

From Oman to Georgia and back, carrying an idle glottis

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1. Intro: Leaving Oman with an Idle glottis

- Mehri (Semitic; Oman & Yemen) exhibits

voiceless consonants	f θ s t ʃ k x ʕ h
voiceless ejective consonants	θʔ sʔ tʔ ʃʔ kʔ
voiced consonants	b ɖ z d g ʁ ʕ
sonorant	m n l r j w

- Bedjaballah & Ségéral (2014) argue for a new distinctive feature [\pm idle glottis]

voiceless consonants	f θ s t ʃ k x ʕ h	[+idle glottis]
voiceless ejective consonants	θʔ sʔ tʔ ʃʔ kʔ	} [-idle glottis]
voiced consonants	b ɖ z d g ʁ ʕ	
sonorant	m n l r j w	

- The distinction is central to a plethora of morpho-phonological alternations.

- (1) i. Definite article allomorphy
- | |
|----------------------------|
| Ø before [+idle glottis] |
| [a] before [-idle glottis] |

N	Def+N		
ham	ham	‘name’	h-ham => ham, *həham
ʕiwōtʔ	ʕiwōtʔ	‘fire’	
bajt	a-bajt	‘house’	h-bajt => a-bajt, *hə-bajt
θʔawma	a-θʔawma	‘thirst’	

- ii. Verbal prefix allomorphy - I
- | |
|----------------------------|
| Ø before [+idle glottis] |
| [a] before [-idle glottis] |

sōfər	‘travel’	hsōfər => sōfər
hōðər	‘warn of danger’	
a-rōkəb	‘put on fire’	hrōkəb => arōkəb, ?hərōkəb
a-kʔōməḥ	‘disappoint’	

- iii. Verbal prefix allomorphy - II
- | |
|----------------------------|
| Ø before [+idle glottis] |
| [h] before [-idle glottis] |

frūk	‘frighten’	hfrūk => frūk, *həfrūk
χdūm	‘employ’	
hə-nsūm	‘put on fire’	hnsūm => hənsūm
hə-kʔbūl	‘disappoint’	

etc.

- Most effects can be accounted for by assuming a violable constraint against [ə] occurring between two voiceless consonants

*C_[+idgl][ə]C_[+idgl]

- Bendjaballah & Ségéral propose therefore that voiceless C's can form pseudo-geminates.
- An innovative proposal:
 - [spread glottis] (standard, but not assumed to distinguish [p,b])
 - [slack vocal folds] (Halle & Stevens 1971; does not distinguish [p,pʰ])
(Ladefoged 1973)
- We propose a formalization of [idle glottis] within Element Theory (Kaye et al. 1985, Backley 2011), an approach with **privative features** only.
- We show that in Tush (Nakh, spoken in Georgia),

Claim: On the “laryngeal tier”,
[-idle glottis] [+idle glottis]
|L| = /d/ |-| = /t/
|L| = /tʰ/

- This representation is responsible for the allophony between the two epiglottals [h,ħ].

2. What to do with the idle glottis in Georgia

2a. The sounds of Tush

- **Tush** (also called Tsova-Tush by some speakers) is spoken only in Zemo Alvani, a village in the Tush region (central Georgia). Probably not for long - no native speakers under 50.
- Facts from Wichers Schreur (2024), field work by authors in 2024 (CauLage project). Wichers Schreur:

	Lab.	Alv.		Post.	Vel.	Uv.		Epi.	Glott.	
Plosive	<i>p</i> [p ^h]	<i>t</i> [t ^h]	<i>tt</i> [t ^h :]	<i>c</i> [ts]	<i>č</i> [tʃ]	<i>k</i> [k ^h]	<i>q</i> [q ^h]	<i>qq</i> [q ^h :]		ʔ
	<i>p'</i>	<i>t'</i>	<i>t't'</i> [t':]	<i>c'</i> [ts']	<i>č'</i> [tʃ']	<i>k'</i>	<i>q'</i>	<i>q'q'</i> [q':]		
	<i>b</i>	<i>d</i>		<i>ɟ</i> [dʒ]	<i>ǰ</i> [dʒ]	<i>g</i>				
Fricative		<i>s</i>	<i>ss</i> [s:]		<i>š</i> [ʃ]		<i>x</i> [χ]	<i>xx</i> [χ:]	<i>ħ</i> [ħ]	<i>h</i>
		<i>z</i>			<i>ž</i> [ʒ]		<i>ǧ</i> [ʁ]		(ʕ [ʕ])	<i>w</i> [f ^w]
Nasal	<i>m</i>	<i>n</i>								
Lateral		<i>l</i>	<i>ll</i> [l:]							
		<i>l̥</i> [l̥]								
Approx.	<i>v</i> [v]	<i>r</i>			<i>j</i>					

- Voiced [d] vs. ejective [tʔ] vs aspirated [t^h]
- Lenis [t^h, tʔ] vs fortis [t^h:, tʔ:].
- Clusters in Tush come in three types
 - a. “Harmonic clusters” (cf. Chitoran 1998): Anterior stop + posterior C
 Share glottal feature:

[tχir] ‘frost’ [tʔqʔa] ‘twenty’ [bʒã] ‘large cattle’

- b. “Muta cum liquida”:

[blu-] ‘mute’ [tsru] ‘show-off’ [qʔlortʔ] ‘gulp’

- c. C+epiglottal, on which see below.

