Chapter 2

Phonology of Mehweb

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In this paper, I describe the phonetic inventory of Mehweb, consonants and vowels, as well as the main productive alternations. Two separate sections treat the rules of syllable structure and give a preliminary treatment of pharyngealization. In Mehweb, pharyngealization is a feature which extends the basic vowel inventory (*i*, *e*, *a*, *u*) to include *oˤ* (the pharyngealized variant of *u*, along with pharyngealized *iˤ*, *eˤ*, *aˤ*, *uˤ*) and the inventory of radical and laryngeal consonants by the process of epiglottalization (where *ʡ* is a pharyngealized variant of *ʔ* and *ʜ* is a pharyngealized variant of *ħ*).

Keywords: syllabification, stress, vowels, consonants, pharyngealization, alternations.

1 Introduction

This paper is an overview of the phonology of Mehweb. It is primarily descriptive and is intended to make phonological aspects of Mehweb clear to the reader. The paper is organized as follows. In §2 and §3 I describe the language's consonant and vowel systems. §4 is dedicated to syllable and word structure of Mehweb. §5 deals with stress. In §6 I introduce basic phonological and morphophonological alternations. In the last section I describe pharyngealization and how it affects segments.

2 Consonants

The inventory of consonants is given in Table 1. Sounds provided in parentheses are allophones, distributed either contextually or socially, as described below.

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Table 1: Mehweb consonant phonemes[1]

		labial	dental	alveolar	palatal	velar -lab	velar +lab	uvular -lab	uvular +lab	pharyngeal -lab	pharyngeal +lab	epiglottal -lab	epiglottal +lab	glottal -lab	glottal +lab
plosive	+v	b	d			g	gʷ								
	-v	p	t			k	kʷ	q	qʷ			(ʡ)	(ʡʷ)	ʔ	ʔʷ
	ej	p’	t’			k’	k’ʷ	q’	q’ʷ						
fricative	+v		z	ž		(ɣ)		ʁ	ʁʷ					(ɦ)	
	-v		s	š		x	xʷ	χ	χʷ	ħ	ħʷ	(ʜ)	(ʜʷ)	h	hʷ
affricate	+v		(ʒ)	(ǯ)											
	-v		c	č											
	ej		c’	č’											
sonorant		m, w	n, l, r		j										

There are 41 consonant phonemes in Mehweb, which are listed in Table 1. Most plosives and affricates form three-way oppositions (voiced vs. voiceless vs. ejective), but there are no radical[2] voiced segments except some rare realizations of *h* as *ɦ*. I don’t mark concrete place of articulation for the sonorants *n*, *l* and *r*, since they can be realized as either dental or alveolar. All postvelar consonants and velar plosives have labialized counterparts, which occur in word-initial, medial intervocalic, medial preconsonantal and final position. Some Dargwa languages have voiceless geminate consonants. They correspond to voiced consonants in Dargwa languages lacking geminates. There are no geminates in Mehweb (contra Magometov 1982: 8). Sequences of homorganic consonants, however, are realised as geminates phonetically (cf. example (1)):

(1) *it-di-ni* > *it:ini*
this-PL-ERG

The voiced velar fricative *ɣ* is attested only word initially in a few roots and only in the speech of older consultants (cf. examples (2–4)). Younger consultants use the velar stop *g* instead.

(2) ***ɣ**an*
‘snake’

[1]In the table, +v stands for voiced, -v stands for voiceless, ej stands for ejective, lab stands for labialization. Some allophones are presented in brackets. To be consistent with the transcription system used in the other contributions to this collection, I use the following transcriptions:

CT	g	ž	š	č	c	ʒ	ǯ
IPA	ɡ	ʒ	ʃ	tʃ	ts	dz	dʒ

[2]I use *radical* after Ladefoged & Maddieson (1996) to denote pharyngeal and epiglottal sounds.

(3) ***ɣ****uli*
'hide'

(4) ***ɣ****ala*
'pitchfork'

The voiced affricates *ʒ* and *ǯ* are allophones of the voiced fricatives *z* and *ž*. They are attested only in the speech of older consultants (cf. example (5a–b)):

(5) a. *ʒe* (older speakers)
'salt'
b. *ze* (younger speakers)
'salt'

Some realizations of *s* in intervocalic position seem geminate and are perceived as such by some of our consultants, including *is:es* 'take (ipfv)', cl-*is:es* 'weep (ipfv)', *us:es* 'grind'. These are the only three verbal roots with intervocalic *s* known to us, and we have no comparable evidence for nouns. There is thus no clear evidence that geminate *s:* is phonologically distinct from simple *s*. The issue requires further investigation.

