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II Phonology

In the two charts below the consonant phonemes of Ghomara Berber are displayed. The consonant phonemes between brackets are rare and occur mostly in borrowed words. Consonant phonemes (simple and geminate) are grouped together on the basis of their place of articulation.

1. Consonants

Chart 1 Simple Consonants

<table>
<thead>
<tr>
<th></th>
<th>Lab</th>
<th>Interd</th>
<th>Alv</th>
<th>Post-Alv</th>
<th>Pal</th>
<th>Vel</th>
<th>Vel-Lbd</th>
<th>Uvu</th>
<th>Uvu-Lbd</th>
<th>Phr</th>
<th>Lar</th>
</tr>
</thead>
<tbody>
<tr>
<td>vcl. stop</td>
<td>p</td>
<td>t</td>
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<td>k</td>
<td>kʷ</td>
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<td>(ʔ)</td>
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<tr>
<td>vcd. stop</td>
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<td>x</td>
<td>xʰ</td>
<td>ह</td>
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<td>vcl. phr. fric.</td>
<td>š</td>
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<td>vcd. phr. fric.</td>
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<tr>
<td>vcl. affr.</td>
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<td>pha.lat.approx.</td>
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<td>nasal</td>
<td>m</td>
<td>n</td>
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</tbody>
</table>

5 lab = labial, interd = interdental, alv = alveolar, post-pal = post-palatal, pal = palatal, vel = velar, lbd = labialised, uvu = uvular, phr = pharyngeal, pha = pharyngealised, lar = laryngeal, vcd. = voiced, vcl. = voiceless, lat = lateral, approx. = approximant
Like many other Berber languages the Ghomara consonant system has the typical contrastive features of voice, pharyngealisation and length (Kossmann 2012: 6, see Galand 2010: 49-59 who regards length as the result of tension). Most voiced consonants have a voiceless counterpart. All consonants distinguish length (in a few cases combined with another feature), which is used in morphophonological oppositions, especially in verbs. Pharyngealisation occurs with alveolar consonants. Velar and uvular consonants oppose labialised versus non-labialised phonemes.

The relationship between (short) plosives and fricatives deserves special attention. In word-medial position, the plain continuants ːb, t, d, k, k’, g, g’, are in phonemic opposition to their plosive equivalents. The plain continuants are the result of a process of spirantisation of stops which is a general development in the Northern Berber varieties (cf. Kossmann, 2012: 11-12). In word-initial and word-final position the phonemic contrast is neutralised to a large extent. In word-initial position there are only stops. In word-final position, stops occur in post-consonantal position while fricatives occur in post-vocalic position⁶. In intervocalic position the fricatives are more frequent. These are generalisations for which counter-examples exist. The geminate counterparts are always realised as plosives (except for marginal g̣g̣ which is only attested in the verb with the same form g̣g̣ ‘to do/to make’).

⁶ In neighbouring Chefchaouen Arabic, spirantisation of stops occurs only in postvocalic position (cf. Moscoso 2002: 37-49).
Apart from the spirantised - occlusive pairs, there are two other simple - geminate consonant pairs which are irregular. The Aorist and the Imperfective forms are contrasted:

<table>
<thead>
<tr>
<th>Aorist</th>
<th>Imperfective</th>
</tr>
</thead>
<tbody>
<tr>
<td>(w &gt; gg^w)</td>
<td>zwir</td>
</tr>
<tr>
<td>(y &gt; qq)</td>
<td>yems</td>
</tr>
</tbody>
</table>

Below we will discuss each consonant separately. The major topics are: the status of the spirantised consonants, the status of the \( \tilde{g} \) and \( \tilde{c} \) and the semi-vowels. In separate paragraphs a summary of the distribution of spirantised consonants will be given. This will be followed by a brief discussion of the status of the geminates and the spread of pharyngealisation. In the section on the vowels, the diphthongs are presented and the behaviour of schwa is discussed. Separate paragraphs are dedicated to assimilations, elision of final consonants, vocalic sandhi and finally labialisation.

1.1. Labial and labiodental consonants

\(p\) [IPA: \(p\)]

This consonant is often found in loanwords from European languages, mostly from Spanish. In a few cases non-European words contain a \(p\) as well, such a iparparen ‘money’ lpeyrir ‘pan cake’, ṭṭawpa ‘rat’.

\(pp\) [IPA: \(p:\)]

This consonant is only found in medial position.
\(čappu\) ‘cap’

**Distribution of \(b\) [IPA: \(b\)] ~ \(b\) [IPA: \(β\)]**

In initial position \(b\) is prevalent over \(β\). Very few instances of initial \(b\) exist, while examples of initial \(b\) are many.

- berra ‘outside’
- baqi ‘still’
- bezzaf ‘many’
- bekrī ‘early’
- berreḥ ‘call!’
- bellarež ‘stork’
- bačtiyātna ‘between us’
- bežžṭen ‘they trampled’
- berrḏax ‘I made cold’
baḥa

‘father’

The few exceptions with initial ḇ are given below. These examples show that there is, marginally, a phonemic opposition in this position.

ḇедḍax

‘I stood up’

ḇezḍax ~ beẓḍax

‘I urinated’

As for word-internal position, ḇ never occurs after l. Furthermore, there is a tendency for the b rather than ḇ to occur after t, although there are a few exceptions. Examples of words in which these sequences occur are:

lbaṭil

‘boat’
lbir

‘well’
lbît

‘room’
lbuṛka

‘pond’
lbettix

‘melon’
lbibiru

‘feeding bottle’
itbaɛbaɛ

‘it bleats’
itbeḷbaḷ

‘he cuddles’
ltbuweh

‘it mooed’

There are a number of exceptions to these two generalisations, for example:

llbayṭ

‘great-grandchildren’
llbač

‘sail, wind from the north’
itḥerraḍ

‘he makes cold’
ketṭax

‘I wrote’
tṭae

‘follow’

In most word-medial consonant clusters, the appearance of b or ḫ is unpredictable as shown in the examples below.

**first member of a consonant cluster:**

ṭdeblīž

‘bracelet’ vs.
lġebli

‘Jebli man’
ssbibṭaṭ ‘little shoes’ vs. teḥṭut ‘you divided’

ttrebṣil ‘plate’ vs. taḇṣelt ‘onion’

**second member of a consonant cluster:**

ssbiɣa ‘paint’ vs. ssḇeɛ ‘lion’

teqbex ‘I pierced’ vs. taqḇilt ‘village’

Intervocally, b occurs more often and in fact intervocalic b is very rare. For example:

**intervocalic b**

iɾaḅen ‘village of Iraben’
tabekkiwṭ ‘worm’
taḥerquqt ‘prune’
taḥerṛkt ‘sheep’
tekaṭax ‘I am writing’

**intervocalic b**

itgabal ‘he keeps an eye on’
tibaṭaṭan ‘potatoes’

Word-finally b is found after a vowel. b is found after a consonant although the evidence for this is restricted to one example.

qelleḥ ‘to try’
iḥerreb ‘he made flee’
isṣeyyaḥ ‘he throws’
iṣṭeḥ ‘he asks to marry’
adaṭraḥ ‘stone’
lḡumb ‘side’

bb [IPA: b:]

bbax ‘I took’; ḫebb ‘wheat’
1.2. Interdental and alveolar consonants

Distribution of t [IPA: t] and ṭ [IPA: θ]

Word-initially only the plosive pronunciation t occurs. In word-medial position both ṭ and t occur in the same environments. Therefore we assume a phonemic distinction between the two consonants in word-medial position. In word-final position the realisation is ṭ after a vowel and t after a consonant, although there are a few exceptions which have t after a vowel. Examples for each of the positions are:

**Initial t**
- taseeddist: ‘belly’
- taxeyyalt: ‘girl’
- tameṭṭut: ‘woman’
- tammart: ‘beard’
- tawfalt: ‘egg’

**Medial t**
- ikteḇ: ‘he wrote’
- isten: ‘it barks’
- ftēḥ: ‘open!’
- atay: ‘tea’
- amekter: ‘long wooden stick of the plough’
- kafatira: ‘kettle’

**Medial ṭ**
The medial \( \text{t} \) occurs intervocalically as well as adjacent to a consonant, for example:

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>aṯebban</td>
<td>‘trousers’</td>
</tr>
<tr>
<td>tlaṯa</td>
<td>‘three’</td>
</tr>
<tr>
<td>tiṯun</td>
<td>‘they go’</td>
</tr>
<tr>
<td>ayeṯma</td>
<td>‘brothers’</td>
</tr>
<tr>
<td>lexwaṯem</td>
<td>‘rings’</td>
</tr>
<tr>
<td>sekṭax</td>
<td>‘I hushed’</td>
</tr>
<tr>
<td>metqeḇ</td>
<td>‘chisel’</td>
</tr>
<tr>
<td>lemṭac</td>
<td>‘property’</td>
</tr>
<tr>
<td>tamṯunt</td>
<td>‘yeast’</td>
</tr>
<tr>
<td>eemmṭiwaṯ</td>
<td>‘aunts’</td>
</tr>
<tr>
<td>taftilt</td>
<td>‘fuse’</td>
</tr>
<tr>
<td>lbiṯ</td>
<td>‘room’</td>
</tr>
<tr>
<td>lḥanuṯ</td>
<td>‘shop’</td>
</tr>
<tr>
<td>taslaṯ</td>
<td>‘bride’</td>
</tr>
<tr>
<td>tameṭṭuṯ</td>
<td>‘women’</td>
</tr>
<tr>
<td>taḡayzuṯ</td>
<td>‘calve’</td>
</tr>
<tr>
<td>muqqret</td>
<td>‘big (F./PL)’</td>
</tr>
<tr>
<td>taneḇduṯ</td>
<td>‘mowing season’</td>
</tr>
<tr>
<td>itmettaṯ</td>
<td>‘he dies/is dying’</td>
</tr>
</tbody>
</table>

**final t**

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>taqḇilt</td>
<td>‘tribe’</td>
</tr>
<tr>
<td>tiḏert</td>
<td>‘ear (of wheat)’</td>
</tr>
<tr>
<td>taferkiwt</td>
<td>‘small piece of land’</td>
</tr>
<tr>
<td>tawnaft</td>
<td>‘baked bread’</td>
</tr>
<tr>
<td>tasefrawt</td>
<td>‘yellow’</td>
</tr>
<tr>
<td>tafirast</td>
<td>‘pear’</td>
</tr>
<tr>
<td>tayezdist</td>
<td>‘rib’</td>
</tr>
</tbody>
</table>

**final ṭ**

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>lbiṯ</td>
<td>‘room’</td>
</tr>
<tr>
<td>lḥanuṯ</td>
<td>‘shop’</td>
</tr>
<tr>
<td>taslaṯ</td>
<td>‘bride’</td>
</tr>
<tr>
<td>tameṭṭuṯ</td>
<td>‘women’</td>
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</tr>
</tbody>
</table>

**Post-vocalic final t**

In a few cases t appears word-finally and postvocally (cf. III.1.3.2.)\(^7\).

