

A Moraic Account of Compensatory Lengthening in Tehrani Farsi*

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1. Introduction

The purpose of this paper is to reconsider compensatory lengthening (henceforth, CL) in modern colloquial Tehrani Farsi in a moraic theory framework.

To begin with, the consonantal system of Farsi is given in (1) (Darzi 1991:23-24).

(1) Consonants

	labial	labio-dental	dental	alveolar	alveo-palatal	palatal	uvular	glottal
stop	p, b		t, d			k, g	q	ʔ
fricative		f, v		s, z		ʃ, ʒ	x	h
affricate					ʧ, ʤ			
trill				r				
nasal	m			n				
lateral				l				
glide					y			

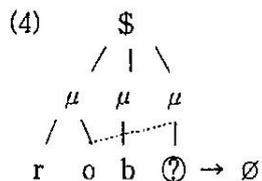
In modern colloquial Tehrani Farsi, the loss of the glottal consonants /ʔ/ and /h/ in

* This paper has benefited greatly from discussions with Chin W. Kim. Any faults are, of course, mine.

coda position induces CL as shown in (2)¹, whereas that of other consonants fails to trigger CL as shown in (3).²

	<u>Formal</u>	<u>Conservative</u>	<u>Colloquial</u>	<u>Gloss</u>
	roʔb	roʔb	ro:b	quarter
	soʔb	soʔb	so:b	morning
	tæʔmir	tæʔmir	tæ:mir	repair
	pæhna	pæhna	pæ:na	width
	suʔ	suʔ	su:	bad
	kuh	kuh	ku:	mountain
	boʔd	boʔd	bo:d	dimension
	bæhs	bæhs	bæ:s	discussion
(3)	dæst	dæst	dæs	hand
	mozd	mozd	moz	wage
	fokr	fokr	fok	thanks
	æz	æz	æ	sugar
	fekr	fekr	fek	thought

Darzi (1991) has recently proposed that in order to account for CL in Farsi, it is necessary to replace Hayes's (1989) original account in the "exclusively" moraic framework with a two-tier analysis combining both a skeletal (CV) and a moraic tier, along the lines suggested by Hock (1986). He was motivated to adopt a two-tier analysis in order to avoid a line crossing such as (4) in a strictly moraic account.



Darzi's analysis, however, is undesirable in some respects to be discussed in what

¹ Glottal consonants /ʔ/ and /h/ are sometimes deleted in syllable-initial position, which, however, does not induce CL (e.g., /mæʔhæd/ → [mæʃæd], /sæʔid/ → [sæid]). This is precisely what moraic theory predicts: i.e., since onset consonants are nonmoraic, deletion of them strands no mora, and hence no CL occurs.

² The data in (2) and (3) are all taken from Darzi (1991).

follows. In this paper, I will argue that in accounting for CL in Farsi, the two-tier analysis proposed by Darzi runs into serious difficulties, and that CL in this language can be given a natural account in the 'pure' moraic theory by modifying three of Hayes's principles. Before I proceed to a moraic account of CL in Farsi in section 3, I will provide a brief review of previous analyses in the following section.

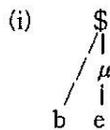
2. Previous analyses

Considering the syllable structure of Farsi³ and its relation to the moraic structure of syllables, Hayes (1989) proposes the moraic structure of Farsi as in (5).⁴

(5)	light	heavy		superheavy		ultraheavy
	\$	\$	\$	\$	\$	\$
		\	\	/ \	/ \	/ \
	μ	μ μ	μ μ	μ μ μ	μ μ μ	μ μ μ
	/	/ \ /	/	^ /	/	/ \ / \
	b e	t a	b æ d	t a b	d æ s t	d a f t
	"to"	"till"	"bad"	"swing"	"hand"	"hand"

³ In Farsi, no syllable can begin with a vowel (Darzi 1991:24). Thus, the types of the permissible syllable structure in this language are CV, CVC and CVCC. In addition, there are no syllabic consonants.