The glottal stop *ʔ* is usually deleted in initial and intervocalic position. Some older speakers occasionally produce the voiced glottal fricative *ɦ* instead of voiceless *h* in intervocalic position.

In non-final position epiglottal *ʡ* and *ʜ* are in most cases followed and/or preceded by a pharyngealized vowel. The segments *ʔ* and *ħ* are never followed or preceded by a pharyngealized vowel[3]. In §7 I will discuss some examples of *ʔ*/*ʡ*- and *ħ*/*ʜ*-alternations triggered by pharyngealization, where I will also consider evidence for the independent and suprasegmental nature of the pharyngeal feature.

[3]The situation is however more complex. First of all, the difference between *ʜ* and *ħ* is not perceived by all speakers; the others blame it on the quality of the preceding or the following vowel. Second, on *a* and *u*, the presence of the pharyngeal feature is very hard to perceive, even if the speakers were able to recognize the few minimal pairs we were able to find. One could then simply assume that *ʔ* and *ħ* only appear in non-pharyngealized contexts and *ʡ* and *ʜ* only appear in pharyngealized contexts. However, in the perceptually clearest cases, which are a combination of a pharyngeal stop *ʡ* with the vowel *a*, in some words, epiglottal *ʡ* can be followed by non-pharyngealized *a*. Some of these are Avar loanwords, including *ʡat'* 'dough, flour' (cf. Avar *ʕat'* 'flour'; providing a pseudo minimal pair *ʡat'* 'dough' vs. *ʡaˤt'a* 'frog'), *ʡaraq* 'haystack' (cf. Avar *ʕaraqχ* 'haystack'), *ʡamal* 'temper' (Avar *ʕamal* 'temper'), *maʡna* 'meaning' (Avar *maʕna* 'meaning'). But other seem to be native, including *ʡarʁal* 'long', *ʡa‹b›ad* 'behind', *ʡaraʁa* 'last', *beʡʷes* 'seed', and particle *ʡaj*. In combination, all this lead to inconsistencies in our transcription of pharyngeals throughout the book. Pharyngealized vowels other than *a* and *u* may also have been lost in transcription.

3 Vowels

There are four plain vowels and five pharyngealized vowels. Length is not distinctive. Some pharyngealized vowels such as *iˤ*, *eˤ*, *uˤ* are very rare, the phonological status of these sounds thus is not clear, so they are written in brackets. Pharyngealized vowels occur most often adjacent to, or in forms containing, epiglottals (*ʔ*, *ʜ*) or uvulars (*q*, *χ*, *ʁ*). However, *aˤ* is also attested in some stems without those segments:

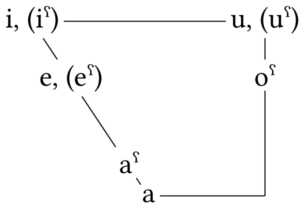

Figure 1: Vowel system

(6) *l**aˤ**ži*
'cheek'

(7) *kʷ**aˤ**š*
'handful'

(8) *t**aˤ**j*
'foal'

Pharyngealized vowels are not common in Mehweb, and some are rarer than others. For example, pharyngealized *iˤ* and *eˤ* are only attested in very few words. Pharyngealized *oˤ* seems to be a realization of *u* in pharyngealized syllables; however, while in some roots only *oˤ* is attested (9a), in other forms *uˤ* occurs as a variant (9b). This distribution may also depend on individual speakers.

(9) a. *d**oˤ**rʜ**oˤ***
'cub'
b. *malʔ**uˤ**n, malʔ**oˤ**n*
'wolf'

Vowels, as well as pharyngeal and epiglottal consonants, rarely show clear evidence of independent behavior of the pharyngeal feature. Pharyngealized vowels show alternations in e.g. plural stem formation, as shown in examples (10–15); see also Chechuro (2019).

(10) a. *j**aˤ**bu*
horse
'horse'
b. *j**aˤ**b-ne*
horse-PL
'horses'

(11) a. *t**aˤ**j*
foal
'foal'
b. *t**uˤ**j-re*
foal-PL
'foals'

(12)	a.	*č'aˤʔ**a**ˤ*	b.	*č'aˤʔ**u**ˤ-be, č'aˤʔ**o**ˤ-be*
		cane		cane-PL
		'cane'		'canes'
(13)	a.	*č'**u**ʔaˤ*	b.	*č'**u**ˤʔ-ne, č'**o**ˤʔ-**ne***
		straw		straw-PL
		'straw'		'straws'
(14)	a.	***u**ʔaˤ*	b.	*ʔ**a**ˤʔ-ne, ʔ**u**ˤʔ-ne, ʔ**o**ˤʔ-ne*
		cheese		cheese-PL
		'cheese'		'cheeses'
(15)	a.	*ʜ**u**ˤli*	b.	*ʜ**a**ˤl-me*
		fat		fat-PL
		'fat'		'fats'

Table 2 sums up the vowel alternation patterns shown in (10) to (15). Pharyngealization-related processes are explained at the end of §7.