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>tarḇat</td>
<td>‘girl’</td>
</tr>
<tr>
<td>tafriwet</td>
<td>‘wing’</td>
</tr>
</tbody>
</table>

\(^7\) Final -t following a vowel could have developed from geminate final -tt (cf. Penchoen, 1973: 13-14).
In the following two Arabic-morphology nouns, which form the plural by inserting a vowel before the final consonant, t changes to ṭ in final position:

<table>
<thead>
<tr>
<th>SG</th>
<th>PL</th>
</tr>
</thead>
<tbody>
<tr>
<td>lqent</td>
<td>leqnuṭ</td>
</tr>
<tr>
<td>ššent</td>
<td>lešnāṭ</td>
</tr>
</tbody>
</table>

**t > h ~ Ø**

In some positions t becomes h or disappears completely.8 This only happens in subject prefixes on the verb, in third person direct object pronouns (masculine and feminine) and in the numeral ‘one’. The subject prefix t- on the verb regularly changes to h ~ Ø when followed by a t or tt (whether it is a Imperfective prefix or a verb stem consonant), for example:

Before the Imperfective marker tt- ~ t-.  

- ḫetteftaf ~ tteftaf (< tetteftaf)  ‘she is searching’
- ḫteqqlet ~ teqqlet (< tteqqlet)  ‘you return’
- ḫettara ~ ttara (< tettara)  ‘she writes’

Before a tt- ~ t- which is part of the verb stem.  

- ḫettru ~ ttru (< tettru)  ‘she keeps on crying’

There is free variation between t and h in the subject prefixes of the Perfective. The subject prefixes are never reduced to zero. In similar context the prefix can be either t or h, for example:

- saɛa tedda  ‘and then she went’
- amḵ a hedda (< tedda)  ‘when she went’
- heqqim  ‘she sat’

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8 Lafkioui (2009: 109) notes for Senhaja de Srair: ‘L’élément ṭ(e)p est en variation libre avec les formes spirantisées h(e)p et Ø- chez les Ayt Ktama, les Ayt Taghzat et les Ayt Bucibet (Rif occidental). La marque Ø- est aussi régulièrement attestée dans plusieurs variétés centrales.’
All subject prefixes with  in the Aorist disappear after a non-real marker (cf. IV.8.1.1.3.), e.g.

\[\text{ṣ a ddu} (< \text{ṣ a teddu}) \quad \text{‘she will go.’}\]
\[\text{ṣ a ddut} (< \text{ṣ a teddut}) \quad \text{‘you will go.’}\]

The direct object pronoun  has a variant  when preceding deictic clitic  (cf. III.11.2.1.).

\text{tt} [IPA: t:\]  
\text{tt}hawed ‘talk (to each other)!’; \text{netta} ‘he’; \text{afatt} ‘branch’

\text{ṭ} [IPA: tʕ:]  
\text{aṭil} ‘grapes’; \text{aṭgam} ‘yesterday’; \text{ikemmēt} ‘to burn’

There is a tendency in some speakers’ speech for  to become  after a vowel or a voiced consonant, for instance:

\begin{align*}
\text{ayeffēt} & > \text{ayeffēd} \quad \text{‘cattle’} \\
\text{lmuṭae} & > \text{lmuḍēa} \quad \text{‘to a place’} \\
\text{baṭem} & > \text{baḍēm} \quad \text{‘to each other’} \\
\text{mriṭ} & > \text{mriḍ} \quad \text{‘ill’} \\
\end{align*}

\text{ṭṭ} [IPA: tʕː:]  
\text{ṭṭmr} ‘date’; \text{inēṭtar} ‘he flies’; \text{ṭṭṭt} ‘suck’

\text{Distribution of d [IPA: d] and ḏ [IPA: ð]}  

\text{Initial position}  
Initial  and  are not very frequent in Ghomara Berber. The few words that begin with either of these consonants have the stop, except for one verb.

\text{initial d}  
\begin{align*}
\text{daxel} & \quad \text{‘inside’} \\
\text{deydaḵ} & \quad \text{‘earlier’} \\
\text{daʔimen} & \quad \text{‘always’} \\
\text{dhāḍinet} & \quad \text{‘here’} \\
\text{das} & \quad \text{‘there’} \\
\end{align*}
Medial d appears in consonant clusters as well as intervocally. After r and n mostly d is found, although after r there are a few exceptions where d and ḍ are in free variation. Intervocalic d is rare, one normally finds ḍ. All instances of intervocalic d are listed below. Medial d adjacent to a consonant and intervocalic d are also presented. Sometimes there is free variation in intervocalic position. In final post-consonantal position d appears, whereas fricative ḍ appears in postvocalic position. However, there are a few exceptions.

deydak ‘earlier’
meedum ‘ill’
iferdì ‘gun’
lkebda ‘liver’
isardunen ‘mules’
issendaw ‘he churns’
edel ‘make!’
itdeğdag ‘he crushes’
zdù ‘under’
ageţdir ‘green lizard’

Intervocalic d

lbìdu ‘bucket’
abdìdu ‘small bucket’
labræɛ ‘saddles’
tamezïda (~ tamezgiða) ‘mosque’
adideğ ‘mortar’

Medial d adjacent to a consonant

ağdi ‘jackal’
tamḍa  ‘pond’
qḍim  ‘old’
adfel  ‘snow’
adyes  ‘colostrum’
lqaeda  ‘part of the plough’
tafḍent  ‘toe’
ttaẓḍax  ‘I pee’

**Intervocalic ḏ**
thaḍin  ‘this one (F.)’
taxaḍemt  ‘ring’
mnaḍem  ‘man/person’
taḍunt  ‘fat’
aḍem  ‘blood’
iḍes  ‘with hem/her’
tamuḍa  ‘sow’

**final d**
isSEND  ‘he churned’
ayižd  ‘billy goat’
aṭuḡd  ‘finger’
ṣṣehd  ‘heat’
lǧeld  ‘skin’
lqird  ‘monkey’

**final ḏ**
lberraḍ  ‘tea pot’
uhaḍ  ‘this one (msc.)’
iḥseḍ  ‘he envied’
CID  ‘still’
seqqed  ‘release (goats)’
iheddèḍ  ‘he threatens’
ayeḍ  ‘ash’
elqruḍ  ‘monkeys’
leḡluḍ  ‘skins’
ažebbāḍ  ‘elastic’
afuḍ  ‘knee’
There are a few exceptions, which have d postvocically.

\begin{tabular}{ll}
\textit{lwalid} & \text{‘father’} \\
\textit{zzrud (\sim zzru\d)} & \text{‘feast meals’} \\
\textit{lʔaždad} & \text{‘ancestors’} \\
\end{tabular}

\textbf{dd [IPA: d:\]}

\textit{dder} ‘be alive’; \textit{medden} ‘people’; \textit{lhed} ‘border, sunday’

The \textbf{dd} in the verb \textit{ddu} ‘to come’ can become a single d between vowels and after the deictic clitic d ‘hither’.

\begin{tabular}{ll}
\textit{a d idu} & \text{‘he will come’} \\
\end{tabular}

\textbf{d [IPA: d\textsuperscript{5}]}

The consonant d is very rare. In certain cases it is a free variant of t. In words such as \textit{ayerd\textsuperscript{ay}} ‘mouse’ and \textit{izza\d} ‘he grinds’ (I) it could be a result of the spread of pharyngealisation. An example is:

\textit{taḍ\textsuperscript{utt}} ‘wool’

In some words d and d are in free variation, for example:

\begin{tabular}{ll}
\textit{h\d\textit{i}} \sim \textit{h\d} & \text{‘keep an eye on’} \\
\textit{rrem\d\textit{dan}} \sim \textit{rrem\d\textit{dan}} & \text{‘ramadan’} \\
\end{tabular}

\textbf{dd [IPA: d:\textsuperscript{5}]}

\textit{dd} is very rare. Apart from \textit{hedd\d} \sim \textit{hedd\d} ‘he keeps an eye on’ which are in free variation, only the following noun and verb in our corpus have this geminate consonant.

\begin{tabular}{ll}
\textit{tiḍ\d\textit{a}} & \text{‘leech’}; \textit{medd\d} & \text{‘to sharpen’} \\
\end{tabular}

\textbf{d [IPA: d\textsuperscript{5}]}

This phoneme is not found in word-final position.

\begin{tabular}{ll}
\textit{dess} & \text{‘laugh’}; \textit{hwer\d} & \text{‘a rose’} \\
\end{tabular}

\textbf{dd [IPA: d:\textsuperscript{5}]}

This phoneme is restricted to three instances in our corpus:

\begin{tabular}{ll}
\textit{ddbae} & \text{‘jackal’}; \textit{fe\d\d} & \text{‘finish!’}; \textit{lyedd\d\textit{ar}} & \text{‘traitor’} \\
\end{tabular}
n [IPA: n]
anas ‘sparkle’; afenṭuṭ ‘lip’; ihessen ‘he shaved’
nn [IPA: nː]
nnan ‘they said’; genna ‘sky’; inn ‘he said’
s [IPA: s]
asif ‘river’; tasa ‘cow’; iles ‘tongue’
ss [IPA: sː]
assā ‘nowadays’; ihessēb ‘he counts’; iciss ‘to guard’
§ [IPA: sʰ]
ṣum ‘fast!’; ṣuṣef ‘spit!’; ixelles ‘he payed’
 $$$ [IPA: sːʰ]
ṣṣebbat ‘shoes’; anessab ‘piece of iron on which bait is put’; lgeṣṣ ‘big floor’
 z [IPA: z]
zebbel ‘curse!’; azar ‘fur’; krez ‘plough!’
zz [IPA: zː]
zzuɣur ‘pull!’; rezzwan ‘they delouse’; ihezz ‘he shook’
ž [IPA: zʰ]
žum ‘fast!’; aẓar ‘root’; illuz ‘he is hungry’
  zz [IPA: zː]
iffezzer ‘he cut open’; izzar ‘he sees’; afazza ‘edible part of doum leaf’

1.3. Post-alveolar consonants

§ [IPA: f]
ašqef ‘snail shell’; taxšebt ‘trap’; iεaš ‘he lived’
$$ [IPA: fː]
$$far ‘hair’; ſš ‘eat!’; irešš ‘he splashed’
č [IPA: tʃ]
This consonant is quite rare. Most often it appears in Spanish loanwords and in onomatopoeia. We consider it a phoneme on its own, as there is one verb which shows its use in a morphophonological opposition, namely the Imperfective formation. Many verbs form the Imperfective by geminating the second consonant of the Perfective (cf. paragraph 7.6.1.2. for this type of Imperfective formation). Compare the Perfective and the Imperfective forms of the verb kšem ‘to enter’.

<table>
<thead>
<tr>
<th>P</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>ikšem  ‘he entered’</td>
<td>ikečem  ‘he always enters’</td>
</tr>
</tbody>
</table>

There is no phonetic difference between the č in the verb above and č in the following nouns.

čeppuxa ‘balloon’ ahečun ‘vagina’, llḥač ‘hot rain, sail’

The phonetically same sound tš can be the result of a sequence of t + š, for example in the derived form tšaq ‘be split’ or in ḥetšax ‘I have fetched the grass’ which is the first person singular form of ḥteš ‘to fetch grass’. In this case tš is written instead of č.

