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## Glottal deletion in Farsi

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## 1. Data

	/ /	[ ]	Gloss
a.	hame	hame	all
	ʔabr	ʔabr	cloud
b.	tarh	tar	drawing
	tah	ta	bottom
c.	ʔenfʔ	ʔenfʔ	composition
	taht	ta:t	under
d.	taʔm	ta:m	taste
	tahdig	ta:dig	scorched rice
e.	taʔsir	ta:sir	effect
	tanha	ta:na	alone
f.	farʔi	fa:ri	peripheral
	bahal	ba:l	cool
	teʔatr	taatr	theater

In colloquial Iranian Persian, a.k.a. Farsi, glottal consonants /h/ and /ʔ/ tend to delete in all non-word-initial positions (b to f).

In pre- and post-consonantal positions, when the glottal is not word-final (c, d, e), its deletion triggers the compensatory lengthening (CL) of the previous vowel.

Word-initially (a), glottals are preserved.

Intervocally (f), their deletion can lead to the fusion of the two vowels or to a surface hiatus.

The phenomenon is well-documented in the literature (Lazard 1957, Darzi 1991, Mahootian 1997, Kavitskaya 2001/2, Alqahtani 2020, a.o.). Nonetheless, two points remain overlooked:

- deletion in word-internal post-consonantal position (e),
- lack of CL when the glottal is word-final (b).

## 2. CVCV

CVCV a.k.a. Strict CV (Lowenstamm 1996, Scheer 2004) reduces universal syllable structure to strict alternations of non-branching Onsets and non-branching Nuclei.

The distribution of empty Nuclei is regulated by ECP and a set of language-specific parameters.

**Empty Category Principle (ECP)** (KLV 1990)  
An empty Nucleus may remain phonetically unexpressed if it is (properly) governed, i.e. if the following Nucleus is phonetically expressed.

Government (Gvt) and Licensing (Lic) are the two lateral forces defined in the model. While the former inhibits, i.e. silences or weakens its target, the latter enhances it.

## 3. Coda-Mirror

Coda-Mirror (Ségéral & Scheer 2001, Scheer & Ziková 2010) is a theoretical tool developed within the CVCV model. It explains:

- The positional strength vs weakness of a consonant by the lateral forces it is the target of.
- The asymmetry between the two weak positions, i.e. Coda and intervocalic.

Position	Forces	Phenomenology
Coda {_#, _C}	no Gvt, no Lic	lenition type I
Coda-Mirror {#_, C_}	Lic	fortition or preservation
Intervocalic V_V	Gvt	lenition type II

In languages where the Initial CV parameter (Lowenstamm 1999) is ON, both word-initial and word-internal Coda-Mirror contexts are strong. When the parameter is OFF, only the word-internal one is (see Scheer 2015: 209).