Table 2: Examples of alternation patterns

SG	*aˤ* (10a)	*aˤ* (11a)	*aˤ* (12a)	*u* (13a)	*u* (14a)	*uˤ* (15a)
PL	*aˤ* (10b)	*uˤ* (11b)	*uˤ, oˤ* (12b)	*uˤ, oˤ* (13b)	*aˤ, uˤ, oˤ* (14b)	*aˤ* (15b)

Vowel frequencies in a list of 596 noun roots are as follows: *a* – 38%, *i* – 27%, *u* – 23%, *e* – 6%, *aˤ* – 6%, other vowels less than 2%. The most frequent vowel structure in bisyllabic words is *a–a*.

The most complex phenomenon in Mehweb phonology is pharyngealization. Pharyngealization seems to be associated with uvular, pharyngeal and epiglottal consonants, but there are some cases where it is not; cf. (6–8). Pharyngealized vowels typically appear after radical or uvular consonants, e.g. (13a–15a); but sometimes they may precede them, e.g. (13b–15b); or occur both preceding and following them; e.g. (12a) and (12b). For a discussion of an approach to pharyngealization as a suprasegmental feature, see §7.

4 Syllable and word structure

Except in some borrowings, the syllable structure of most words can be described as (C)V(C)(C). In other words, possible syllables are: CV, CVC, CVCC, VC, VCC, and V (cf. (16–21)). If the coda is complex, the first consonant is most frequently either a liquid or a nasal, as in examples (16) and (18). Clusters of sonorants in the same syllable are not attested. Consonant sequences cannot be longer than three segments, as in (21), and appear only at morphological boundaries. I treat such sequences as divided between two syllables. All native words can be divided into syllables according to the above schemata, but no experiments with speakers' judgments on the location of syllable boundaries have been conducted.

(16) *nerʔ*
'louse'

(17) *bec'*
'wolf'

(18) *ims*
'moth'

(19) *u*
'bottom'

(20) *qi*
'horn'

(21) *ims-la*
moth-GEN

The two action nominals *w-ilsk'-ri* (M-look:IPFV-NMLZ) and *w-ebk'-ri* (M-die:PFV-NMLZ) are the only examples known so far to show a deviant syllable structure. Note that there is some evidence from nominal inflection (Chechuro 2019) that *b* may be treated as a sonorant.

In Mehweb, the sonority sequencing principle[4] is thus rarely violated: codas are predominantly sequences of a sonorant and an obstruent. Sequences of sonorants or vowels are not allowed.

Noun stems can have from one to five syllables (cf. (22–26)). Most common are one- and two-syllable roots. Table 3 shows the proportion of one-, two-, three-, four- and five-syllable noun stems, based on a list of over 500 noun entries.

(22) *bec'*
'wolf'

[4]This principle can be formulated as follows: the overall acoustic energy of segments should increase from the beginning of the syllable towards the syllable nucleus, and decrease from the nucleus toward the end of the syllable. I use a shortened version of the Sonority Hierarchy: obstruents < sonorants < vowels.

Table 3: Distribution of one-, two-, three-, four- and five-syllable noun stems

one-syllable	two-syllable	three-syllable	four-syllable	five-syllable	Total
132	284	65	22	1	504
26%	56%	13%	4%	<1%	100%

(23) *darša*
‘thread’

(24) *urculi*
‘wood’

(25) *pušduk’ani*
‘sledgehammer’

(26) *urʁaˤdiq’aˤni*
‘fat tail’

Most verbal stems are monosyllabic. Out of 150 verbs collected so far, only five are disyllabic (cf. (27)).

(27) *usaʔʷ-as*
M.sleep:PFV-INF
‘sleep’

There are also five irregular verbal stems (cf. (28–32)) which, in some word forms, only consist of one consonant or, in the case of ‘say’ (cf. (29)), may be considered to be realized as zero morphs. The vast majority of Mehweb verbs have two stems, a perfective stem and an imperfective stem. It is worth pointing out that all irregular mono-consonantal stems are perfective.

