that occur in affixes tend to be the less marked segments of the phoneme inventory.

Hypothesis 3: The phonemes that occur in affixes tend to be the less complex segments of the phoneme inventory.

Hypothesis 4: The phonemes absent from affixes form systematic sets.

In this paper, we present inflectional and derivational affixes of some Iranian Balochi dialects in order to be attested against the four Bybee's (2005) hypotheses which have been already introduced above.[1] Besides, our observations will be shown within Optimality Theory framework (henceforth OT), a theory of constraint interactions in grammar (Prince & Smolensky 1993, McCarthy & Prince 1993a, b). Furthermore, the phonological analysis of Iranian Balochi dialects (IBDs) will be shown based on comparative tableaux.

This paper proceeds as follows: §2 introduces the language background; §3 deals with the theoretical framework employed; §4 provides a description and an analysis of the linguistic data; and, finally, §5 presents the conclusion.

[1] In Bybee (2005: 208), Balochi affixes are based on non- Iranian Balochi dialects which are introduced in Barker & Mengal (1969). Whereas the linguistic data in the present research relies on three Iranian-Balochi dialects namely Sarawani, Sarhaddi and Lashari, which are spoken in the province of Sistan and Baluchistan in Iran. All the data used in our paper were gathered through interview and elicitation from the speech of 10 male and 10 female language consultants during 2010-2013 in the province of Sistan and Baluchistan, Zahedan, Iran.

2. Language background

Balochi is spoken in south-western Pakistan, and by a large number of people in Karachi. It is also spoken in south-eastern Iran, in the province of Sistan and Baluchestan, and by Balochi who have settled in the north-eastern province of Khorasan and Golestan. It is, furthermore, spoken by small communities in Afghanistan, in the Gulf States, in the Marw/Marie region of Turkmenistan, in India, East Africa and today also by a considerable number of Baloch in North America, Europe and Australia (Jahani & Korn 2009).

Jahani & Korn (2009: 636) divide the main dialects of Balochi into Western, Southern, and Eastern. They declare that this is a very broad dialect division, within which further dialect demarcations can be made. Some dialects do not easily fit any of these groups. This is true, for example, of the dialect spoken in Iranian Sarawan, which shows transitional features between Western and Southern.

As mentioned in the introduction section, the present study focuses on the root-affix asymmetries of three Iranian Balochi dialects namely Mrijaveh Sarhaddi, Sarawani and Lashari. These three selected Iranian Balochi dialects are spoken, respectively, in Mirjaveh, Sarawan and Lashar in Sistan and Baluchestan province which is located in the southeast of Iran. It is worth mentioning that the Iranian Balochi dialects, are not only surrounded by Standard Persian, but also by some Persian dialects, such as the Sistani and Birjandi dialects, as well as some other languages such as Brahui, Bashkardi, Jadgali, Mazandarani, Qashqai and Kurdish (Okati 2012).

3. Theoretical considerations

At the heart of OT is the conflict between faithfulness constraints, which keep surface representations in line with the abstract phonological forms, and well-formedness constraints, which seek to keep surface realizations in line with cross-linguistic generalizations based on markedness. In other words, faithfulness constraints oppose changes, while markedness constraints trigger changes (Prince & Smolensky 1993, McCarthy & Prince 1993a, b). This exemplifies the basic concept behind OT: all languages

have the same constraints, all of which are violable. The output forms of the corresponding input depend on which constraints are the most important in a given language. Violations, as well as the optimal output, are represented visually through the use of a tableau (Kager 1999).

Prince (2000) suggests a new version of representing elements in OT which is known as "comparative tableaux". In this format, each candidate is a desired optimum or competes with a desired optimum which is, indeed, suboptimum as shown in the following tableau:

	C_1	C_2	C_3
a. ☞ candidate (a)			*
b. candidate (b)		*W	L

Tableau 1. Comparative tableau

As above tableau represents, the optimal candidate is candidate (a), so it is optimum candidate and candidate (b) is suboptimum candidate. *W* shows that the constraint ranking prefers the desired optimum candidate. It prefers the Winner, in this case candidate (a)) and *L* shows that the constraint ranking prefers the desired suboptimum candidate (it prefers the Loser, here we mean candidate (b)) and *blank* means constraint does not distinguish the candidates. In ranking theory, indeed, each *W* must precede the *L* (Prince 2000: 3).