⁴ In Hayes (1989), onset consonants are directly linked to the syllable node. /be/ 'to', for instance, is syllabified as follows:

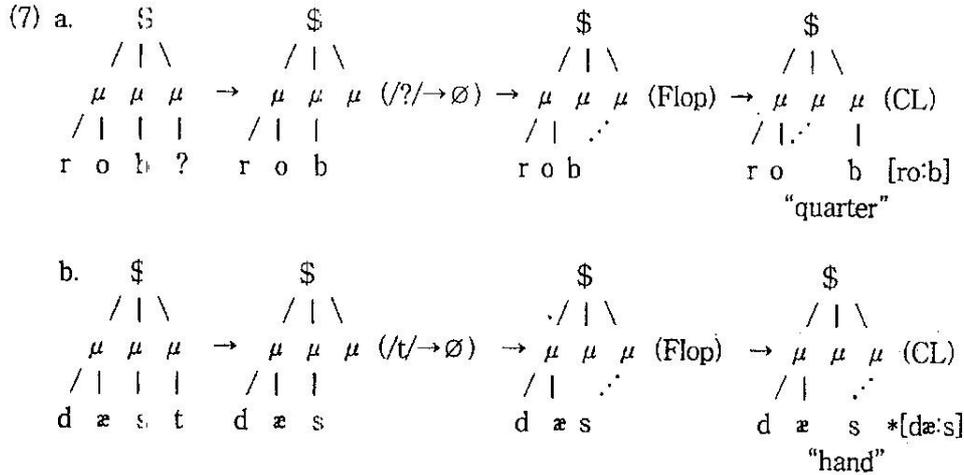


As discussed in Zec (1989) and Kang (1992), however, this representation violates the Strict Layer Hypothesis given in (ii).

(ii) Strict Layer Hypothesis

A category of level *i* in the hierarchy immediately dominates (a sequence of) categories at level *i*-1. (Selkirk 1984)

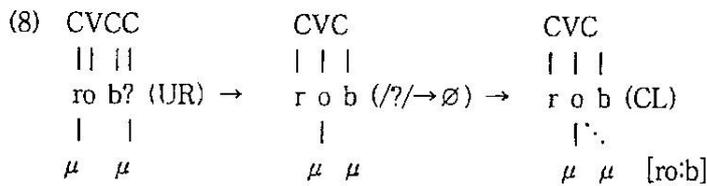
In this paper, I will assume after Zec (1989) and Kang (1992) that onset consonants are associated with the following mora.



Assuming that only glottals are moraic consonants in Farsi, Darzi (1991) claims that in addition to a moraic tier, we also need to have a CV tier. He (pp. 34-35) says,

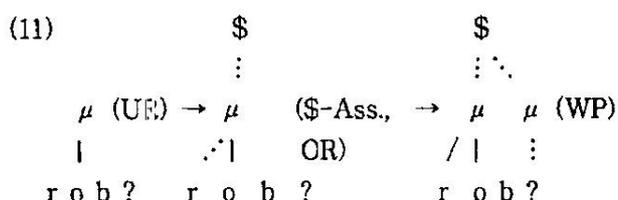
"Once we assume that moras are not constructed directly on top of segments but rather are on a tier separate but linked to the skeleton, the spreading of a segment on the moraic tier does not cross the association lines between the elements of the CV tier and the syllable node or moraic slots, because they are on two separate tiers or planes."

Under his analysis, for instance, [ro:b] 'quarter' is derived from its underlying /rob?/ as shown below.



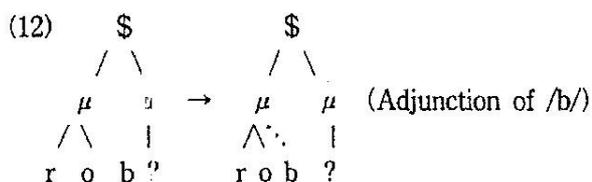
This analysis, however, is untenable for two reasons. First, Darzi's account multiplies entities unnecessarily, since a CV tier is redundant once we have a moraic tier (cf. Auer 1989, Hayes 1989). Second, in Darzi's analysis, we have to stipulate that CL in Farsi is a rightward spreading rule so as not to produce a wrong output in examples like (9).

assigned a mora by the WP.

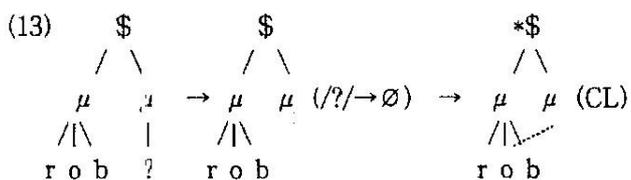


(UR=underlying representation; OR: onset rule)

Second, Hayes (1989) asserts that nonmoraic consonants in the coda are linked to the preceding mora. If we accept his proposal, the nonmoraic segment /b/ in (11) will be adjoined to the preceding mora, as shown below.