The Arabic article does not assimilate to the č of Arabic-morphology nouns, for example:

lčabula  ‘shed’
lčuppa   ‘lollipop’
lčimineyya ‘chimney’
lčerqun   ‘filth on the skin’

ž [IPA: ʒ]
ižni ‘he picked’; lḥaža ‘thing’; afeṛṛuž ‘rooster’

The phoneme ž changes to ġ when following l, n or r. With one exception in our corpus, ž is always realised as ġ following the Arabic article l. The article does not assimilate to the consonant⁹. Examples of ġ are:

lġeda  ‘carrot’
lġeld   ‘skin’
lġmel   ‘camel’

⁹ In many varities of Moroccan Arabic the article assimilates to the žž (cf. Heath 2002: 169).
There are a few exceptions, especially after r and very rarely after l and n\(^\text{10}\).

We also find a few instances of ţ following ḥ and w\(^\text{11}\).

The following singular - plural pairs show that ţ alternates with ż in forms where there is no direct contact with the triggering consonant.

<table>
<thead>
<tr>
<th>SG</th>
<th>PL</th>
</tr>
</thead>
<tbody>
<tr>
<td>lţumb</td>
<td>leţnab</td>
</tr>
<tr>
<td>lţaleb</td>
<td>aţellab</td>
</tr>
<tr>
<td>lţim</td>
<td>leţyam</td>
</tr>
<tr>
<td>amenţur</td>
<td>lemmaţer</td>
</tr>
<tr>
<td>lţduţ</td>
<td>źeddi</td>
</tr>
</tbody>
</table>

An unexplained occurrence of ţ is found in the verb ţeţeţeţ ‘glide/drag along the ground’ which corresponds to žeţeţeţ ‘glide/drag along the ground’ in Moroccan Arabic (Harrell, 1966:236). The initial ţ could be a geminate counterpart of ż. The second second ţ follows an r. Another case is the collective noun lţuţet ‘walnut’ in which the second affricate corresponds to ż as shown by the unity noun taţuţet ‘a walnut’. In the case of the active participle forms maţi / maţa (~ maţţa) / maţin (~ maţţin) ‘come’ the ţ can be explained as a realisation of underlying žy.

\(^{10}\) Compare Anjra Arabic (Vicente 2000:45) for a similar situation.

\(^{11}\) In Chefchaouen Arabic ţ also occurs when following n, d, ḥ, y, ŏ, ţ, f (Moscoso, 2002:43).
There is free variation between ž and ǧ in a limited number of instances, for example:

\[
\text{teežb as } \sim \text{ teeǧb as} \quad \text{‘he liked her‘}
\]

\[\text{ǧ [IPA: dʒ]}\]

iĝun ‘he has eaten enough’; weģed ‘prepare’; iġ ‘he left’

Some instances of ǧ correspond to źź. In the first place, the verb ǧ ‘to let/leave’ has optional deaffrication. Deaffrication only takes place at the end of an utterance or before a consonant, for example:

\[
\begin{array}{l}
\text{š} \quad a \quad y=\text{ne-źź} \quad \text{dar} \quad \text{ṣṣbeḥ} \\
\text{FUT} \quad \text{AD} \quad 3\text{MS:DO}=3\text{MS:leave:A} \quad \text{until morning}
\end{array}
\]

‘We will leave him until the morning.’

Compare also the following example of the second singular Perfective form and the third person masculine singular form which is in final position and is deaffricated.

\[
\begin{array}{l}
\text{2S} \quad \text{3MS} \\
\text{teǧat ‘you left‘} \quad \text{ižž ‘he left‘}
\end{array}
\]

Furthermore, deaffrication is found as a variant of the second person masculine independent pronoun when it is the final consonant (see III.11.1).

\[
\begin{array}{l}
\text{keği(n)} \quad \text{‘you‘} \quad \text{kežž ‘you‘}
\end{array}
\]

In Arabic loans, Ghomara ǧ often corresponds to źź in other variants of Moroccan Arabic, e.g.

Ghomara \quad \text{Mar. Arab.}

\[
\begin{array}{l}
\text{leqmiğa} \quad \text{leqmižža} \quad \text{(Harrell, 1966:109) ‘shirt’} \\
\text{lhaḡ} \quad \text{lhažž} \quad \text{(Harrell, 1966:251) ‘pilgrim‘} \\
\text{tuḡar} \quad \text{tužžar} \quad \text{(Harrell, 1966:163) ‘merchant, wealthy man‘}
\end{array}
\]

In the following verb pairs ž and ǧ are opposed. In the first example the second verb is derived from the first verb by gemination of the second consonant (Arabic stem II). The
second and third example show the difference between Perfective and Imperfective verb pairs. In the Imperfective the first consonant is geminated yielding the affricate \( \ddot{g} \).\(^{12}\)

<table>
<thead>
<tr>
<th>P</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{wžed} )</td>
<td>( \text{iwežed} )</td>
</tr>
<tr>
<td>‘it is prepared’</td>
<td>‘he prepares’</td>
</tr>
<tr>
<td>( \text{ižrež} )</td>
<td>( \text{ižruž} )</td>
</tr>
<tr>
<td>‘he is injured’</td>
<td>‘he is always injured’</td>
</tr>
<tr>
<td>( \text{ižmeɛ} )</td>
<td>( \text{ižmuɛ} )</td>
</tr>
<tr>
<td>‘he gathered’</td>
<td>‘he gathers’</td>
</tr>
</tbody>
</table>

The consonant \( tž \) in for example the \( t \)- derived form \( tžewwi \) ‘be wrapped up’ is phonetically the same as \( \ddot{g} \) but is not considered the same consonant.

There is no length difference between the allophone \( \ddot{g} \) of \( ž \) and the phoneme \( \ddot{g} \) which corresponds to \( źŽ \) in other variants of Moroccan Arabic.\(^{13}\) Therefore there are two phonemes: \( ž \) and \( \ddot{g} \).

We found only one invariable instance of \( źŽ \) in our corpus (IPA: \( Ž: \)) which is not the result of deaffrication of \( \ddot{g} \), namely \( \text{bežzet} \) ‘to trample on’.

1.4. Lateral and rhotic consonants

\( r \) [IPA: \( r \)]

\( \text{argaz} \) ‘man’; \( \text{yura} \) ‘he wrote’; \( \text{kkur} \) ‘stand up’

\( rr \) [IPA: \( r:\) ]

\( \text{rr} \) ‘bring back’; \( \text{berrďax} \) ‘I froze’; \( \text{tařerriwt} \) ‘animal dropping’

\( r \) [IPA: \( r^\prime \)]

\( \text{rebbi} \) ‘raise!’; \( \text{lešfař} \) (\( n \) \( \text{tiwan} \)) ‘eyelids’; \( \text{amer} \) ‘send’

\( rř \) [IPA: \( r^{\prime}\) ]

\( rřmel \) ‘sand’; \( \text{serřden} \) ‘they sent’; \( \text{aṣerřey} \) ‘ram’

---

\(^{12}\) This is not the result of an assimilation of imperfective \( tt \sim t \) with \( ž \). This is a regular morphological Imperfective formation which geminates the first consonant and inserts and \( u \) before the final consonant.

\(^{13}\) El Hannouche’s data show that there are more exceptions in Amṭiqan with regards to the \( ž \). In his texts (2010:177-242) we find for example \( \text{iželd, izemea, iziran} \), but also \( \text{(e)ğri} \). Furthermore, we find \( \text{amenžur} \) (273) and \( \text{nžum} \) (65). The phoneme \( \ddot{g} \) is never realised as \( źŽ \) as in \( \text{ahečal} \) (65), \( \text{keg} \) (113) and \( \text{aγar} \) (235).
I [IPA: l]
iles ‘tongue’; alum ‘hay’; ikemmel ‘he finished’

In a few cases there is free variation between I and r, for example:

tilkan ~ tirkan ‘head louse’
tilkaman ~ tirkaman ‘kind of spinach’
pulpu ~ purpu ‘octopus’ (< Spanish)

Il [IPA: l:]
lluẓ ‘be hungry!’; mellken ‘they marry’; ggull ‘swear’

The pharyngealised lateral l [IPA: l] does not occur on its own in non-pharyngealised contexts. The geminate ll [IPA: l:] is only found in words containing alla ‘God’ such as stayfirulla ‘may God forgive’, wella ‘I swear’ and yalla ‘come on’.

1.5. Velar consonants

Distribution of k [IPA: k] and ḵ [IPA: x]
The consonants k and ḵ have the same place of articulation, in the front-velar/mid-velar range; ḵ is thus quite different from the palatal fricative [ç] found, for instance, in Tarifiyt and in Kabyle Berber. The consonant k is found more often than ḵ in initial position. The examples enumerated below are all the words beginning with k in our corpus.

initial k
kelwa ‘kidney’
kelma ‘word’
kueballa ‘female jackal’
kursi ‘chair’
kamlin ‘all (PL)’
kreh ‘hate!’
keği ‘you (M:SG)’
kerkeb ‘roll!’

initial ḵ
kma ‘my brother’
кра ‘some’
krez ‘plough!’
kerreług  ‘lie!’

In word-medial environments, both k and ḵ can occur, both intervocically and in pre- and postconsonantal position, for example:

**medial k**

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>tilket</td>
<td>‘louse’</td>
</tr>
<tr>
<td>ilkem</td>
<td>‘he entered’</td>
</tr>
<tr>
<td>tiskert</td>
<td>‘garlic’</td>
</tr>
<tr>
<td>škun</td>
<td>‘who’</td>
</tr>
<tr>
<td>tirkila</td>
<td>‘bitches’</td>
</tr>
<tr>
<td>muškil</td>
<td>‘problem’</td>
</tr>
<tr>
<td>akerkukr</td>
<td>‘stone heap’</td>
</tr>
<tr>
<td>sakeṭ</td>
<td>‘quiet’</td>
</tr>
<tr>
<td>akeḥlaw</td>
<td>‘black (person)’</td>
</tr>
</tbody>
</table>

**medial ḵ**

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>melḵen</td>
<td>‘they married’</td>
</tr>
<tr>
<td>tilḵaman</td>
<td>‘type of spinach’</td>
</tr>
<tr>
<td>ssḵemṭ-awet</td>
<td>‘burn!’ (PL)</td>
</tr>
<tr>
<td>aḳenniw</td>
<td>‘twins’</td>
</tr>
<tr>
<td>tafuḵt</td>
<td>‘sun’</td>
</tr>
<tr>
<td>lmakla</td>
<td>‘food’</td>
</tr>
<tr>
<td>aḳal</td>
<td>‘soil’</td>
</tr>
<tr>
<td>beḳri</td>
<td>‘early’</td>
</tr>
<tr>
<td>aḳmez</td>
<td>‘nail’</td>
</tr>
<tr>
<td>aḳemmar</td>
<td>‘face’</td>
</tr>
<tr>
<td>imuḳar</td>
<td>‘thieves’</td>
</tr>
</tbody>
</table>

In word-final position, ḵ occurs after a vowel (including schwa) and k after a consonant. A singular - plural pair like lmilk ‘possession’ amlak ‘possessions’ shows this alternation.

**final k**

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ṭṭaḥk</td>
<td>‘laughter’</td>
</tr>
<tr>
<td>ifk</td>
<td>‘he gave’</td>
</tr>
<tr>
<td>iwešk</td>
<td>‘he got lost’</td>
</tr>
<tr>
<td>aṭuẓk</td>
<td>‘male partridge’</td>
</tr>
<tr>
<td>sselk</td>
<td>‘iron wire’</td>
</tr>
</tbody>
</table>
There are a few exceptions in our corpus with final postvocalic k:

- lplaṣṭik ‘plastic’
- hak ‘here!’