4. Root-Affix asymmetries

4.1 *IBDs inflectional and derivational affixes*

In this subsection, both inflectional and derivational affixes in IBDs will be introduced,[2] then the phonemes that are used and not used in affixes will be shown.

[2] It should be mentioned that all the affixed listed in tables 1 and 6 are the ones found only in the corpus under investigation.

Moreover, the morpheme shapes in inflectional and derivational affixes will be illustrated. Finally, the asymmetries between root and affixes in IBDs will be discussed.

First, let us consider the inflectional affixes in IBDs as shown in the following table:

Form	Label	Dialect	example	
b-	subjective marker	MSB, SB, LB	*bgu*	'tell!'
p-	subjective marker	SB, LB	*ptʃaːr*	'look!
mæ-	prohibitive marker	MSB, SB, LB	*mæwaːr*	'Do not eat!'
næ	negative marker	MSB, SB, LB	*næwaːnton*	'I do not read'
-aːn	plural marker	MSB, SB, LB	*dræhtaːn*	'trees'
-ter	comparative marker	MSB, SB, LB	*wæʃʃter*	'better, nicer'
-terin	superlative marker	SB	*wæʃʃterin*	'best, nicest'
terien	superlative marker	SM	*zænɋterien*	'best'
teriən	superlative marker	LB	*selteriən*	'worst'
-aːn /on	verbal ending 1SG (present and Past tense)	MSB, SB, LB	*ræwaːn* *waːpton*	'I go' 'I slept'
-ej	verbal ending 2SG (presen and past tense)	SB	*ræwej* *waːptej*	'You go' 'You slept'
-iːn	verbal ending 1PL (present and past tense)	MSB, SB, LB	*ræwiːn* *waːptiːn*	'We go' 'We slept
-iːt	verbal ending 2PL (present and past tense)	MSB, SB, LB	*ræwiːt* *waːptiːt*	'You go' 'You slept'
-ent	verbal ending 3PL (present and past tense)	MSB, SB, LB	*ræwent* *waːptent*	'They go' 'They slept'

Table 1. List of inflectional affixes in IBDs

As to inflectional affixes listed above, it seems that IBDs exclude more consonants in inflectional affixes. To see whether this exclusion is random or patterned, consider the consonant inventory of IBDs as listed in table (2) with the consonants not used in inflectional affixes in parenthesis.

	labial	alveodental	alveolar	postalveolar	retroflex	velar	uvular	glottal
plosive	p b	(t) (d)			(ʈ) (ɖ)	(k) (g)		(ʔ)
fricative		(s) (z)		(ʃ) (ʒ)		(ɣ)	(χ)	(h)
affricate				(tʃ) (ʃ)				
nasal	m	n						
Central approximant	(w)	r			(ɻ)	(j)		
Lateral approximant		l						

Table 2. Consonant inventory of IBDs, with consonants not used in affixes in parenthesis

Based on table (2), it seems that IBDs exclude more consonants, and these exclusions appear not random, but patterned (it can be any natural class of sound). This could be defined by manner of articulation, place of articulation, voicing, or airstream mechanism (Bybee 2005: 178). Now consider the patterned exclusion in IBDs:

(a) IBDs have no fricatives and affricates in affixes.

(b) IBDs have no postalveolar, no retroflex, no velar, no uvular and no glottal consonants in affixes.

Thus only a small number of phonemes (6 out of 26) namely coronals [n, r, l] and bilabials [p, b, m] are favored in IBDs inflectional affixes. This fact supports the first, third and froths hypotheses which already discussed, but not the second one, as bilabials are more marked than coronals and pharyngeals.