## Glottal deletion in Farsi

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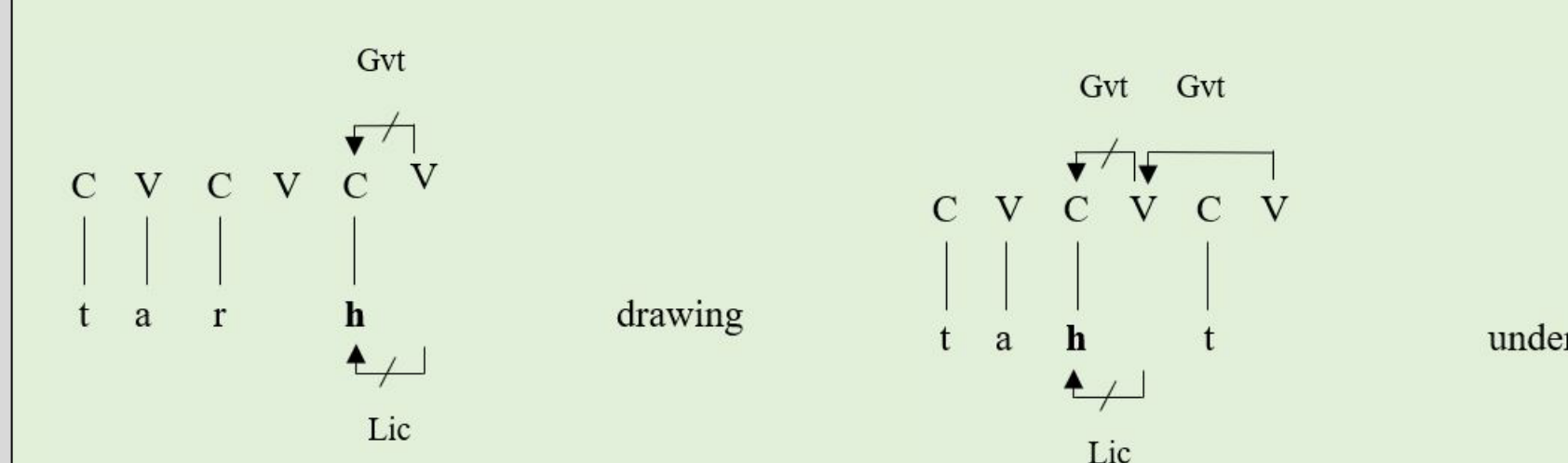
### In a nutshell

Cross-linguistically, glottal consonants are prone to deletion. In Farsi, /ʔ/ and /h/ delete in all non-word-initial positions. I propose two CVCV analyses of the phenomenon and one of the compensatory lengthening that it triggers when the glottal is not word-final. These explain the otherwise overlooked cases of post-consonantal glottal deletion, as well as the lack of compensatory lengthening in word-final position.

## 4. Analysis I: deletion is lenition

Glottals delete when they are unlicensed, i.e. in both Coda and intervocalic positions. Licensing protects them from lenition (here, deletion).

Note that besides simple Codas, both segments of final clusters are in Coda.



### Flaw

In previous work (e.g. Jaferian 2023), I have shown that the Initial CV parameter is ON in Farsi. The word-initial position is thus strong. Strength is then predicted in word-internal Coda-Mirror as well. Nonetheless, deletion is what we observe: /tan.hɑ/ → [ta:na]. Licensing cannot protect /h/ from deletion!

### A very ‘formal’ solution

In cases such as /tanha/, the glottal undergoes metathesis, ending up in Coda position. Its deletion follows ‘naturally’:  
/tanha/ → \*tahnɑ → [ta:na]

### What is wrong with it?

The metathesized form is unattested / marginally attested, while deletion is optional and gradient.

## 5. Analysis II: deletion is unconditioned

Glottal deletion occurs independently from the lateral forces. Word-initially, it is blocked because of a language-specific parameter, banning empty initial Onsets (see Guerssel 2014 on Classical Arabic for a similar proposition).