**Final ḵ**
- deydaḵ ‘earlier’
- lmalḵ ‘king’
- nneḵ ‘yours’
- itḵerrak ‘he lies’
- haḏīḵ ‘that’
- ašriḵ ‘farmer’s assistant’
- aḇeddiḵ ‘rooster’

**kʷ [IPA: kʷ]**
Labialised kʷ is only found in the Aorist form of the verb /lkʷem / [lkum] ‘arrive, reach’ and the derived form /sselkʷem/ [sselkum] ‘make arrive, reach’ (see IV.3.2.1.1. on the causative prefix).

**kʷ [xʷ]**
Labialised kʷ is found, among others, in taḵʷmamt ‘muzzle’ and the Aorist of the verb akur (/aḵʷer/) ‘steal’.

**kk [IPA: kː]**
Geminate kk stands in morphophonological opposition to k in ilkem ‘he arrived’ - ilekkem ‘he arrives’ as well as to ḵ, e.g. in iknex ‘he argued’ - ikknex ‘he argues’.
ikkrez ‘he ploughs’; ilekkem ‘he arrives’; ḥekk ‘scratch’

**kkʷ [IPA: kːʷ]**
Labialised kkʷ is only found in the Aorist forms of the verbs kkur /kkʷer/ ‘get up!’; ukkr-awet /kkʷer-awet/ ‘get up!’ (PL) and kkus /kkʷes/ ‘remove!’ - ukks-awet /kkʷs-awet/ ‘remove!’ (PL).

**Distribution of g [IPA: g] and ḡ [IPA: ɣ]**
Like k and ḵ, the consonants g and ḡ have front-velar to mid-velar pronunciation. The consonant ḡ therefore has a different pronunciation from ḡ in other Berber languages, such
as Kabyle and some Tarifiyt varieties, which is a voiced palatal fricative [ʝ]. Word-initially only g is attested, as in the following examples.

**initial g**

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>genna</td>
<td>‘sky’</td>
</tr>
<tr>
<td>gum</td>
<td>‘in front of’</td>
</tr>
<tr>
<td>gas</td>
<td>‘in it’</td>
</tr>
<tr>
<td>gatri</td>
<td>‘bed’</td>
</tr>
<tr>
<td>gerru</td>
<td>‘cigarette’</td>
</tr>
<tr>
<td>gales</td>
<td>‘seated’</td>
</tr>
<tr>
<td>gewwez</td>
<td>‘pass!’</td>
</tr>
<tr>
<td>gewweḏ</td>
<td>‘lead!’</td>
</tr>
</tbody>
</table>

In medial position both g and ḡ are attested adjacent to both vowels and consonants. When following alveolar consonants l, r, t, n, z the stop g is more frequent than fricative ḡ. In some words, there exists free variation between g and ḡ, notably when following ṭ and ḥ, e.g. aṭgam ~ aṭḡam ‘yesterday’ and tazga ~ ṭaẓḡa ‘forest’.

**medial g**

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>targa</td>
<td>‘canal’</td>
</tr>
<tr>
<td>angi</td>
<td>‘rain water’</td>
</tr>
<tr>
<td>lgebš</td>
<td>‘gypsum’</td>
</tr>
<tr>
<td>azgaznet (~ azg’aznet)</td>
<td>‘two years ago’</td>
</tr>
<tr>
<td>imezgan</td>
<td>‘ears’</td>
</tr>
<tr>
<td>tageržumt</td>
<td>‘adam’s apple’</td>
</tr>
<tr>
<td>agamgam</td>
<td>‘big rock’</td>
</tr>
<tr>
<td>lemnagež</td>
<td>‘earrings’</td>
</tr>
<tr>
<td>ngi</td>
<td>‘push!’</td>
</tr>
<tr>
<td>ageyyar</td>
<td>‘tree stump’</td>
</tr>
</tbody>
</table>

**medial ḡ**

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>aḡḍi</td>
<td>‘jackal’</td>
</tr>
<tr>
<td>aḡṭi</td>
<td>‘bird’</td>
</tr>
<tr>
<td>taḡiḡet</td>
<td>‘tree’</td>
</tr>
<tr>
<td>aḡellu (awellu)</td>
<td>‘plough’</td>
</tr>
<tr>
<td>taḡursa</td>
<td>‘ploughshare’</td>
</tr>
<tr>
<td>aṭuḡd</td>
<td>‘finger’</td>
</tr>
<tr>
<td>taḡnawt</td>
<td>‘pumpkin’</td>
</tr>
</tbody>
</table>
aseḡnu

‘clouds’

The noun aḡellu ‘plough’ has a free variant awellu. It is reported by informants that in Beni Mensour the noun taḡiḡet ‘tree’ is pronounced tawiḡet.

In final position g and ḡ are not very frequent. There is a preference for ḡ in final postvocalic position, while after a consonant there is always g.

g [IPA: g]

This consonant is among others found in the diminutive noun tagw sisert ‘small downwards slope’ and in agw laf ‘bee swarm’.

ḡ [IPA: ɣ]

This consonant is found in the Aorist verb form neẓẓuḡ (/neẓẓeḡw/) ‘we milked’ and in the Aorist form nsaḡum (/nsaḡem/) ‘we will wait’.

gg [IPA: gː]

In verbs there is a morphophonological opposition between g - gg as in ingi ‘he pushed’ and ineggi ‘he pushes’. cf. also iggez ‘he descended’.
This shows up in inugg (/inegg/) ‘it is cooking’ where it is the geminate of w, and also in the Aorist form gguz (/gg"ez/) ‘descend!’.

There is one instance of geminate ġġ in Ghomara. The ġġ in this word can become ww, tegget > tewwet ‘you did’. This consonant does not have a labialised counterpart.

‘do, make’

In some verbs and nouns the consonant ggw and gg are in free variation with ġ and k intervocally. For example:

aggez ~ uggez ‘recognise!’  >  š a y nuġuz / š a y nuķez  ‘we will recognise him.’

gguz /gg"ez/ ‘go down!’  >  ss-ugez / ss-uķez  ‘make go down!’

tiggura ~ tiġura  ‘doors’

1.6. Semi-vowels

y [IPA: j]
ayaw ‘grandchild’; taryalt ‘basket’; amaṣay ‘canine tooth’

In sequences of two high vowels i and u in initial position the result is free variation between yu and iw for example:

yuḡel ~ iwḡel  ‘he hung’
yuki (yuكا) ~ iwka  ‘he crossed (the water)’

yy [IPA: j:]
The semi-vowel yy is only found in word-medial position. seyyeḇ ‘throw!’; keyyel ‘weigh!’

w [IPA: w]
werreḵ ‘lie down!’; ittawi ‘he brings’; aḡnaw ‘big pumpkin’

The geminate correspondent of w can be ggw, for example in rwel (P) - ruggel (I) /reッグel/ ‘to flee’. However, there are other verbs which have ww as the geminate correspondant, for example the verb xwi (P) - xewwi (I) ‘to empty’.

35
ww [IPA: w:]  
The semi-vowel ww is only found in medial position.  
*xewwef* ‘frighten’; *aṭewwiš* ‘rain-pipe’

**Behaviour of semi-vowels**  
When in contact with schwa, the semivowel w can in some positions be realised as /u/, compare for example the following forms of the same verb:

* nuɣel ~ newɣel  ‘we are trapped.’
* ittewsir ~ ittusir  ‘he is becoming old’
* lewqiṯ ~ luqiṯ  ‘matches’
* ŝ a sut / ŝ a swet  ‘you will drink’
* ttun ~ ttwen  ‘they forgot’

In final position ew and u are neutralised, and are both realised as u. For example:

* ŝ a nu (< ŝ a ssnew)  ‘it will be cooked’
* ŝ a ttu (< ŝ a ttew)  ‘he/she will forget’
* ŝ a su (< ŝ a sew)  ‘he/she will drink’

Similarly, the difference between i and ey is neutralised in favour of i in final position., e.g.  
* ittawi  ‘he takes’

There is free variation between the form between ey and i when followed by a suffix, e.g.  
* ttawyen ~ ttawin  ‘they take’

Not all final i’s are the result of the neutralisation of ey, for example:  
* tunim  *tunyem  ‘you (PL) mounted’

In the morphology, for example in the formation of the Imperfective of the causative, the original semivowel reappears when following a plain vowel, e.g.

<table>
<thead>
<tr>
<th>Aorist</th>
<th>Imperfective</th>
</tr>
</thead>
<tbody>
<tr>
<td>ssku</td>
<td>sskaw</td>
</tr>
<tr>
<td>ssnu</td>
<td>ssnaw</td>
</tr>
<tr>
<td>sseḥmu</td>
<td>sseḥmaw</td>
</tr>
</tbody>
</table>
There is free variation between **yu** and **iw** when the **i-** subject prefix and **u** collide, for example:

- **yuf ~ iw**
  - ‘he found’
- **yulu ~ iwlu**
  - ‘he picked (fruit)’

### 1.7. Back-velar and uvular consonants

**x [IPA: χ]**

The consonant **x** is a back-velar fricative, tending towards the uvular domain. It is never confused with the velar fricative **ḵ** (IPA: [x]).

- **ixebbeɛ** ‘he has stored’;
- **nnexla** ‘date palm tree’;
- **fsex** ‘untie!’

**xʷ [IPA: χʷ]**

This consonant appears only in /taxʷest/ which has realisations [taxust] and [taḵʷest] and in **taxʷṛaft** ‘riddle, story’.

- **taxxunt** ‘ass’;
- aduxxan ‘chimney’;
- **lfexx** ‘bird trap’

**γ [IPA: ξ]**

The consonant **γ** is a back-velar fricative, tending towards the uvular domain. It is never confused with the velar fricative **ḡ** (IPA: [γ]). This consonant is in morphophonological opposition to **qq**, e.g. in the verb **iyres** ‘he slaughtered’ - **iqqres** ‘he slaughters’.

- **yres** ‘slaughter!’;
- **adyes** ‘colostrum’;
- **iğey** ‘heap of grain’

**γʷ [IPA: ξʷ]**

A number of nouns exist that have labialised **γʷ**. It is not found in initial position.

- **tizγʷal** ‘ladles’;
- **ffuγ⁄ffeyʷ⁄γ** ‘go out!’

**q [IPA: q]**

- **qurrayes** ‘type of insect’;
- **aqezzun** ‘dog puppy’;
- **felleq** ‘cut in two pieces!’

**qq [IPA: qː]**

- **iqqres** ‘he slaughters’;
- **taweqqaft** ‘door jamb’;
- **lheqq** ‘right’
qqw [IPA: q:"
This phoneme occurs in the adjective ‘be big’, e.g. masculine meqquʁ /meqq"er/, feminine/plural muqqreṭ /meqq"ret/. Furthermore, the Aorist of a number of verbs have qqw e.g. qquł /qq"el/ ‘return!’ uqql-awet /qq"l-awet/ ‘return!’ (PL) and qquṇ /qq"en/ ‘tie!’ uqqn-awet /qq"n-awet/ ‘tie!’ (PL).