(28) *k-ib*
bring.to:PFV-AOR
‘s/he brought something to somebody’

(29) *ib*
say:PFV.AOR
‘s/he said’

(30) *g-ub*
see:pfv-aor
's/he saw'

(31) *g-ib*
give:pfv-aor
's/he gave'

(32) *χ-ib*
bring:pfv-aor
's/he brought'

These examples show a difference in number of syllables in nominal and verbal stems: nominal stems tend to be disyllabic, while verbal stems are mostly monosyllabic. This type of asymmetry is typical for the other Dargwa varieties as well.

5 Stress

As compared with different Dargwa varieties, Mehweb has more or less fixed stress (cf. Moroz 2014). In nearly all polysyllabic forms the stress is on the second syllable.

(33)
a. *uq'l**á**ha*[5]
window
'window'

b. *uq'l**á**ha-jni*
window-erg

c. *uq'l**á**ha-li-če-r*
window-obl-super-f[ess]
'on the window'

(34)
a. *w-ak'-**í**b*
m-come:pfv-aor
'he came'

b. *w-ak'-**í**ša*
m-come:pfv-fut.ego
'I (male) will come'

c. *w-ak'-**á**s*
m-come:pfv-fut
'he will come'

There are, however, some exceptions and even some minimal pairs distinguished by the position of the stress (cf. (35–38)).

(35) *bek'**á***
hill
'hill'

[5] The nucleus of the stressed syllable is marked by an acute accent mark.

(36) *b-**é**k'-a*
HPL-choose:PFV-IMP.TR
'choose (them)!'

(37) *duž**é***
night
'night'

(38) *d-**ú**ž-e*
NPL-drink:IPFV-IMP
'drink (it)!'

When a suffix is added to a monosyllabic root, the stress is placed on the second syllable, as shown in (39–40).

(39) a. *b**é**č'*
head
'head'

b. *beč'-l**á***
head-GEN
'(e.g. part) of a head'

c. *buč'-r**é***
head-PL
'heads'

(40) a. *g-**ú**b*
see:PFV-AOR
'(s)he saw'

b. *g^w-iš**á***
see:PFV-FUT.EGO
'I will see'

c. *g^w-**é**s*
see:PFV-FUT
'he will see'

Some verbal forms are more complex. In (41b) and (41c), as compared to (41a), the stress is on the second syllable, as expected. Example (41d), the only type of structure where two initial syllables are added in inflection, shows that the stress may not leave the verbal stem:

(41) a. *b-ik-**í**b*
N-become:PFV-AOR
'he became'

b. *ħa-b-**í**k-ib*
NEG-N-become:PFV-AOR
'he didn't become'

c. *ar-b-**í**k-ib*
PV-N-fall:PFV-AOR
'he fell'

d. *ar-ħa-b-**í**k-ib*
PV-NEG-N-fall:PFV-AOR
'he didn't fall'

A form that goes against the second-syllable stress generalization is the vocative. A special vocative form only exists for two-syllable stems which denote humans. These forms are treated as a special stress pattern, with the stress on the first syllable. However, an acoustic study is necessary to find out whether this salience should be treated as stress or, alternatively, as a special vocative intonation. In these forms stress always on the first syllable (cf. (42–43)).

(42) a. *ad**á**j*
father
'father'

b. ***á**daj*
father[voc]
'father!'

(43) a. *urš**í***
brother
'brother'

b. ***ú**rši*
brother[voc]
'brother!'

Another exception is the optative form: the optative marker is never stressed (cf. (44–45)):

(44) *l**ú**č'-ab*
read:IPFV-OPT
'if only he would read'

(45) ***ú**rc-ab*
fly:IPFV-OPT
'if only he would fly'

Imperative forms never have the stress in the final position – as in the optative, in the imperative the stem is stressed. Plural forms, however, where the imperative is suffixed with the plural-of-addressee marker *-na*, have the pattern with stress on the second syllable.

(46) ***á**rc-e*
fly:PFV-IMP
'fly!'

(47) *arc-**é**-na*
fly:PFV-IMP-IMP.PL
'fly! (to a group of people)'

There are numerous Arabic borrowings and proper names which are stressed mostly as in Arabic (cf. (48–51)):

(48) *aman**á**t*
'assignment'

(49) *paraq'**á**t*
'calm'

(50) *ʔ**á**ˤq'lu*
'wit'

(51) *m**á**sala*
'for example'

6 Some phonological and morphophonological alternations

In Mehweb hiatus is not allowed, and the underlying forms are changed in various ways whenever such configurations arise. If the verb stem is *i*C or *u*C, *i* becomes *j* (as in (52) and (53)) and the vowel *u* (*u*ˁ, *o*ˁ) becomes *w* (as in (54) and (55)).