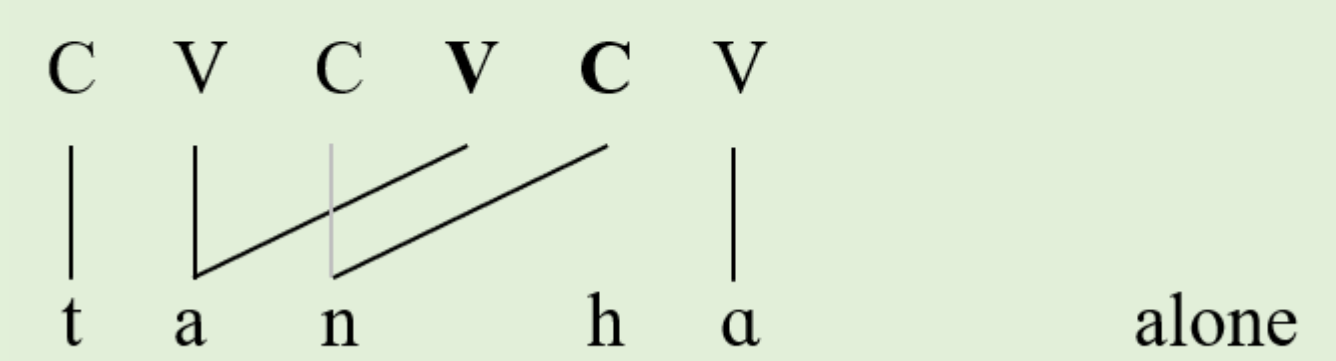
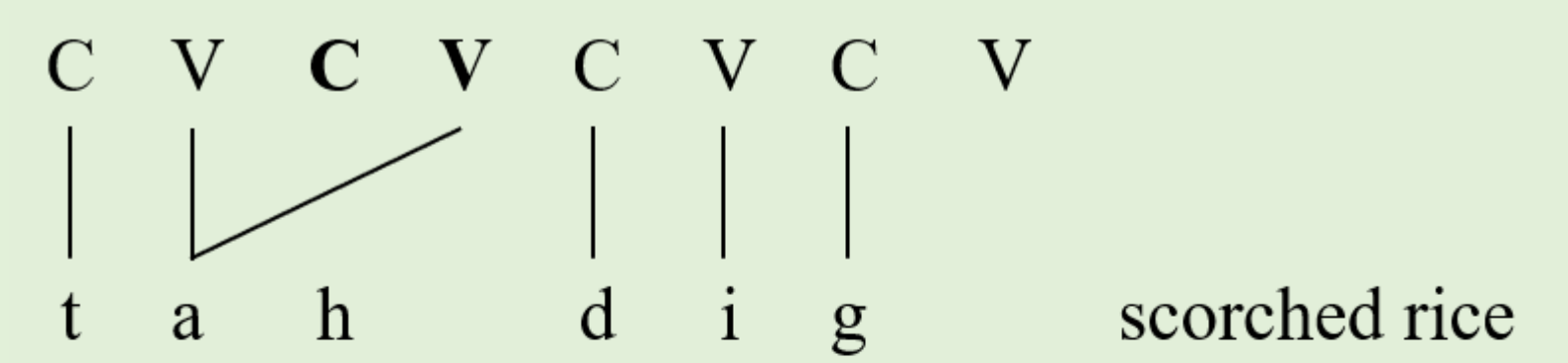
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## 6. Compensatory lengthening (CL)

CL occurs when

- glottal deletion creates an empty CV or VC sequence, AND
- the sequence is word-internal and does not include morpheme-boundary.



Word-final empty CVs can remain empty. We can consider that they are deleted.

While empty VCs including morpheme boundary are deleted from the structure (Gussmann & Kaye 1993, applied to Farsi data by Jaferian 2023), morpheme-internally, they need to be identified, hence the spreading of the previous V (See Ulfsbjorninn 2022 on parametrization of empty VC reduction).

### Question for future work

Intervocalic geminates are attested in Farsi.

There is no ban on /n/ gemination.

Why, then, does the identification of the empty VC not lead to \*[tanna]?

## 7. Advantage over existing accounts

Existing analyses pay little attention to glottal deletion in cases such as /tanha/ and overlook or fail to explain the lack of CL word-finally.

Darzi (1991) excludes cases of glottal deletion in C\_ because they are non-systematic. Non-systematicity is, however, true of all the cases of glottal deletion.

Adapting Hayes' (1989) moraic analysis to Farsi data, Darzi (1991) supposes that CL occurs due to glottal deletion in \_# as well. Phonetic studies, e.g. Shademan (2005), do not confirm such lengthening.

All other studies cited in (1) either overlook these two points or propose ad-hoc explanations.

## 8. Conclusion

Considering glottal deletion as a case of lenition in weak positions calls to suppose an intermediate metathesis, unattested in the language.

Analyzing glottal deletion as an unconditioned process, blocked only word-initially, seems a more natural, yet formal solution.

While a final empty CV can remain empty, word/morpheme-internally, empty CVs and VCs need to be interpreted.