1.8. Pharyngeal and laryngeal consonants

e [IPA: ʕ]
euryan ‘naked’; taɛeddist ‘belly’; ixellec ‘he preserved meat’

EE [IPA: ʕ:\
This consonant is not found in initial or final position.
beexed ‘go away!’; ahecciš ‘lamb’; reexeš ‘make shiver’

h [IPA: h]
henni ‘stoop!’; ahenthwil ‘tall man’; ṭrwaḥ ‘air’

HH [IPA: hh]
This consonant is not found in initial or final position.
imehha ‘he erases’; seẖun ‘they get well’

h [IPA: h]
herreb ‘make flee!’; taheḡalt ‘widow’; neddeh ‘drive, guide!’

HH [IPA: h:]
This consonant is not found in initial or final position.
ifehhem ‘he explains/makes understand’ dehheř ‘make appear!’ tehheř ‘circumcise’

ʔ [IPA: ʔ]
This consonant only occurs in borrowings from Standard Arabic, for example:
tʔekked ‘verify!’ daʔimen ‘always’
1.9. Status of geminate consonants

Geminate consonants have two sources; they can be the result of assimilations or they are lexically determined\(^\text{14}\). Geminates have more muscular force associated with them and as a result are generally longer than their simple counterparts. Their status is determined by being contrastive with simple consonants (cf. Galand, 2010:49959). Geminates are considered monophonemic as they cannot be split up by schwa insertion. In the first example \textit{qq} can not be split by schwa as would be expected if it behaved as two consonants (compare \textit{kešmen} ‘they entered’).

\textit{qqln} > \textit{qqlen} (*\textit{qeqlen})       ‘they returned’

However, they behave differently from single consonants. A geminate can have schwa’s on both sides, behaving like two consonants: the coda of one syllable and the onset of the next syllable.

\textit{teqqel}       ‘she returned’

Geminates are neutralised in final pre-pausal position. They become simple (non-geminate) consonants. In non-final environments the geminate surfaces again. In initial and medial position there is no neutralisation. Final geminates are always written with two consonants. Some examples are:

<table>
<thead>
<tr>
<th>Pre-pausal final</th>
<th>Non-final</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textit{ṭadūṭ}</td>
<td>‘wool’</td>
</tr>
<tr>
<td>\textit{ṭāmaṭuṭ}</td>
<td>‘dirty woman’</td>
</tr>
<tr>
<td>\textit{iṭet}</td>
<td>‘He sucks (breast).’</td>
</tr>
<tr>
<td>\textit{š a s in}</td>
<td>‘He will say to him.’</td>
</tr>
<tr>
<td>\textit{iggul}</td>
<td>‘he swore’</td>
</tr>
<tr>
<td>\textit{ka-yec}</td>
<td>‘he guards’</td>
</tr>
<tr>
<td>\textit{iṛes}</td>
<td>‘he strews’</td>
</tr>
<tr>
<td>\textit{ṭadūṭṭ aḏ}</td>
<td>‘this wool’</td>
</tr>
<tr>
<td>\textit{ṭāmaṭuṭṭ aḥen}</td>
<td>‘that dirty woman’</td>
</tr>
<tr>
<td>\textit{iṭet aḥen}</td>
<td>‘He sucks them.’</td>
</tr>
<tr>
<td>\textit{šw a s inna}</td>
<td>‘What did he say to him?’</td>
</tr>
<tr>
<td>\textit{iggull aṣ}</td>
<td>‘He swore for him.’</td>
</tr>
<tr>
<td>\textit{ka-yeissu}</td>
<td>‘they guard’</td>
</tr>
<tr>
<td>\textit{iṛešš aḥen}</td>
<td>‘he strews them (the water)’</td>
</tr>
</tbody>
</table>

\(^{14}\) Sequences of three homophonous consonants are not allowed. The three consonants are reduced to two e.g. \textit{xeffef} ‘be quick, be light’ > \textit{txeffet} ‘You are light/quick.’
1.10. Summary of stops - fricatives

Spirantisation is a historical process which makes fricatives out of stops. The behaviour of these spirantised consonants differs depending on the position; in some positions the stop is realised while in other positions the corresponding fricative is realised. In initial position, there is a strong tendency for the stops to appear. In medial position, stops and fricatives are in phonemic opposition. In final position, one in general finds stops after consonants and fricatives after vowels. (C = consonant, V = vowel. The fricative consonants ̱ḍ, ̱ḵ et ̱ḡ and ̱ḡg are very rare. C̱d is not attested):

<table>
<thead>
<tr>
<th>Initial position</th>
<th>Medial position</th>
<th>Final position</th>
</tr>
</thead>
<tbody>
<tr>
<td>b - ṣb</td>
<td>b - ṣb</td>
<td>Cb - Vb</td>
</tr>
<tr>
<td>t</td>
<td>t - ṭ</td>
<td>Ct - Vt</td>
</tr>
<tr>
<td>d - (ḏ)</td>
<td>d - ḏ</td>
<td>Cd - Vḏ</td>
</tr>
<tr>
<td>ḏ</td>
<td>ḏ - ḏ</td>
<td>(X - Vḏ)</td>
</tr>
<tr>
<td>k - ḵ</td>
<td>k - ḵ</td>
<td>Ck - Vk</td>
</tr>
<tr>
<td>g</td>
<td>g - ̱g</td>
<td>Cg - V̱g (g)</td>
</tr>
</tbody>
</table>

1.11. Spread of pharyngealisation

The consonants t, d, s, z, r, l have pharyngealised counterparts ṭ, ḏ, ṣ, ṣ, ṭ, and marginally ḻ. The geminate counterparts of these pharyngealised phonemes are ṭṭ, ṣṣ, ṭṭ, ṭṭ, ṭṭ, and the rare phoneme ḻḻ. A pharyngealised consonant causes the spread of pharyngealisation to other consonants which means that they also become pharyngealised. In principle, any consonant can be pharyngealised phonetically except for pharyngeals and laryngeals. The minimum domain of pharyngealisation spread is the syllable and the maximum is the prosodic word which includes verbal and nominal clitics. Furthermore, the spread of pharyngealisation depends on speech tempo (cf. Boukous 1990: 76 for Tashelḥiyt Berber). In the following examples pharyngealisation spreads over the whole word:

| İbaṭil       | > [ḻḇ'at'eḻ] | ‘boat’          |
| ṭṭažin       | > [ṯṯ'aẕ̌eṉ] | ‘tajine’        |
| ayeffet      | > [a[y̱'afˇəṯ] | ‘cattle’        |
| taẓuxt       | > [ṯaẓ̱ox̱ṯ] | ‘milk’          |
| tamelzėt     | > [ṯam̱'aḻẕi̱ṯ] | ‘type of plant’ |
| alažen       | > [aḻ'aẕen]  | ‘tomorrow’      |
| iṣeṭṭuhėn    | > [iṣ̱əṯ'oḥəṉ] | ‘sticks’        |
Pharyngealisation that spreads to a clitic:

\[
iqqr\text{ as} \quad \rightarrow \quad [iq^r\dot{\alpha}\text{ as}] \quad \text{‘he tells him/her’}
\]
\[
\text{šebbṛan as} \quad \rightarrow \quad [\text{š}^\text{o}b^\text{r}^\text{r}^\text{α}\text{ an}^\text{r}^\text{α}\text{ as}] \quad \text{‘they held for him’}
\]

It is by no means a rule that clitics are pharyngealised in this position, compare the following text excerpts:

\[
afeṛṛuž\text{ aḍ} \quad \rightarrow \quad [af^\text{o}r^\text{r}^\text{o}z\text{ aḍ}] \quad \text{‘this rooster’}
\]
\[
ṛṛḇiɛ\text{ aḍ} \quad \rightarrow \quad [ṛʃ^\text{b}^\text{b}^\text{e}^\text{e}\text{ aḍ}] \quad \text{‘this grass’}
\]

2. Vowels

The vocalic system of Ghomara Berber consists of three plain vowels $a$, $i$, $u$ and one short central vowel $e$ ([ə]; schwa).

2.1. Vocalic system

<table>
<thead>
<tr>
<th>Close</th>
<th>i</th>
<th>u</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid</td>
<td>$e$</td>
<td></td>
</tr>
<tr>
<td>Open</td>
<td>$a$</td>
<td></td>
</tr>
</tbody>
</table>

**Vowel $a$ - open-mid front unrounded vowel [IPA: e]**

In the pairs below the contrast between $a$ and other vowels is shown.

\[
tasaft \quad \text{‘chestnut tree’}
\]
\[
tasift \quad \text{‘small river’}
\]
\[
taslaṯ \quad \text{‘bride’}
\]
\[
asleṯ \quad \text{‘two years ago’}
\]
\[
itɛayan \quad \text{‘he is searching’}
\]
\[
ixayen \quad \text{‘he searched’}
\]
\[
mul \quad \text{‘owner’}
\]
\[
lmal \quad \text{‘property’}
\]
The vowel \( a \) \([ɛ]\) is realised as open back unrounded \([ɑ]\) in a pharyngealised environment, for example:

\[
\begin{align*}
\text{aṭaṛ} & \quad [\alpha \text{ṭaṛ}] \\
\text{aẓaṛ} & \quad [\alpha \text{ẓaṛ}]
\end{align*}
\]

‘leg’

‘root’

**Raising of final a**

In Ghomara, final \( a \) is pronounced as a short \([e]\) in word-final position in pausal context (at the end of a phrase, not in other positions). It is found with all types of word classes, although most examples are nouns because of their frequency in phrase-final position in texts.

\[
\begin{align*}
/g\ \text{ləhwa}/ & \quad > \quad [g\-\text{ləhwe}] \quad \text{‘in the rain’} \\
/\text{eṭima}/ & \quad > \quad [\text{ʔdime}] \quad \text{‘weak’ (F)} \\
/\text{ṭwila}/ & \quad > \quad [\text{tʰwile}] \quad \text{‘long’ (F)} \\
/\text{ṭqila}/ & \quad > \quad [\text{tʰqeле}] \quad \text{‘heavy’} \\
/\text{ʔaɣda}/ & \quad > \quad [\text{ʔawde}] \quad \text{‘lunch’} \\
/\text{ʔeɾbiyya}/ & \quad > \quad [\text{ʔaɾʰbiːyːe}] \quad \text{‘Arabic’} \\
/\text{mya}/ & \quad > \quad [\text{mje}] \quad \text{‘hundred’} \\
/\text{tamadda}/ & \quad > \quad [\text{temadda}] \quad \text{‘bird of prey’} \\
/\text{tamezgiḍa}/ & \quad > \quad [\text{temazgiḍa}] \quad \text{‘mosque’} \\
/\text{n tsa}/ & \quad > \quad [\text{n-tse}] \quad \text{‘of the cow’} \\
/\text{yemma}/ & \quad > \quad [\text{ʔemme}] \quad \text{‘mother’} \\
/\text{tamudā}/ & \quad > \quad [\text{temudā}] \quad \text{‘sow’} \\
/\text{g teẓḡa}/ & \quad > \quad [\text{ʔezɣe}] \quad \text{‘in the forest’} \\
/\text{assa}/ & \quad > \quad [\text{ʔesːe}] \quad \text{‘nowadays’}
\end{align*}
\]

When there is an adjacent (preceding) pharyngealised, velar, glotal, uvular or pharyngeal consonant vowel heightening does not occur. The following examples do not show vowel heightening in word final position in pausal context.