(52) *ħa**j**hub /ħa-**i**h-ub/*
NEG-throw:PFV-AOR
'(he) didn't throw'

(53) *ħa**j**g^{w}an /ħa-**i**g^w-an/*
NEG-burn:IPFV-HAB
'(it) doesn't burn'

(54) *ħa**w**cib /ħa-**u**c-ib/*
NEG-M.catch:PFV-AOR
'(he) didn't catch him'

(55) ħawrib /ħa-**u**r-ib/
NEG-rain:IPFV-IPFT
'it didn't rain'

Whenever the verbal stem consists of two consonants, the root-initial vowel deletes after the negation marker (as in (56)).

(56) *ħal*ʔ*un /ħa-**e**l*ʔ*-un/*
NEG-count:PFV-AOR
'he didn't count'

The vowel *u*, when followed by a consonant cluster, is deleted and triggers the labialization of the final consonant (compare (54–55) and (57–59)). Most labialized consonants that appear as a result of this rule also occur as independent phonemes (see Table 1), but some labialized consonants, e.g. z^w, only appear as a result of this process.

(57) *ħa*ˤ*rχ*ʷ*ib* /*ħa*-***u***ˤ*rχ-ib*/
NEG-M.touch:PFV-AOR
'didn't touch him'

(58) *ħabk'*ʷ*an* /*ħa*-***u****bk'-an*/
NEG-M.die:IPFV-HAB
'he doesn't die'

(59) *ħarz*ʷ*an* /*ħa*-***u****rz-an*/
NEG-M.praise:IPFV-HAB
'didn't praise him'

The alternation from the examples above can be generalized as follows:

(60) a. /*a*-*u*C/ → [*aw*C]
b. /*a*-*u*CC/ → [*a*CCʷ]

The behavior of the labialization feature can be explained by phonotactic constraints. As stated in §4, if the coda is complex, the first consonant is most frequently a sonorant, no complex onsets are allowed, and clusters of sonorants in the same syllable are not attested. The rule in (60b) provides a resolution of unacceptable consonant cluster (*w*-sonorant-plosive).

The marker of the prohibitive and the negative optative (NEGVOL) *m*(V)- has an unspecified vowel that, when appearing before CVC or CL-VC roots, copies the vowel of the root (cf. (61–63)):

(61) *m**u**-luč-adi*
NEGVOL-read:IPFV-PROH
'don't read'

(62) *m**i**-d-ic'-adi*
NEGVOL-NPL-thaw:IPFV-PROH
'don't thaw it'

(63) *m**a**-m-aš-adi-na* /*m*V-*b-aš-adi-na*/
NEGVOL-M-walk:IPFV-PROH-PL
'don't go (to several people)'

The gender marker *b*- assimilates to the nasality of the preceding NEGVOL marker *m*V-; cf. (64).

(64) a. *mi-**d**-ilc-adi*
NEGVOL-NPL-sell:IPFV-PROH
'don't sell them (non-humans)'

b. *mi-**m**-ilc-adi* /*m*V-***b****-ilc-adi*/
NEGVOL-HPL-sell:IPFV-PROH
'don't sell them (humans)'

The same segment in the verb root does not undergo assimilation:

(65) *m-i**b**-adi* (**m-i**m**-adi*)
NEGVOL-sew:IPFV-OPT
'don't sew'

There are some assimilations triggered by *l* and involving *n* and *l*. The sequences *nl*V or *ll*V in final position can become *w* or *jj* after *u* (66, 67) and *jj* elsewhere (68, 69).

(66) *xunu**w**a, xunu**jj**a /xunu**l**-**l**a/*
female-GEN

(67) *buk'u**w**a, buk'u**jj**a /buk'u**n**-**l**a/*
shepherd-GEN

(68) *t'a**jj**a /t'a**l**-**l**a/*
pillar-GEN

(69) *šaˤʜba**jj**a /šaˤʜba**n**-**l**a/*
filbert-GEN

There is a correlation between the age of the speaker and the preferred type of the alternation in nouns: older speakers tend to use the *w*-variant of the genitive, middle-aged speakers consider both *w*-variants and *jj*-variants as well-formed, and younger speakers tend to use the *jj*-variant only. In the imperfective converb, only *w* is available for all speakers.