The examination of using vowels in IBDs inflectional affixes yields those five cardinal vowels are used in affixes. All front vowels /i/, /e/, /æ/ and all back vowels /u/, /o/ except for /u/ are used in inflectional affixes, whereas no /ɪ/ or /ʊ/ are found in affixes. Moreover, only long /ɑ/ and /i/ are used in inflectional affixes and no other long vowels. In addition, there seems to be slight dispreference for diphthongs in affixes, and only /ie/ and /iə/ are not excluded. The following table shows all phonemes which are used and also not used in IBDs inflectional affixes:

Phonemes

used in affixes	**not used in affixes**
Consonants b [**b**gu], p[**p**tʃɑ:r] t [wæʃʃ**t**er], m[**m**æwɑ:r] n [dræhtɑ:**n**], r[wæʃʃte**r**]	**Consonants** ʈ [gæ**ʈʈ**] ‘bite’, ɖ [**ɖ**ɑ:l] ‘lentil’ k [**k**ell] ‘hole’, g [**g**el] ‘mud’ ʔ [ʔɑ:p] ‘water’, s [**p**es] ‘father’ z [**z**ɑ:r] ‘plaint’, ʃ [**ʃ**æp] ‘night’ ʒ [**ʒ**ænd] ‘tired’, χ [saχm] ‘roof’ ɣ[ʃolo**ɣ**] ‘busy’, h [**h**our] ‘rain’ w [**w**æht] ‘time’, j [**j**ɑ:r] ‘friend’ ɻ [bu:**ɻ**] ‘louse’, l [**l**ɑrr] ‘data’ tʃ [pro**tʃ**] ‘broke’, dʒ [gor**dʒ**æ]’‘tomato’
Vowels i [ræw**i**:n], e [ræw**e**nt] æ [n**æ**wa:nton], o[wɑ:pt**o**n] ɑ[dræht**ɑ**:n**]** ie [zændʈter**ie**n], iə[selter**iə**n]	**Vowels** Iɪ [ʃ**ɪ**r] ‘milk’, ʊ [g**ʊ**k] ‘cow’ u [d**u**:r] ‘far’ ue [r**ue**p] ‘broom’, uə [d**uχə**g] ‘Dough’æu [k**æu**ʃ] ‘shoe’, ou [mout] ‘death’

Table 3. IBDs phonemes used and not used in inflectional affixes

In addition, Urbanczky (2011: 2492-2493) discusses the usual type of root-affix asymmetry in languages as a subset relation which is shown in (4):

(4) root affix

a. segmental inventory

{a}	{a}	same segmental inventory
{a}	{a, b}	root is a subset of affix inventory
{a, b}	{a}	affix is a subset of root inventory
{a, b}	{a, b}	same segmental inventory

Thus, segmental contrasts found in IBDs inflectional affixes can be an instance of affixes having a subset of roost inventory. Moreover, Urbanczyk (2011) investigates not only segmental contrasts in affix-root asymmetry, but also root-affix shapes. Based on data listed in (1), affix morphemes have only simple onset, though complex and simplex onsets are allowed in IBDs roots as discussed in section 2. Besides, the onset less syllables like in V and VC are allowed in affixes and not in roots. Even affixes can shape as a consonant and not even nucleus. Once again, this is an example of affixes having a subset

of the patterns found in roots. Table (5) represents the inflectional affixe and root morpheme shapes in IBDs.

Morpheme shapes	
used in affixes	**not used in affixes**
C [**b.**gu]	CCVC [dræht] ‘tree’
CV [**mæ**wɑ:r]	CVCC [godd] ‘cloth’
VC [dræht**ɑ:n**]	CCVCC [tʃlimp] ‘water pipe’
CVC [wæʃʃ**ter**]	
CV.CVC [wæʃʃ**te.rin**]	
VCC [wɑ:pt**ent**]	

Table 5. IBDs morpheme shapes used in inflectional affixes and not used in inflectional affixes

Derivation affixes in IBDs are given in table (6), as data show the number of segments used in derivational affixes are more than in inflectional affixes.