---

\(^{15}\) This vowel heightening is a well-known phenomenon in many Arabic dialects. It exists in differing degrees in the dialects of North-Western Morocco. In Anjra the vowel heightening always occurs in final position or in pausal position and extends from (non-heightened) \([\alpha]\) to \([i]\) (Vicente, 2000: 28-29). For instance the name *Maliḵa* becomes *Maliḵi* in such contexts. In Chefchaouen it is restricted to word-internal position. Its realisation is \([\alpha]\) (Moscoso, 2002: 27).
Examples of verbs are very few in texts, but they do exist as this example shows:

\[
yemma \text{ nn-es he-tzalla} \quad [jəmːɛ \text{ nːəs hətʃəlːɛ}]
\]

mother of-3S 3FS pray:IMP

‘His mother prays.’

Vowel /i/ near-close front unrounded vowel [IPA: i]
The vowel /i/ is realised as a near-close front unrounded vowel [ɪ]. In certain environments, often adjacent to an alveolar consonant /i/ is realised as a close front unrounded vowel [i], e.g. in the following examples:

\[
tissezzraṯan \quad [tɪzəzːreθɛn] \quad \text{heyforks’}
tiskert \quad [tɪskərt] \quad \text{garlic’}
akkil \quad [ɛkːɪl] \quad \text{curdled milk’}
inu \quad [ɪnu] \quad \text{my’}
aḡḍi \quad [ɛɣðɪ] \quad \text{jackal’}
izi \quad [izi] \quad \text{fly’}
\]

The contrast between i and other vowels is illustrated in the following examples:

\[
i - a
\]

\[
ssirḏax \quad \text{‘I wash’ (AOR)}
ssarḏax \quad \text{‘I washed’ (P)}
\]

\[
aḡḍi \quad \text{‘jackal’}
avda \quad \text{‘dog’}
\]

\[
aḡelzim \quad \text{‘pick-axe’}
iḡelzam \quad \text{‘pick-axes’}
\]
Vowel /i/ is realised as a close-mid front unrounded /e/, for example:

- *aṭil* [ɑtˁelˁ] ‘grape’
- *aḡṭiṭ* [ɑɣtˁetˁ] ‘bird’

Vowel /u/ is realised as a close back rounded vowel [u]. When in contact with a velar, uvular or pharyngeal consonant it is realised as a near-close back rounded vowel [ʊ], e.g.

- *n uɣyul* [n ʊʁjul] ‘of the donkey’

The vowel is realised as a close-mid back rounded vowel [o] when influenced by a pharyngealised consonant, for example:

- *teḵṣuṭ* [təxsˁotˁ] ‘she was afraid’

Below we contrast /u/ with schwa.

Vowels in borrowings from European languages, mainly from Spanish, are realised in the same way as other vowels, for example:

- *stilus* [stɪlus] ‘pens’
- *rrigalus* [rːɪgɑlus] ‘presents’
- *lebyixus* [bːyɪxus] ‘old men’
- *lǧaṭis* [lǧatˁis] ‘sailing boats’
2.2. Diphthongs

A number of nouns which are borrowed from Arabic have the diphthongs aw [au] and ay [ai]. These are historical diphthongs in Arabic (they cannot be contrasted with (non-existent) au and ai and therefore they do not form minimal pairs). In mainstream Moroccan dialects the diphthongs have become monophthongs. The forms with diphthongs are sometimes in free variation with forms that have u and i. Some examples are:

**Diphthong aw**

- ṛrawzd ‘rice’
- lhawṭ ‘vegetable garden’
- lhayṭ ‘wall’
- ttawḇ ‘cloth’
- llawn ‘colour’
- lnawža ‘wave’

**Diphthong ay**

- lɣays ‘mud’
- lxayṭ ‘thread’
- lɣayṭa ‘flute’
- ssayf ‘sword’

However in some cases the historical diphthong has become a monophtong, e.g.

- lḥit ‘room’

An example of a noun which has aw ~ u is:

- ššawṭ ~ ṣuṭ ‘voice’
2.3. Mid central unrounded vowel e [ə] (schwa)

2.3.1. Phonetic realisation

Schwa is realised phonetically in multiple ways. Different realisations are governed by adjacent consonants, but also by intonation. Below a number of consonantal environments are treated. Schwa can be realised as:

- A short near-open central vowel [ə] when immediately preceding x, y, h, q and e, for example:

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>lwext</td>
<td>[lwəxt]</td>
<td>‘time’</td>
</tr>
<tr>
<td>mdewwex</td>
<td>[mdəwːəx]</td>
<td>‘having a headache’</td>
</tr>
<tr>
<td>ifsey</td>
<td>[ifəɾə]</td>
<td>‘He went out.’</td>
</tr>
<tr>
<td>ṣṣbeḥ</td>
<td>[sˁːβəh]</td>
<td>‘morning’</td>
</tr>
<tr>
<td>inneːnec</td>
<td>[ɪnːɐʕnɐʕ]</td>
<td>‘It flourished.’</td>
</tr>
<tr>
<td>ḥmeq</td>
<td>[ħməq]</td>
<td>‘crazy’</td>
</tr>
</tbody>
</table>

- [ɑ] when it precedes or is between pharyngeal(ised) consonants, for example:

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ifekkeɾ</td>
<td>[ɪfəkːɑɾˁ]</td>
<td>‘He grabbed.’</td>
</tr>
<tr>
<td>inṭeɾ</td>
<td>[ɪntˁɑrˁ]</td>
<td>‘He flew.’</td>
</tr>
</tbody>
</table>

In some cases there is no difference in pronunciation between /ə/ and /a/. Compare the realisation of the Aorist form of the following verb which has /ə/ underlyingly and the Imperfective form which has /a/ underlyingly.

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>iferːh</td>
<td>[ɪfəːɾːɑħ]</td>
<td>‘He makes happy.’</td>
</tr>
<tr>
<td>itfərːrah</td>
<td>[ɪtfəːɾːɑħ]</td>
<td>‘He always makes happy.’</td>
</tr>
</tbody>
</table>

When a clitic is added the difference shows up. The schwa dissapears whereas the /a/ remains in its position (cf. 2.3. above for schwa insertion rules).

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>iferːh ahen</td>
<td>[ɪfəːɾːɑħ ęhən]</td>
<td>‘He makes them happy.’</td>
</tr>
<tr>
<td>itfərːrah ahen</td>
<td>[ɪtfəːɾːɑħ ęhən]</td>
<td>‘He always makes them happy.’</td>
</tr>
</tbody>
</table>

- Schwa is realised as [u] and [i] before the semivowels ww and yy. For example:

<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xewwef</td>
<td>[xuwwəf]</td>
<td>‘to scare’</td>
</tr>
</tbody>
</table>
2.3.2. Phonemic status

Schwa has a special status as a vowel in that its position is partly predictable (cf. Kossmann 1995). Schwa does not appear in open syllables and in final position. Nouns with Berber morphology, with one exception, allow for phonetic schwa which is predictable according to syllable structure, while for many Arabic nouns schwa placement is not predictable. The placement of schwa is predicted by the following procedure: In nouns schwa is inserted from right to left in a cc-string yielding cec (except when there is a -t suffix, see below). In the next example schwa insertion applies to the noun.

\[ aḵmz > aḵmez \]

‘nail’

Schwa is not allowed in an open syllable. If it is inserted in the first cc-sequence from the right side and it appears in an open syllable, the resulting form is ungrammatical.

\[ iḵmzan > *iḵmezan \]

‘nails’

Therefore schwa must be reinserted in the adjacent left CC sequence to yield the correct form.

\[ iḵmzan > *iḵmezan > iḵemzan \]

‘nails’

The same applies to other nouns of the same type as well as other types of nouns, for example:

\[ amḍer \] ‘branch’
\[ imeḍren \] ‘branches’
\[ awrez \] ‘heel’
\[ iwerzen \] ‘heels’
\[ azreɣmel \] ‘centipede’
\[ izerɣemlen \] ‘centipedes’

Some Arabic-morphology nouns abide by the same rule, for example when a feminine suffix is added to a masculine noun:
However, there is a group of Arabic-morphology nouns in which the placement of schwa is not predicted by the procedure above. For these nouns we have to assume an underlying schwa at the phonological level\(^\text{16}\). Schwa is not inserted from right to left in a cc-string but can only be analysed as being present underlyingly, as in these examples\(^\text{17}\).

<table>
<thead>
<tr>
<th>M:SG</th>
<th>F:SG</th>
</tr>
</thead>
<tbody>
<tr>
<td>lǧmel</td>
<td>ṭǧeml-a</td>
</tr>
<tr>
<td>‘male camel’</td>
<td>‘female camel’</td>
</tr>
</tbody>
</table>

Schwa is not inserted from right to left in a cc-string but can only be analysed as being present underlyingly, as in these examples:

<table>
<thead>
<tr>
<th>M:SG</th>
<th>F:SG</th>
</tr>
</thead>
<tbody>
<tr>
<td>lfeṛn</td>
<td>nnefs</td>
</tr>
<tr>
<td>‘clay oven’</td>
<td>‘breath’</td>
</tr>
<tr>
<td>ṣṣehd</td>
<td>lferg</td>
</tr>
<tr>
<td>‘heat’</td>
<td>‘swarm’</td>
</tr>
<tr>
<td>lweḥš</td>
<td></td>
</tr>
<tr>
<td>‘animal’</td>
<td></td>
</tr>
</tbody>
</table>

There is one Berber-morphology noun in our corpus which has schwa in an unexpected position.

<table>
<thead>
<tr>
<th>M:SG</th>
<th>F:SG</th>
</tr>
</thead>
<tbody>
<tr>
<td>azref</td>
<td>tazreft</td>
</tr>
<tr>
<td>‘road’</td>
<td>‘path’</td>
</tr>
</tbody>
</table>

Schwa insertion applies in the same way to verbs. Schwa is inserted in a cc-string from right to left in Berber-morphology as well as in Arabic-morphology verbs. Compare the following Imperative singular and plural forms of the Berber-morphology verb ‘dig’ and the Arabic-morphology verb ‘cultivate’.

---

\(^{16}\) We basically follow the analysis proposed by Kossmann (1995) for Figuig Berber and other dialects to which structure-based syllabification applies.

\(^{17}\) Marçais (1977:93) notes that the schwa in these nouns is often placed before the liquids l, n and r and the labials b, f and m. As the examples above show this is only a tendency.
Sometimes schwa is found following the first consonant in a ccc-stem resulting in cecc-strings instead of the expected ccec. This type is restricted to the following verbs in our corpus.

\[\begin{array}{ll}
\text{ḥfeṛ} & \text{‘dig!’} \\
\text{ḥefṛ-awet} & \text{‘dig!’ (PL)} \\
\text{fleḥ} & \text{‘cultivate!’} \\
\text{felḥu} & \text{‘cultivate!’ (PL)} \\
\end{array}\]

Some Aorist forms of cc verbs adopt the form ecc instead of the expected cec, for example:

\[\begin{array}{ll}
\text{efk} & \text{‘give’} \\
\text{ewṯ} & \text{‘hit’} \\
\end{array}\]

Other cc verbs show the cec form:

\[\begin{array}{ll}
\text{ẓeṛ} & \text{‘see’} \\
\text{neɣ} & \text{‘kill’} \\
\end{array}\]

Verbs of the cccc type, which include reduplicating verbs, allow for three consonants in a row as in the following examples. Schwa is not found in open syllable.

\[\begin{array}{ll}
\text{perpren} & (\text{< *prepren}) \\
\text{selsl-awet} & (\text{< *slesl-awet}) \\
\text{beryz-awet} & (\text{< *beryez}) \\
\end{array}\]

Schwa is found optionally at the beginning of a verb if there is no prefix and there is an initial consonant cluster or a geminate consonant, for example:

\[\begin{array}{ll}
\text{(e)freq} & \text{‘divide!’} \\
\text{(e)nda} & \text{‘go!’} \\
\text{(e)bb} & \text{‘take!’} \\
\end{array}\]

If a full vowel or schwa follows the first consonant, it is not possible to have initial schwa, for example:

\[\text{ferq-awet} \quad \text{‘divide!’ (PL)}\]
Schwa insertion applies at the word level, which includes clitics. The rules spelled out above thus apply to the clitics as well, such as the direct and indirect object pronouns (cf. III.11. for pronouns). Compare the following examples:

*inkeř*  
‘he denied’

*inekř at*  
‘He denied her.’