(70) *wik'u**w**e /w-ik'-u**l**-**l**e/*
M-come:IPFV-PTCP.CVB
'coming (M)'

(71) *luč'u**w**e /luč'-u**l**-**l**e/*
read:IPFV-PTCP.CVB
'reading'

In medial position, the sequences *nli* or *lli* become *j* and cause vowel deletion (cf. (72–75)):

(72) *xunu**j**ze /xunu**l**-**l**i-ze/*
female-OBL-INTER[LAT]

(73) *buk'u**j**ze /buk'u**n**-**li**-ze/*
shepherd-OBL-INTER[LAT]

(74) *t'a**j**ze /t'a**l**-**l**i-ze/*
pillar-OBL-INTER[LAT]

(75) *ša*ˤ*Hba**j**ze /ša*ˤ*Hba**n**-**l**i-ze/*
filbert-OBL-INTER[LAT]

The sequences ***n***V*l* or *l*V*l* after ***u*** show deletion of a medial vowel, which feeds the *nl*/*ll* alternations above; cf. (76):

(76) a. *hu**n**i*
road

b. *hu**j**zé /hu**n**-**l**i-ze ← hu**ní**-**l**i-ze/*
road-OBL-INTER[LAT]

c. *hu**w**á /hu**n**-**l**a ← hu**ní**-**l**a/*
road-GEN

When the clusters *n*V*l* or *l*V*l* follow any other vowel, only an unstressed vowel can be deleted, and this deletion also feeds the *nl*/*ll*/*jj* alternation described above (cf. (77–80)):

(77) *qarč'á**jj**a /qarč'á**l**-**l**a ← qarč'á**la**-**l**a/*
shoulder-GEN

(78) *qarč'á**j**ze /qarč'a**l**-**l**i-ze ← qarč'á**la**-**l**i-ze/*
shoulder-OBL-INTER[LAT]

(79) *ba**lá**-**l**a* (**ba**jj**a*)
wool-GEN

(80) *ča**ná**-**l**a* (**ča**jj**a*)
sledge-GEN

There are some exceptions to the vowel deletion rule, illustrated in (76). While (81) shows non-deletion of a stressed vowel, in (82–83) the stressed vowel is deleted:

(81) *culála*
tooth-GEN

(82) a. *šajjá /ša**l**-**l**a ← ša**lí**-**l**a/*
side-GEN

b. *ša**j**zé /ša**l**-**l**i-ze ← ša**lí**-**l**i-ze/*
side-OBL-INTER[LAT]

(83) a. *ejjá /e**l**-**l**a ← e**lí**-**l**a/*
child-GEN

b. *e**j**zé /e**l**-**l**i-ze ← e**lí**-**l**i-ze/*
child-OBL-INTER[LAT]

Finally, *r* can assimilate to *n* and *l* (cf. (84–88)), including after applying vowel deletion (cf. (97) and (98)), which then feeds the *r*-assimilation.

(84) *qa**ll**ize /qa**r**-**l**i-ze/*
sheepskin.coat-OBL-INTER[LAT]

(85) *belč'u**nn**a /b-elč'-**un**-**r**a/*
M-read:PFV-AOR-EGO
'I've read'

(86) *aħi**nn**a /aħi**n**-**r**a/*
be:NEG-EGO

(87) *bata**ll**a /batari-**l**a/*
wing-GEN

(88) *bata**ll**ize /batari-**l**i-ze/*
wing-OBL-INTER[LAT]

In some cases, this assimilation is optional (cf. (89–91)):

(89) *qa**rl**á, qa**ll**a /qar-la/*
sheepskin.coat-GEN

(90) *ši**nn**á, ši**nr**á /ši**n**=**r**a/*
water=ADD

(91) *t'u**ll**a, t'u**lr**a /t'u**l**=**r**a/*
finger=ADD

The *r*-assimilation would increase the number of forms to which *nl*- and *ll*-mutations would apply. This does not happen, however, so I postulate that *r*-assimilation applies after *nl*-/*ll*-mutations (counterfeeding order, see Kiparsky 1968):

Table 4: Interaction of the *nl*-/*ll*- mutation rule and the *r*- assimilation rule

	(85) /*belč'**un**-**r**a*/	(67) /*buk'**un**-**l**a*/
nl- and *ll*-mutation	d. n. a.	*buk'u**w**a, buk'u**jj**a*
r-assimilation	*belč'u**nn**a*	not applied

The rule for vowel deletion between the consonants *r*, *l* or *n* can be generalized as follows:

vowel deletion rule: V ⟶ ∅ / [+cons;+son; DORSAL]__[+cons;+son; DORSAL]

Table 5 summarises the rules discussed in this section.