2b. On the representation of glottalic features in Tush

Question: What are the relevant features for plosives in Tush?

- The answer is provided by the sounds [ħ,ʕ], which are articulatorily trills or fricatives.
- Belonging to the Nakh family and closely related to Chechen and Ingush (Komen, Molocheva, Nichols 2020; 2011), Tush should have shown a full set of pharyngealized consonants. While it may be more useful to analyze them as single consonants in modern Chechen given their strong phonotactic constraints (Nichols 1997), Tush seems to have changed them into /Tħ/ clusters (where T is any plosive, including nasals, and /ħ/ is an epiglottal trill), possibly under the influence of Georgian with its large array of clusters.

- Kojima (2007): [ʕ] occurs only in initial clusters, after voiced or voiceless ejective consonants:

(2)	[bʕarkʔ]	‘eye’	[pʔʕã]	‘wing’	[pʕartʃ]	‘dogs’
	[dʕeʔ]	‘liver’	[tʔʕir]	‘star’	[tʕak]	‘footprint’
	[nʕan]	‘worm’	[kʔʕakʔ]	‘heel’	[kʕekʔ]	‘ready’

- Therefore, Kojima argues, [ʕ, ʕ̥] are two realizations of the same phoneme.

“A third sound, sometimes described as an epiglottal stop, is found exclusively word-initially (ʕa ‘winter’, ʕep ‘shame’, ʕirin ‘sharp’, ʕop-d-ar ‘cover (v.)’, ʕurden ‘in the morning’). However, this sound can be analysed (probably phonetically, but definitely phonologically) as a combination of ʔ+ʕ” (Wichers Schreur 2024: 51, following Kojima 2007): e.g. [ʔʕartʃi] ‘black’.

- Restrictions on C_H/ʕ:
 - i. C cannot be a fricative *_{SH}, ʕ_H
 - ii. C cannot be a pharyngeal *_{QH}, qʔʕ

Hypothesis: the underlying epiglottal trill is voiceless: /ʕ̥/.

Argument: only [ʕ] occurs outside clusters:

(3)	#_		_#		V_V	
	[ʕaʕ]	‘Caucasian’	[bʕʕ]	‘budock’	[qʕʕar]	‘fetch’
	[ʕeʕ]	‘hollow’	[bʕʕ]	‘goat kid’	[qʔʕʕẽ]	‘bitter’

- Hence:
 - i. As it transmits nothing to /ʕ̥/ (null hypothesis), /T/ is underspecified for the laryngeal feature, its aspiration being passive: it is the neutral term within Laryngeal Realism (Honeybone 2005; Beckman, Essen & Ringen 2013).
 - ii. On the other hand, /D/ (including nasals) and /Tʔ/ must have a specific common feature inducing the voicing of /ʕ̥/.

- What is this common feature?

Claim:

- | | | |
|-----|----|--|
| (4) | a. | The feature common to /D/ and /Tʔ/ is the L element. |
| | b. | L is the head in /D/ but not in /Tʔ/. |

- |L| spreads to the epiglottal trill in the clusters, hence the voicing of the epiglottal.

Question: If |L| can be either head or non-head, then |H| can have the same variation. What are the resulting phonemes? Are there any in Tush?

Answer: Admitting that |H| and |L| cannot govern each other, we shall assume the following phonemic organization of plosives (of which /t/ is a representative):

<u>Tush Consonants</u>							
head	H	∅	∅	L	∅	∅	H,L
non-head	∅	H	∅	∅	L	H,L	∅
	/t ^h /	/t:/	/t/	/d/	/tʔ/	/t:ʔ/	/d ^h /

- Note that the fortis /t:ʔ/ is hypermarked: it has both |H| and |L| as non-heads.
- /t/ is the neutral unit in both cases.
- **Given the array of combinations in Tush, it is an |L|-language: |H| is never head.**
- /t:/ is typical of Dagestani languages, including Tush. It undoubtedly has representatives elsewhere, for example the well-known Korean *fortis* (cf. Shin et al. 2012).
- In this respect, Tush appears to be the mirror image of Korean, where the only headedness-based contrast concerns |H| and /t^h/ ~ /t:/:

<u>Korean Consonants</u>							
head	H	∅	∅	L	∅	∅	H,L
non-head	∅	H	∅	∅	L	H,L	∅
	/t ^h /	/t:/	/t/	/d/	/tʔ/	/t:ʔ/	/d ^h /

3. Analysis

Recall:

(5) Distribution of [H,ɸ]

- | | | |
|----------|---------|-------------------------------------|
| a. H | b. ɸ | c. *H, *ɸ |
| i. V__ | i. Tʔ__ | G/S__ (G=any guttural, S=fricative) |
| ii. T__ | ii. D__ | |
| iii. #__ | | |

- In our analysis, we assume that:
 - i. Lar(yngeal) element must be shared
 - ii. Place element cannot be shared (no phonological geminates in Tush)
 - iii. Pharyngeals have the Element |A| (Angoujard 1995 a.o.)
 - iv. Plosives lack Manner Element

- In addition, we have shown that, in clusters, C2 has no Lar element; it is shared by C1.