*iɣeṛs as i flan*  
‘He slaughtered for someone.’

The following examples show that schwa does not change position when followed by a noun which begins with a vowel, in other words the rule does not apply across word boundaries.

*iřee ašaqur ahen*  
‘He lifted the axe.’

*anka iḵšem aḡdı*  
‘When the jackal went in.’

*iɣes tayatt*  
‘He slaughtered a goat.’

When a verbal subject suffix of the shape ec is followed by a vowel-initial clitic, it becomes a in order to prevent schwa in open syllable, e.g.

*rewlen leḥšam nnes*  
‘His children fled.’

*rewlan as (*rewlen as)*  
‘They fled from him.’

*tṭfan as teṯ (*tṭfen as teṯ)*  
‘They caught her for him.’

The rule only concerns the suffixed subject markers and does not apply to the base of the verb. Compare for example:

*išebbṛ ay*  
‘He caught me.’

*šebbṛan ay*  
‘They caught me.’

In sum, schwa is largely predictable through a set of rules in nouns as well as in verbs. There are two exceptions of the following type: the nominal feminine singular suffix -t is not part of the schwa insertion rule. The other exception is borrowed nouns of the type CeCC which have unpredictable schwa. For verbs the verbal complex, that is the verb and its clitics, is the domain for which schwa insertion applies. ecc and wecc verbs form an exception to the rules as well. Finally, cccc-verbs allow ccc sequences without schwa insertion.
3. Assimilations

In this section consonant assimilations within the word and over word boundaries (sandhi) are treated together. Virtually all regular assimilations concern alveolar stops and post-alveolar fricatives. There are a number of minor assimilations of other consonants which are in contact. When two alveolar stops are in contact there is a difference between word internal assimilations and assimilations over word boundaries. Within the word, the result is a geminate, while over word boundaries (including verbal clitics), the result is a simple stop. Voice assimilation is always regressive, except for one case.

3.1. Regressive voice assimilation

t + d > dd

tdafen > ddafen ‘to fight’
itdaḡam > iddaḡam ‘he fetches water’

d + t > t

tabuseyyaḏt > tabuṣeyyat ‘type of snake’
taeuqqadaḏt > taeuqqat ‘knot’

Complete assimilation does not obligatorily take place when a t suffix is added. Sometimes there is only regressive voice assimilation, for example:

d + t > tt

aheddad ‘a smith’ > taheddatt ‘practice of being a smith’
- > taherruṯt ‘type of insect’

t + d > d

amka t d ibb > amka d ibb ‘When he brought it.’
themmudha > themmu dha ‘You are warming up here.’
iğ at das > iğ a das ‘He left her there.’

A special case is the assimilation of the masculine and feminine third person DO pronoun to the deictic clitic d / id, for example (cf. also Ⅳ.3.3.5. syntax):

tebb as t id > tebb as d id ‘She has brought him hither.’
tebb as tet d > tebb as ded ‘She has brought her hither.’

In sandhi there is regular voice assimilation.
\[d + t > t t\]

\[\text{isafey d taceyyalt} \rightarrow \text{isafey t taceyyalt}\]

‘He took out the girl.’

\[\text{hedda d tamedda} \rightarrow \text{hedda t tamedda}\]

‘The eagle came.’

The exception the deictic clitic \(d / id\) when it is in preverbal position, for example:

\[d + t > d\]

\[\text{smana a d tedda} \rightarrow \text{smana a d edda}\]

‘Where did she come from?’

\[\text{ma ḡtaẓ a d teqqul} \rightarrow \text{ma ḡtaẓ a d eqqul}\]

‘He did not want to return.’

\[a d teqqul \rightarrow a d eqqul\]

‘She will come back.’

There is regular devoicing of sibilants when they precede voiceless \(t\). The masculine and the feminine forms below show this process.

\[z + t > st\]

\[\text{aeebb}b\text{iz} \rightarrow \text{tacebb}b\text{ist}\]

‘calf’

\[\text{amuggaz} \rightarrow \text{tamuggast}\]

‘stick to pin animals’

\[ż + t > şt\]

\[\text{amaẓuẓ} \rightarrow \text{tamaẓuṣt}\]

‘last born’

\[ž + t > şt\]

\[\text{ameɛṛaž} \rightarrow \text{tameɛṛašt}\]

‘someone who limps’

In sandhi regressive voice assimilation takes place as well, for example:

\[ž + š > š š\]

\[\text{mahṭṭraž ši} \rightarrow \text{mahṭṭraš ši}\]

‘He does not limp.’

\[t + ż > d ż\]

\[a tẓall \rightarrow a dżall\]

‘She will pray.’

\[š + d > ż d\]

\[š dεṣṣad \rightarrow ž dεṣṣad\]

‘You will hunt/fish.’

\[s + d > z d\]

\[\text{tenn as d a ceqlet.} \rightarrow \text{tenn az d a ceqlet}\]

‘She told him: will you recognise..?’
When alveolar s and z precede palatal š and ž there is regressive assimilation to place of articulation. The result is a geminate consonant.

\[ s + Š > Š Š \]
\[ ma yres ši \quad > \quad ma yreš ši \quad ‘He does not have’ \]

\[ z + Ž > Ž Ž \]
\[ iggez žehha \quad > \quad iggež žehha \quad ‘Zehha went down.’ \]

Finally, there is this irregular assimilation:

\[ bb + š > ppš \]
\[ bbšel \quad > \quad ppšel \quad ‘onions’ \]

3.2. Assimilation to pharyngealised consonants

Pharyngealised alveolar stops also have regressive voice assimilation. The resulting consonant is always pharyngealised.

\[ t + ð > ðð \]
\[ ka-tḍɛaf \quad > \quad ka-dḍɛaf \quad ‘She loses weight.’ \]
\[ itḍeṣṣa \quad > \quad iḍḍeṣṣa \quad ‘He laughs.’ \]

\[ t + ŏ > ŏň ŏň \]
\[ itṭewwal \quad > \quad iṭṭewwal \quad ‘He makes longer.’ \]
\[ itṭeḥḥaḵ \quad > \quad iṭṭeḥḥaḵ \quad ‘He makes laugh.’ \]

\[ ť + t > ţţ ţţ \]
\[ tamaṭuṭt \quad > \quad tamaṭuṭt \quad ‘dirty woman’ \]
\[ tafeṛkuṭt \quad > \quad tafeṛkuṭt \quad ‘piglet’ \]

3.3. Assimilation of n and l

There are different assimilations of /n/ and /l/. Assimilations can be progressive as well as regressive.

\[ n + l > ll \sim nn \]
When the preposition n ‘of’ is assimilated to the Arabic article l, a geminate ll or nn is the result, e.g.
In other cases a single l is the result.

\[ \text{iḵšem fxessen lweḥš} \rightarrow \text{iḵšem fxesse lweḥš} \]  ‘Animals entered upon them.’

\[ \text{n + r > rr} \]

This assimilation takes places only when the n is the verbal prefix, e.g.

\[ \text{nrennu} \rightarrow \text{rrennu} \]  ‘We add.’

\[ \text{l + n > nn} \]

Within the word boundary the result is a geminate.

\[ \text{a nerwel fḥalna} \rightarrow \text{a nerwel fḥanna} \]  ‘We will flee.’

\[ \text{l + n > n} \]

Outside the word boundary the l is deleted.

\[ \text{g ul n teryalt…} \rightarrow \text{g u n teryalt…} \]  ‘in the middle (heart) of the basket’

\[ \text{kul nnḥar} \rightarrow \text{ku nnḥar} \]  ‘every day’

The preposition dar ‘to’ loses its final r when followed by l (cf. III.13.2.3. for this preposition). This context often appears, as many borrowed Arabic nouns have the article /l/ initially.

\[ \text{dar lbir} \rightarrow \text{da lbir} \]  ‘to the well’

The n assimilates to the place of articulation of the velar and uvular consonants and labial stops, e.g.

\[ \text{nqetṭe} \rightarrow \text{nqetṭee} \]  ‘We cut.’

\[ \text{š a ngx} \rightarrow \text{š a ngx} \]  ‘I will push.’

\[ \text{n-bhɛt} \rightarrow \text{m-bhɛt} \]  ‘be astonished’
3.4. Long distance assimilation and metathesis

There is irregular distant voicing of voiceless alveolar consonants when they are followed by
the deictic clitic d surrounded by voiced consonants (and vowels), for example asen
becomes azen, and the final t of the verb becomes d.

he-ṭṭitu  a  azen = d = te-bb
3FS-go:1  AD  3PL:IO = DC = 3FS-take:A
‘She goes to bring for them.’

te-bba-d = ay = d  aṭerraś  n  waman
2S-take:Ρ-2S = 1S:IO = DC  jar:EL  of  water:EA
‘Bring me a jug of water.’

The particle d ‘hither’ and the first person plural prefix n optionally change position18.

a ḵ d nerry ah d  >  a ḵ nderry ah d  ‘We will return it for you.’
a d neqqul  >  a ndeqqul  ‘We will return.’

3.5. Voicing of first person singular suffix -ax

The first person singular suffix is -ax (cf. III.7.2. morphology). In the next example the
verbal suffix is followed by a voiceless consonant:

ẓẓeṛqpax  tiḡura   inu
close:P-1S  doors:EL  POSS-1S
‘I close my doors’

When followed by a vowel or a voiced consonant the first person singular suffix becomes -ay, for example:

nn-ay = ak  i-ɛella
say:P-1S = 2MS:IO  3MS-go.up:P
‘I told you he went up’

d  a  xebbɛ-ay  zdu  ugeḡuf
CRT  AD  hide:A-1S  under  bush:EA
‘I will hide under a bush’

18 In some verbs such as aḡum ~ daḡum the d has become a fixed element of the verb.
3.6. The Arabic article l-

The Arabic article l- assimilates regularly to post-alveolar consonants, some examples are:

- **ddin** ‘religion, debt’
- **ssḇeɛ** ‘lion’
- **ttawḥ** ‘cloth’
- **zzif** ‘handkerchief’
- **ššfeṛ** ‘eyelid’
- **ṛṛas** ‘cape’
- **ṭṭḇiḇ** ‘doctor’

In many Moroccan Arabic dialects the article assimilates to ž yielding žž. In Ghomara ž becomes an affricate ġ under the influence of l-. The article does not assimilate, for example:

- **lǧmel** ‘camel’
- **lǧeld** ‘skin, hide’
- **lǧim** ‘pocket’
- **lǧen** ‘ghost’

Furthermore, the article can assimilate to the labial consonants b, p, m, f, the velar stop k and the uvular stop q. The article can be assimilated completely, with a geminate consonant as a result, or partially resulting in a hardly audible l. This (partial) assimilation only takes place if a consonant cluster follows the article. If the article is followed by a consonant and a vowel there is no assimilation. If asked to pronounce the word slowly, the speakers pronounce the article and the geminate consonant. In that case there is a very short schwa between the article and the geminate. The article is therefore put between brackets in these examples. Compare the following nouns.