However, such an analysis would clearly be inadequate for Farsi, because it removes the possibility of CL: it cannot account for CL with the loss of the glottal consonants /ʔ/ and /h/ in the cases where they are preceded by another consonant, as in /robʔ/ and /sobh/. Observe, for example, the following derivations:



(i) a. μ b. μ μ
 | ∨
 i = /i/ i = /i/

In (13), for the vowel /o/ to lengthen, it must link to the final mora now delinked with the loss of the glottal stop. But the /o/ cannot lengthen because of the ban on crossing association lines. In order to cope with this problem, I propose that unlike Hayes's (1989) assertion, nonmoraic coda consonants are linked to the final mora (i.e., the second mora) of a syllable if the syllable is heavy, or to the only mora if it is light. The following schematic derivations illustrate the procedure.

(14) a. /r.ozd/	b. /bæhs/	c. /rob?/	
μ	μ	μ	
			(UR)
r.ozd	bæhs	rob	
	\$	\$	
	⋮	⋮	
μ	μ	μ	
			(\$-Ass., OR)
m o z d	b æ h s	r o b ?	
	\$	\$	
.....	μ μ	μ μ	
	/ :	/ :	(WP)
	b æ h s	r o b ?	
\$	\$	\$	
	\	\	
μ	μ μ	μ μ	(Adj. of
/ :	/ :	/ :	stray
r o z d	b æ h s	r o b ?	segments)

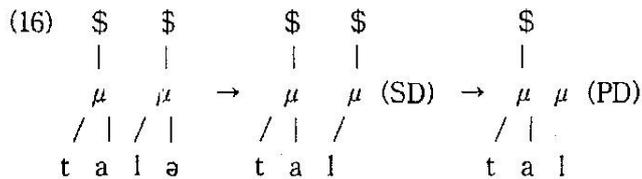
The coda clusters /zd/ in (14a) that are nonmoraic are linked to the only mora of the syllable, while both /s/ in (14b) and /b/ in (14c) are linked to the second mora of those syllables.

Finally, accounting for Middle English CL, Hayes (1989) proposes the following principle:

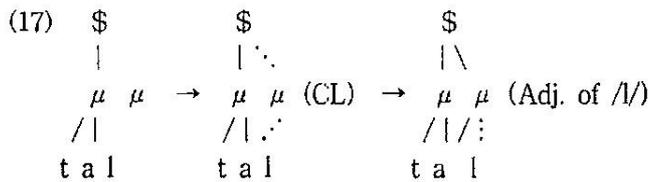
(15) Parasitic Delinking (PD)

Onset consonants are desyllabified if their syllable contains no overt moraic nucleus

The crucial consequence of PD is that when a vowel delinks from a mora, the mora becomes completely free, and may acquire an unexpected new association. For Middle English, for example, the effect of PD on the output of Schwa Drop (SD) is as follows:



In (16), we have a stray mora, which relinks to the preceding vowel melody, producing a long vowel, as illustrated in (17). The end result derives from the resyllabification of the stranded final consonant /l/.



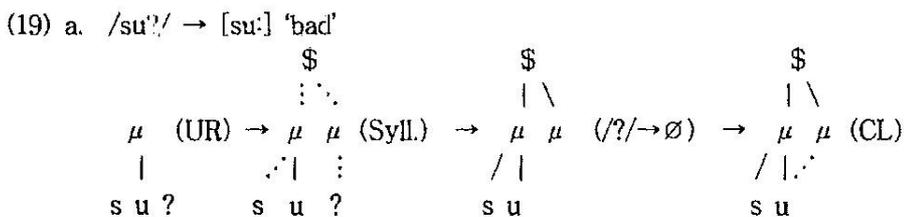
In order to account for CL in Farsi, however, we need to modify the PD as in (18).

(18) Parasitic Delinking (PD)

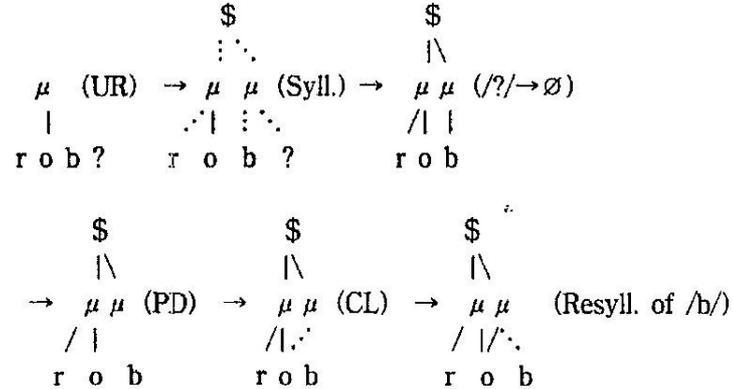
Nonmoraic segments are desyllabified if the mora to which they have been linked contains no overt moraic segment.