(6) The representation of /h/:

Lar		<u>L</u>	(L)	
Manner	h	-	-	h
Place	<u>A</u>	U	<u>A</u>	<u>A</u>
	C	C	V	C
	H	b	a	H

[baH] ‘burdock’

- /h/ has no Lar element (i.e. it is underspecified for this feature).
- [H] is the default realization, as shown in [baH] ‘burdock’ (i.e. when there is nothing to share on the Lar-tier)

(7) The representation of T, D, and T[?]:

	a.	b.	c.
Lar	-	<u>L</u>	L
Manner	-	-	-
Place	U/I	U/I	U/I
	C	C	C
	T	D	T [?]

- T lacks headed/non-headed L;
- D and T[?] contain it.

(8) The representation of /T+H/ clusters:

Lar	-	-	-
Manner	- h	- h	- h
Place	I <u>A</u>	U <u>A</u>	- <u>A</u>
	C C	C C	C C
	t H	p H	k H

- No L, thus no spreading of laryngeal properties: /H/ surfaces as [H], the default realization.

(9) The representation of /D,T²+H/ clusters:

Lar	L	<u>L</u>
Manner	- h	- h
Place	U/I <u>A</u>	U/I <u>A</u>
	C C	C C
	t ² ɸ	d ɸ

- Both headed and non-headed L spread rightwards, thus /H/ surfaces as [ɸ].
- This configuration is typical of complex onsets, such as both harmonic clusters and *muta cum liquida* clusters (see Lowenstamm 2003 a.o.).

(10) Other clusters:

	a.	b.	c.
Lar	L	L	-
Manner	- h	- -	- h
Place	- <u>A</u>	I <u>A</u>	I -
	C C	C C	C C
	? ɸ	t ² q ²	t χ

- Examples: [ʔɸartʃi] ‘black’; [t²q²a] ‘twenty’; [tχir] ‘frost’

(11) Impossible clusters

a.

Lar	*	L/ <u>L</u>	●*
Manner	-		h
Place	I		<u>A</u>
		C	C
		t ² /d	H

- Since L/L must spread, the configuration in (11) is impossible.

(12) Unattested clusters

	a.	b.
Lar	* -	*
Manner	h ●* h	- h
Place	I <u>A</u>	<u>A</u> ●* <u>A</u>
	C C	C C
	s/ʁ/χ H	q H

- (12a) Fricatives do not appear before epiglottals: possibly this is an effect of the SSP (Clements 1990), the two fricatives form a plateau. In our analysis of stops, in contrast, there is no element on the manner tier and therefore no plateau: [tq] is a possible cluster.

- (12b) shows the unattested cluster consisting of a guttural preceding /h/. OCP on Place Element rules this out, *A A.

- Neither types of clusters are harmonic.

4. Bringing the idle glottis back to Oman

- Recall the “constraint” from Bendjaballah & Ségéral *C_[+idgl][ə]C_[+idgl], and their proposal of such sequences forming “pseudo geminates”. In our terms, there is nothing to geminate.

(13) Nothing to geminate in sequences of two voiceless Cs

Lar	- -	
Manner	-	h
Place	I	<u>A</u>
	C	C
	t	ħ

- Instead, one can say that the constraint is against |L|-epenthesis.

(14) |L| epenthesis is preferably copied from an adjacent consonant.

	a.		b.		c.
Lar	*	- <L> -	<u>L</u> -	L -	-
Manner	-	- h	- - h	- - h	-
Place	I	- <u>A</u>	I - <u>A</u>	I - <u>A</u>	-
	C	V C	C V C	C V C	C
	t	ə ħ	d ə ħ	tʰ ə ħ	ħ

- Of course, |L| epenthesis can occur in extremis, as B&S explain.

5. Perspectives and concluding remarks

- Harmonic clusters in Georgian always have a dorsal C2. Georgian doesn't have (dorsal) epiglottals, but Tush does.
- Possibly, the adoption of Georgian harmonic clusters made /CH/ possible in Tush – such clusters are not available in other Nakh languages.
- We even found a loan from Georgian which introduced an epiglottal: Georgian [pʰerangi] 'shirt', Tush [pʰʁerang].
- Prediction: given the presence of [h] in epiglottals, C2 in branching onsets can be a consonant of any manner of articulation.

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