- **lpeṣṣita** ‘peseta’
- *(el)ppṣaṣet* ‘pesetas’
- **lberdaɛ** ‘saddle’
- *(el)bbḥar* ‘sea’

In the words leerbiyya ‘Arabic’ and aṛbbɛa ‘four’ have a geminate bb. This might be the result of the preceding r which has the same effect as the article l-.

- **lmalik** ‘king’
3.7. Dropping of final consonants

Certain consonants in final position can be elided in Ghomara Berber (and Arabic). Following a vowel (a, i, u, e) the consonants n, l, ḏ and ṭ can disappear. This differs according to speech tempo. Some examples are:

n
s warsin > s warsi 'with hunger'

l
itseḡal > itseḡa 'It records.'

d
ɛawed > ɛawe 'again'

ṭ
sskuṭ > sski 'be quiet'

3.8. Vocalic sandhi

When there are two consecutive vowels the following procedures take place:

Insertion of a semi-vowel

A glide y is inserted between a + a, a + i and i + a, for example:

lḥedra ahen > lḥedra y ahen 'that talk'
y a xeeyyal > y a xeeyyal 'only a boy'
idda ɪdɛs > ɪdday ɪdɛs 'He went with him.'
<table>
<thead>
<tr>
<th>Vowel becomes semi-vowel</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a + i &gt; a y</td>
<td></td>
</tr>
<tr>
<td>idda išebber</td>
<td>&gt;</td>
</tr>
<tr>
<td>netta isker</td>
<td>&gt;</td>
</tr>
<tr>
<td>ddwa inši</td>
<td>&gt;</td>
</tr>
<tr>
<td>u + i &gt; u y</td>
<td></td>
</tr>
<tr>
<td>š ifelḥu ibawen</td>
<td>&gt;</td>
</tr>
<tr>
<td>zdu izref inši</td>
<td>&gt;</td>
</tr>
<tr>
<td>i + i &gt; y + i</td>
<td></td>
</tr>
<tr>
<td>maši id izref</td>
<td>&gt;</td>
</tr>
<tr>
<td>a + u &gt; a w</td>
<td></td>
</tr>
<tr>
<td>ya lfurma u šafi</td>
<td>&gt;</td>
</tr>
<tr>
<td>ya usammer</td>
<td>&gt;</td>
</tr>
<tr>
<td>i + u &gt; i w</td>
<td></td>
</tr>
<tr>
<td>i ucyyal</td>
<td>&gt;</td>
</tr>
<tr>
<td>u + a &gt; w a</td>
<td></td>
</tr>
<tr>
<td>iddu am siha daryan</td>
<td>&gt;</td>
</tr>
<tr>
<td>hettiṯu azen d ebb</td>
<td>&gt;</td>
</tr>
</tbody>
</table>

**Vowel loss**

<table>
<thead>
<tr>
<th>a + a &gt; a</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>If two a’s of a verb and a noun come into contact, the result is reduction to one a. Otherwise a glide y is inserted (see above).</td>
<td></td>
</tr>
<tr>
<td>idda argaz</td>
<td>&gt;</td>
</tr>
<tr>
<td>idda ayiżd</td>
<td>&gt;</td>
</tr>
<tr>
<td>u + u &gt; u</td>
<td></td>
</tr>
<tr>
<td>zdu ugeġuf</td>
<td>&gt;</td>
</tr>
</tbody>
</table>
4. Labialisation
Ghomara Berber has a number of labialised velar and uvular consonants. The short labialised consonants are \( k^w, k^w, \check{g}^w, g^w, x^w, y^w \), the geminate consonants are \( kk^w, gg^w, qq^w \).

4.1. Realisation of labialisation
Labialisation of a consonant is realised phonetically in different ways. In the following the phonetic realisation will be discussed. Labialised consonants will be represented by the abstract character \( G^w \). The behaviour of labialised consonants can be captured by a few basic rules. However, some specification is required.

Rule 1
The following rule applies to the base of the word: If there is a schwa position adjacent to the labialised consonant, this position is realised as \( [u] \). Phonetically it is indistinguishable from the plain vowel /\( u \)/.

\[
eG^w c > uGc \\
i-suyn-an /i-sey^w n-an/ \quad \text{‘ropes’}
\]
\[
\check{s} a lukm-et / \check{s} a lek^w m-et/ \quad \text{‘You will arrive.’}
\]
\[
cG^w e > cGu \\
a-suyn /a sy^w en/ \quad \text{‘rope’}
\]
\[
ssenkur /ssenker/ \quad \text{‘make stand up’}
\]
\[
eG^w > uG \\
\check{s} a ffiy /\check{s} a ffey^w/ \quad \text{‘He will exit.’}
\]

In cases where a three-consonant cluster appears in which the labialised consonant is in the middle, the (non-adjacent) schwa in the base is realised as \( u \). A schwa position in the affixes can not be realised as \( u \).

\[
eG^w c > ucGc \\
\check{s} a ssunkr-et \quad \text{‘You will make stand up.’}
\]

Rule 2
If there is no schwa adjacent to the labialised consonant, labialisation is basically realised on a consonant position. In consonant clusters, it is the first consonant of the cluster that takes the labialisation, irrespective of whether it is a velar/uvular consonant or not – put
otherwise, in Gʷ-final clusters the labialisation is transferred to the whole cluster. Rounding of the lips already starts before the velar/uvular consonant is uttered.

\[ G^w c V \rightarrow G^w c V \]
\[ a-\gamma l a l \rightarrow 'loam pot' \]

\[ c G^w V \rightarrow c^w G V \]
\[ t i-\z y a l \rightarrow 'ladles' \]

\[ G^w c e \rightarrow G^w c e \]
\[ a-k s e r \rightarrow 'piece of bread' \]

Rule 1 only applies within the base of a word; schwa which is part of an affix is not coloured by a preceding labialised consonant; instead the labialisation is realised on (and before) the labialised consonant (cluster), e.g.:

\[ ec G^w \rightarrow u c G \]
\[ \dot{s} a s s u y - e m \rightarrow 'You will light.' \]

In the case where there is no schwa preceding the cluster, the whole consonant cluster takes the labialisation.

\[ c G \rightarrow w c G \]
\[ \dot{s} a f f u y - e m \rightarrow 'You (PL) will go out.' \]

In the transcription used here, we use a phonetic transcription of what is phonemically labialisation, writing \( u \) where it is realised as \( u \) (i.e. in schwa position) and, where labialisation is not realised as \( u \), with a \( \wedge \) on the labialised member of the consonant cluster, i.e.

\[ \dot{s} a f f u y \rightarrow /\dot{s} a f f e y^u/ \rightarrow 'He will go out.' \]
\[ \dot{s} a f f y^w - e m \rightarrow /\dot{s} a f f y^w e m/ \rightarrow 'You will go out.' \]

4.2. Analysis of labialisation

As follows from the presentation above, an adjacent labialised consonant causes \( /e/ \) to be pronounced \( /u/ \). This pronunciation leads to a merger with the plain vowel \( /u/ \). The difference between \([u]\) as an allophone of \(/e/\) and \([u]\) as a realisation of \(/u/\) can only be established on the basis of the general phonotactic restrictions to the placement of schwa
(see 2.3.) which also apply to its allophones, including [u]. The vowel /e/ cannot stand in an open syllable. On the other hand, there is no restriction whatsoever to having the plain vowel phoneme /u/ in an open syllable. As a result, [u] (/e/) disappears in contexts where it would be in an open syllable, while [u] (/u/) is maintained. This can be shown by comparing the Imperative forms of two verbs. In the Imperative singular they both have [u]:

A.  (e)qqur  ‘dry up!’  IMP.S
B.  (e)qqul  ‘return!’  IMP.S

When the plural Imperative marker is added, they behave differently. In example A u maintains its position while in example B u shifts to initial position.

A.  qqur-awet  ‘dry up!’  IMP.PL
B.  uqql-awet  ‘return!’  IMP.PL

The same happens in the next examples in which the difference between fixed and flexible u shows up.

A.  (e)kku  ‘dry up!’  IMP.S
    (e)kkw-awet  ‘dry up!’  IMP.PL
B.  (e)kkur  ‘stand up!’  IMP.S
    ukkr-awet  ‘stand up!’  IMP.PL

From this, we conclude that the verbs in examples A have a plain vowel /u/ (/eqqur/, /ekku/), while the [u] in the other verbs is a realisation of the labialisation of the adjacent consonant on a contingent schwa (i.e. /eqqwel/, /ekkwel/). There exists an opposition between pre-labialised realisations and forms which have a genuine /w/. In pre-labialised realisations, schwa is not inserted where expected according to schwa-insertion rules, while (under the right circumstances) there is no impediment to inserting schwa after /w/.

Compare the following examples:

A.  š a weylem  ‘You (PL) will be stuck.’
B.  š a uqqlem (*š a weqqlem)  ‘You (PL) will return.’

It is impossible to insert schwa in cases like example B between the perceived w and the following consonant.

Our corpus contains one minimal pair which shows that labialisation is phonological.
A. *aylal*  
   ‘sea snail’

B. *aylal*  
   ‘loam pot’

In some words, labialisation is optional:

\[ tayzwalt \sim tawzalt^{19} \]  
   ‘bogue’ (fish sp.)

\[ tizyal \sim tizyal \]  
   ‘ladies’

\[ ney \sim nuy \]  
   ‘kill!’

\[ ffey \sim ffuy \]  
   ‘go out!’

\[ s\ a\ ryen \sim s\ r\"y\en \]  
   ‘They will be lit.’

\[ ffy-awet \sim uffy-awet \]  
   ‘go out!’ (PL)

\[ lkem \sim lkum \]  
   ‘arrive’

There is one word which in an irregular manner, allows labialisation to be realised both as pre- and as post-labialisation:

\[ taxu\st \sim ta\"x\est \]  
   ‘molar tooth’

As mentioned above, when labialisation is realised by the allophone [u] of schwa, it is only possible to establish its phonological interpretation because of the existence of other forms. Of course, there are quite some words for which this is impossible to ascertain. This is especially the case of words which have no forms where /e/ would appear in an open syllable, e.g.

A. *tayushman\rt*  
   ‘jaw’

B. *tiusman\ran*  
   ‘jaws’

There is nothing that allows us to decide whether these forms are phonologically /tayushman\rt/, /tiusman\ran/ or /taw\"esman\rt/, /ti\"esman\ran/.

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19 The Berber-morphology noun *tayzalt* ‘bogue’ is used in the neighbouring Arabic dialects and in the Arabic-speaking city Tetouan as well. The neighbouring Arabic dialects do not show the same type of (pre)labialisation as Ghomara Berber.