What (18) says is that when moraic segments are deleted, nonmoraic segments linked to the mora are delinked from it, stranding the mora.

Given the revision above in the mora-linking convention, explanation of CL in Farsi is straightforward. Observe, for example, the following derivations:

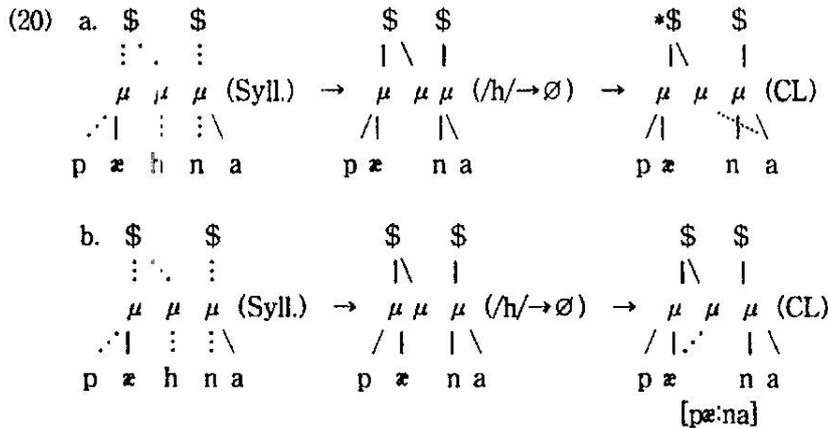


b. /rɔbʔ/ → [rɔ:b] 'quarter'

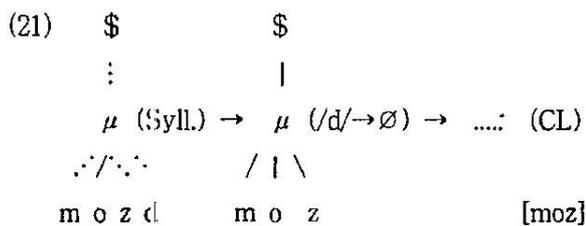


In (19a), the loss of the moraic segment /ʔ/ creates a stray mora, which is reassociated with the preceding vowel melody, producing a long vowel [u:]. (19b) illustrates the derivation of [rɔ:b] from /rɔbʔ/. After the deletion of the moraic segment /ʔ/, the nonmoraic segment /b/ is dissociated from the mora by PD. Then, the vowel /o/ can freely spread to the stranded mora, producing a long vowel. The spreading here does not violate the ban on crossing association lines. Finally, /b/ is reassociated with the preceding mora, i.e., the second mora of the syllable. Note that the occurrence of CL prior to the resyllabification of /b/ is a consequence of Ito's (1986) principle that syllable structure (indeed, all prosodic structure) is created maximally.

Unlike Darzi (1991), there is under the analysis adopted here no need to stipulate that CL in Farsi is a rightward spreading rule. That is, my analysis correctly predicts that spreading of the vowel /a/ to the left in (9) above is blocked, as illustrated in (20a) in comparison with (20b). (20a) clearly shows that the stranded mora after the loss of /h/ cannot be linked to the following vowel /a/; since the /n/ remains linked, it is impossible for the vowel /a/ to spread leftward, due to the ban on crossing association lines. Thus, CL in (20a) is correctly ruled out. As shown in (20b), the only possible way of conserving the stranded mora is to link it to the preceding vowel /æ/. This is exactly what is predicted in my analysis.



Unlike the deletion of glottal consonants in (2) above which induces CL, that of other consonants in (3) fails to feed CL, since it leaves no stranded mora behind. (21), for instance, shows the derivation of [moz] ‘wage’ from /mozd/. Since consonants /z/ and /d/ are nonmoraic, they are assigned no mora in the process of syllabification. They are simply linked to the only mora of the syllable; hence, the deletion of /d/ in (21) strands no mora, so no CL occurs.



4. Conclusion

Considering CL in Farsi so far, I have claimed (i) that unlike Darzi’s (1991) assertion, a two-tier analysis combining both a skeletal (CV) and a moraic tier is not necessary, and (ii) that CL in this language can be given a natural account in the ‘purely’ moraic framework by modifying three of Hayes’s (1989) principles.

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