Form	Label	Dialect	Example	
hæm-	noun marker	MSB, SB, LB	*hæmzɑ:t*	‘family member’
bɑ-	adjective marker	MSB, SB, LB	*bɑwæt*	‘himself’
ʔer-	compound verb marker	MSB, SB, LB	*ʔer kæpten*	‘get off’
bɪ-	adjective marker	SB	*bɪkɑ:r*	‘unemployed’
bie-	adjective marker	MSB	*biewæs*	‘poor’
biə-	adjective marker	LB	*biətɑ:m*	‘tasteless’
nɑ:-	adjective marker	MSB, SB, LB	*nɑ:rɑ:h*	‘foul’
-æg	noun marker, adjective marker, infinitive marker	MSB, SB, LB	*tʃæmmæg* *ræstæg* *wæræg*	‘fountain’ ‘ripe’ ‘to eat’
-æk	noun marker	MSB, SB, LB	*sutʃæk*	‘burning’
-ok	diminutive marker noun marker	MSB, SB, LB SB	*dɑ:rok* *wɑ:rok*	‘small house’ ‘food’
-dɑ:n	noun marker	MSB, SB, LB	*sengdɑ:n*	‘gizzard’
-nɑ:k	adjective marker	MSB, SB, LB	*letʃtʃnɑ:k*	‘sticky
-dɑ:r	noun marker	SB	*mɑ:ldɑ:r*	‘rich’
-æka	adverb marker	SB	*tʃæppæka*	‘wrongly’
-ɑ:r	adjective marker	MSB, SB, LB	*greptɑ:r*	‘busy’
-om	noun marker	MSB, SB, LB	*ʃæʃom*	‘sixth’
-ɑ:	noun marker	MSB, SB, LB	*roʒnɑ:*	‘lightness’
-i:	indefinite marker	MSB, SB, LB	*morgi:*	‘a bird’

Table 6. List of derivational affixes in IBDs

All phonemes used in derivational affixes are presented in the following table:

Phonemes	
used in derivational affixes	**not used in derivational affixes**
consonants	**consonants**
b[bɪkɑ:r], d[sengdɑ:n],	p, t, ʈ , ɖ
k[letʃtʃnɑ:k],	s , z , ʃ , ʒ, χ, ɣ
g[rest{g], h[hæmzɑ:t]	w, j, ɻ , l
m[ʃæʃom], n[nɑ:rɑ:h], r[greptɑ:r]	tʃ, dʒ
vowels	**vowels**
ɪ[bɪkɑ:r], e[*biewæs*],	ʊ, u,
ɑ [*roʒnɑ:*],	ue, u*iə*, æu, ou
o[*wɑ:rok*], {[*sutʃæk*],	
ie[*biewæs*], iə[*biətɑ:m*]	

Table 7. List of phonemes used in derivational affixes in IBDs

As table (7) demonstrates, it seems that IBDs exclude the consonants in derivational affixes not randomly just like in inflectional affixes as discussed already. In fact, IBDs have exclusions that constitute natural classes of consonants:

(a) IBDs have no fricatives except /h/, no affricates and only one, namely [r], out of five approximants in derivational affixes.

(b) IBDs have no postalveolar, no retroflex, and no uvular in derivational affixes.

The investigation of using vowels in IBDs derivational affixes proves that four cardinal vowels are used in derivational affixes. All front vowels /i/, /e/, /æ/ and all back vowels /ɑ/, /o/ except for /u/ are used in derivational affixes, whereas no /ʊ/ is found in these affixes. Besides, only long /ɑ/ and /i/ are used in derivational affixes and no other long vowels. Furthermore, among all diphthongs just /ie/ and /iə/ are preferred

Moreover, the morpheme shapes used in derivational affixes are given in (8). As it is demonstrated in this table, only simple onset and simple codas are permitted in derivational affixes, besides onsetless syllables are also permitted just like in inflectional affixes.

Morpheme shapes	
used in affixes	**not used in affixes**
V[roʒn**ɑ:**]	CCVC
CV[bɑwæt]	CVCC
VC[bɑwæt]	CCVCC
CVC[letʃtʃnɑ:k]	

Table 8. IBDs morpheme shapes used and not used in derivational affixes

In sum, based on tables (3) and (7), no affixes, glides and fricatives except for one out of six, namely [r], are used neither in inflectional nor in derivational affixes. The number of coronals and bilabials in both types of affixes is more than other places of articulation. Besides, no retroflex, postalveolar and uvular consonants involved in affix inventories in IBDs. Additionally, morpheme shapes in IBDs affixes are simpler than in roots, no complex onset is observed in IBDs affixes and onsetless syllables are only allowed in affixes, but not in IBDs roots.

5. IBDs root-affix asymmetry in Optimality theory

Cross-linguistically, root morphemes show more extensive and more marked inventory of segments, and of prosodic structures, than do affix morphemes, like in Arabic which pharyngeal consonants are limited only to roots, or in Cuzco Quechua the laryngeal stops only occur in roots and not in affixes (Beckman 1999: 191).

As examples in (1) and (6) demonstrate, no retroflex or postalveolar consonants occur in IBDS affixes, so the distribution of these consonants are only limited to the roots.