Table 5: Interaction of the *nl-*/*ll-* mutation rule, the *r-* assimilation rule and the vowel deletion rule

	(85) /*belč’**un-ra***/	(67) /*buk’**un-l**a*/	(87) /*batari-**l**a*/	(76c) /*hu**ni-l**a*/
vowel deletion	not applied	not applied	*batar**l**a*	*hu**nl**a*
nl- and *ll-* mutation	not applied	*buk’u**w**a*, *buk’u**jj**a*	not applied	*hu**w**a*
r-assimilation	*belč’u**nn**a*	not applied	*bata**ll**a*	not applied

7 Pharyngealization

I suggest that pharyngealization is a suprasegmental feature. By this I mean that the pharyngealization is not associated with a specific consonant or vowel but with a whole syllable; under certain conditions, it may spread to other syllables. I will mark the presence of the pharyngeal feature on the nucleus of the syllable by ˤ. Phonetically, pharyngealization causes centering of vowels and epiglottalization of the consonants *ʔ* and *ħ*:

Table 6: Effect of pharyngeal feature on vowels and consonants

underlying segments	/iˤ/	/eˤ/	/aˤ/	/uˤ/	/ʔˤ/	/ħˤ/
surface segments	[eˤ]	[ɛˤ]	[æˤ]	[uˤ], [oˤ]	[ʡ]	[ʜ]

The evidence that the surface segment *ʡ* and *ʜ* are underlyingly *ʔ* and *ħ* comes not only from the fact that the latter segments do not co-occur with pharyngealization (see note 2 above) but also from different realizations of the same morphological segments in inflection and derivation. Consider the following examples:

(92) a. ***u**ʡaˤ* < /*ʔ**u**ʔaˤ*/
cheese
‘cheese’

b. ***ʡ**uˤʡ-ne* < /*ʔ**u**ʔaˤ-ne*/
cheese-PL
‘cheese (plural)’

(93) ***a**r-b-uχ-ib*
away-N-bring:PFV-AOR
‘took it away’

(94) ***ʡaˤr****-d-aˤq’-un < /ʔ**a**r-d-aˤq’-un/*
away-F1-go:PFV-AOR
‘she is gone’

As stated in §2, the glottal stop *ʔ* in intervocalic and initial position is often deleted. Glottal stops in initial and intervocalic position can be deleted and appear only in the formal speech styles. I stipulate that at the underlying level vowel initial morphemes have the initial glottal stop. Examples (92–93) show that the pharyngeal feature can spread backward, under which condition an underlying *ʔ* and *ħ* become epiglottal and cease to be affected by the deletion rule. This provides a uniform underlying representation of the prefix, as shown in Table 7.

Table 7: Pharyngealization of underlying initial glottal stop

	*/ʔ**a**r-b-uχ-ib/*	*/ʔ**a**r-d-aˤq’-un/*
pharyngealization SPREAD	not applied	***ʡaˤ****r-d-aˤq’-un*
deletion of initial ʔ	***a****r-b-uχ-un*	not applied
	a*r-b-uχ-un*	***ʡaˤ****r-d-aˤq’-un*

In the first wordform, there is no lexical pharyngeal feature on the root. Pharyngealization does not spread leftward and does not change the underlying glottal stop to *ʡ*; it can then be deleted. On the contrary, in the second wordform, the lexical pharyngeal feature of the root spreads leftwards and changes the glottal stop to epiglottal, which cannot be dropped.

There is another argument for the *ʔ*-to-*ʡ* pharyngealization hypothesis. Examples of the sequences of the epiglottal *ʡ* and plain vowels are rare and seem to be detectable as Avar borrowings. This interpretation creates some minimal pairs distinguished by the pharyngeal feature alone (cf. (95–98)):

(95) *ʔe*
‘winter’

(96) *ʡeˤ < /ʔeˤ/*
‘summer’

(97) *d-irʔ-an*
NPL-gather:IPFV-HAB
‘gathers them’

(98) *d-irʡ-aˤn < /d-irʔˤ-an/*
NPL-freeze:IPFV-HAB
‘they are freezing’

Pharyngealization in (98) may be explained as a floating feature (similarly to floating tone in Goldsmith 1976) that attaches to the post-root syllable of *-irʔ*; the ending *-an* becomes pharyngealized.

Evidence for *ħ* becoming *ʜ* in a syllable with the pharyngeal feature is provided by the negation prefix *ħa-* in contexts of the pharyngeal feature spreading backward (cf. (99–100)):

(99) ***ħa**-d-irʔ-an*
NEG-NPL-gather:IPFV-HAB
‘does not gather them’

(100) ***ʜa**ˤ-d-irʡ-aˤn*
NEG-NPL-freeze:IPFV-HAB
‘they are not freezing’

In nouns, some of the plural CV-morphemes may delete the stem-final vowel. If the deleted vowel is pharyngealized, the pharyngeal feature moves to the previous syllable (101–103):

(101) a. *č’**u**ʡaˤ*
straw
‘straw’

b. *č’**u**ˤʡ-ne*
straw:PL-PL
‘straws’

(102) a. ***u**ʡaˤ*
cheese
‘cheese’

b. *ʡ**u**ˤʡ-ne /ʔ**u**ʔaˤ-ne/*
cheese:PL-PL
‘cheese (plural)’

(103) a. *čiqʷ**a**ˤ*
bird
‘bird’

b. *č**i**ˤqʷ-ne*
bird:PL-PL
‘birds’

I suggest that, in examples (101a), (102a) and (103a), only the second syllable of the underlying form is pharyngealized. In examples (101b), (102b) and (103b), the plural morpheme deletes the nucleus of the pharyngealized syllable, and the feature spreads to the previous syllable. We thus observe *ʡ* in examples (101b) and (102b).

Pharyngealization rules in Mehweb represent a complex phonological phenomenon that requires further study. I will summarize its most prominent properties:

1) the pharyngeal feature shows a strong association with uvular or epiglottal consonants, but also appears in some stems lacking these segments
2) acoustically, it is most visible on vowels adjacent to these consonants, but may spread backward as far as to the verbal prefixes (as in (92), (94) and (100))
3) all vowels can be pharyngealized, but *iˤ* and *eˤ* are extremely rare, and *aˤ* is the most frequent
4) I treat *ʡ* and *ʜ* as realizations of *ʔ* and *ħ* in syllables with the pharyngeal feature

8 Conclusion

This paper explored phononological characteristics of Mehweb. The main generalizations are as follows. Most plosives and affricates form three-way oppositions (voiced vs. voiceless vs. ejective). There are epiglottal consonants and pharyngealized vowels that can be described as a result of the realization of suprasegmental pharyngeal feature. The majority of native Mehweb words can be described as (C)V(C)(C). Nearly all polysyllabic forms have the stress on the second syllable. To describe alternations (including vowel deletion, *nl*- and *ll*- mutation rules and *r*-assimilation), I stipulate that vowel deletion feeds all other rules, and *r*-assimilation counterfeeds *nl*-/*ll*-mutations.

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List of abbreviations

ADD	additive particle
AOR	aorist
CL	gender (class) agreement slot
CVB	converb

EGO	egophoric
ERG	ergative
ESS	static location in a spatial domain
F	feminine (gender agreement)
F1	feminine (unmarried and young women gender prefix)
FUT	future
GEN	genitive
HAB	habitual (durative for verbs denoting states)
HPL	human plural (gender agreement)
IMP	imperative
INF	infinitive
INTER	spatial domain between multiple landmarks
IPFT	imperfect
IPFV	imperfective (derivational base)
LAT	motion into a spatial domain
M	masculine (gender agreement)
N	neuter (gender agreement)
NEG	negation (verbal prefix)
NEGVOL	negation in volitional forms (negative imperative, negative optative)
NMLZ	nominalizer
NPL	non-human plural (gender agreement)
OBL	oblique (nominal stem suffix)
OPT	optative
PFV	perfective (derivational base)
PL	plural
PROH	prohibitive
PTCP	participle
PV	preverb (verbal prefix)
SG	singular
SUPER	spatial domain on the horizontal surface of the landmark
TR	transitive
VOC	form of address

References

Chechuro, Ilya. 2019. Nominal morphology of Mehweb. In Michael Daniel, Nina Dobrushina & Dmitry Ganenkov (eds.), *The Mehweb language: Essays on phonology, morphology and syntax*, 39–72. Berlin: Language Science Press.

Goldsmith, John A. 1976. *Autosegmental phonology*. Bloomington: Indiana University Linguistics Club.

Kiparsky, Paul. 1968. Linguistic universals and linguistic change. In Emmon Bach & Robert T. Harms (eds.), *Universals in linguistic theory*. New York: Holt, Rinehart & Winston.

Ladefoged, Peter & Ian Maddieson. 1996. *The sounds of the world's languages*. Oxford: Blackwell Publishers.

Magometov, Aleksandr. 1982. *Megebskij dialekt darginskogo jazyka: Issledovanie i teksty* [Mehweb Dargwa: Grammar survey and texts]. Tbilisi: Mecniereba.

Moroz, George. 2014. Imennoe udarenie v darginskix jazykax [Nominal stress in Dargwa]. In *Aktualnye voprosy teoretičeskoj i prikladnoj fonetiki. Sbornik statej k jubileju O.F. Krivnovoj*, 245–269. Moscow: Buki Vedi.