In OT, the following universal ranking is proposed to show that roots tend to have more marked contrasts than affixes (Urbanczyk 2011: 2508).

(9) Root-affix faithfulness constraint

FAITH-ROOT >> FATH-AFFIX

So as Urbanczyk (2011: 2508) believes, "the location of some markedness constraint with respect to FAITH-ROOT and FAITH-AFFIX can compel alternations resulting in asymmetrical patterns."

Let us begin our OT analysis by considering cases such as*ʈuːh-ter* 'bigger' and *lætʃtʃ-naːk* 'sticky'. These two examples reflect the main aspects of root- affix asymmetries in IBDs known as phoneme restrictions in affixes and the morpheme shapes in affixes. So,*∝uːh-ter* shows that there is no retroflex consonant in the affixes (as illustrated in the table 2, 7); while in roots there are no phoneme restrictions. Besides, *lætʃtʃ-naːk* illustrates that no consonant clusters used in the affixes (as shown in table 5, 8), whereas in roots both in initial and final positions consonant clusters can occur, even geminate is allowed in final and word-medial position in roots (Soohani, Ahangar & van Oostendorp 2014).

Based on our explanation so far, it is clear that affixes have less marked phonological structures than roots. In the OT analysis of *ʈuːh-ter,* the faithfulness constraint *RETROFLEX is lower ranked than FAITH-ROOT, since retroflex consonants are found in the roots. The following tableau represents the consonant ranking in (10) for the input *ʈuːh-ter*.

(10) Phoneme restrictions in IBDs affixes

FAITH-ROOT >> *RETROFLEX>> FAITH-AFFIX

ʈuːh-ter

Big- comparative marker

'bigger'

Input:/ʈuːh-ter/	FAITH-ROOT	*RETROFLEX	FAITH-AFFIX
a. ☞ʈuːh-ter		*	
b. ʈuːh-ʈer		**W	*W
c. tuːh-ter	*W	L	
d. tuːh- ʈer	*W	*	*W

Tableau 11

As it is shown in tableau (11), the optimal candidate for input *ʈuːh-ter* is candidate (a), however it violates the markedness constraint which is against retroflex consonant known as *RETROFLEX. Candidate (b) violates anti-retroflex constraint two times and FAITH-AFFIX, thus it is loser. Both candidates (c) and (d) are eliminated as well, since they violate the higher ranked constraint FAITH-ROOT.

In the case of morpheme shapes in affixes as in *hæm-,* the markedness constraint which is against consonant cluster namely *CC is relevant, as it is shown in the ranking (12) the FAITH-ROOT is the undominated constraint. The following ranking is illustrated in the tableau (12).

(12) FAITH-ROOT >>*CC >> FAITH-AFFIX

lætʃtʃ- nɑːk

glue- adjective maker

'sticky'

Input:/ *lætʃtʃ- nɑːk/*	FAITH-ROOT	*CC	FAITH-AFFIX
a. ☞lætʃtʃ- nɑːk		*	
b. lætʃtʃ- nɑkk		**W	*W
c. lætʃ-nɑːk	*W	L	
d. lætʃ-nɑkk	*W	*	*W

Tableau 13

The optimal candidate as it is shown in the above tableau is candidate (a), though it has violation, it is not fatal. Candidate (b) is a loser, since it incurs the fatal violations. In addition, both candidates (c) and (d) are not winners, they violate the undominated constraint namely FAITH-ROOT.

6. Conclusion

As illustrated, the asymmetries between root and affix in IBDs can be divided into two main aspects: first the phoneme restriction in affixes, as shown in table (3) and (7), both inflectional and derivational affixes intend to have limited segments which are less complex and less marked, for example no retroflexes, or postalveolar consonants in affixes also affricates and fricatives are not found in the phoneme structure of affixes in IBDs. Further, affixes have simple syllable structure, no onset and coda clusters are seen among affixes, while roots have more complex morpheme shapes such as CCVC, CVCC, and CCVCC. Furthermore, OT analysis given in this study supports the idea that affixes intend to have less marked segments as in tableau (11) and suprasegments than roots as in tableau (13). In both tableaux the FAITH- ROOT constraint is ranked higher than other relevant constraints while FAITH-AFFIX is a lower ranked constraint.

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