Regular and Irregular Imperfective conjugations in Berber languages

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I. Imperfective formation

Processes to form Imperfective in Berber:
  i. prefixation of the augment /t-/ to the basic stem,
  ii. gemination of a segment in the stem,
  iii. insertion of a vowel, mostly /a/, in the stem
  iv. accent on first vowel (Tamashek variety)

(1)

<table>
<thead>
<tr>
<th>Aorist</th>
<th>Imperfective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamazight</td>
<td>tamazight</td>
</tr>
<tr>
<td>“stamp”</td>
<td>akel</td>
</tr>
<tr>
<td>“get cold”</td>
<td>kram</td>
</tr>
<tr>
<td>“speak”</td>
<td>siwol</td>
</tr>
<tr>
<td>Kabyle</td>
<td>Urar</td>
</tr>
<tr>
<td>“play”</td>
<td>tturaar</td>
</tr>
<tr>
<td>“plough”</td>
<td>kroz</td>
</tr>
<tr>
<td>“camp”</td>
<td>sdar</td>
</tr>
<tr>
<td>Tashlhiyt</td>
<td>Tashlhiyt</td>
</tr>
<tr>
<td>“go back”</td>
<td>ruh</td>
</tr>
<tr>
<td>“stand up”</td>
<td>nkr</td>
</tr>
<tr>
<td>“do”</td>
<td>skar</td>
</tr>
<tr>
<td>Tamashek</td>
<td>Tamashek</td>
</tr>
<tr>
<td>“bray”</td>
<td>dur</td>
</tr>
</tbody>
</table>

“enter”  ḏ33al  ṭ33el
“fight”  ḏknas  kūnnes

- Vowel insertion + /t-/ prefixation (e.g. xdm ⇒ ttxdam “work”, Tashlhiyt)
- Vowel insertion + gemination (e.g. ḏknas ⇒ kūnnes “fight”, Tamashek).
- Prefixation never combines with gemination, except for a few mono-consonantal verbs (e.g. g ⇒ ttgga “be”, Tashlhiyt).

(2) Geminated Imperfective

Focus will be made on gemination at the Imperfective stem in Tamazight, Kabyle, Tamashek and Tashlhiyt Berber varieties.

Regular verbs merely geminate a stem consonant.
Irregular verbs involve both gemination and affixation, e.g. gn ⇒ ggan “sleep”; g ⇒ ttgga “be" (Tashlhiyt)

(3) Aims

a. Imperfective gemination is a templatic-based mechanism.
b. Regular and irregular verbs behave templatically similar: they use the same template to form their Imperfective.
c. Surface irregularity follows from templatic constraints.

II. Template Morphology

(4) Classical Arabic Verb conjugation (McCarthy 1979, 1981)

<table>
<thead>
<tr>
<th>Form</th>
<th>Root</th>
<th>Template</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>CVVCV</td>
<td>faal</td>
</tr>
<tr>
<td>II</td>
<td>CVCCVC</td>
<td>faayal</td>
</tr>
<tr>
<td>III</td>
<td>CVVCV</td>
<td>faayal</td>
</tr>
<tr>
<td>IV</td>
<td>CVCCVC</td>
<td>faayal</td>
</tr>
<tr>
<td>V</td>
<td>CVCCVC</td>
<td>faayal</td>
</tr>
<tr>
<td>VI</td>
<td>CVCCVC</td>
<td>faayal</td>
</tr>
<tr>
<td>VII</td>
<td>CVCCVC</td>
<td>faayal</td>
</tr>
</tbody>
</table>

1 /t/- quantity variation is not examined in this paper.
2 Tamazight, Tamashek, Kabyle and Tashlhiyt are spoken in the Middle Atlas range in Morocco, Mali, Northeast Algeria and Southwest Morocco, respectively.
3 Acute and grave accents stand for Imperfective and default accents, respectively. /a/ and /a/ are analysed as being shorter than other vowels in Tamashek (cf. Heath 2004).
(5) Guerssel & Lowenstamm (1993)
- The number of templates listed in (4) are reduced by suggesting that CA verbal forms use a unique template as given in (6):

(6) CV[CV]CVCV

(7) forms II, III, IV and VII of the root ktb "write":

a. Form II b. Form III

```
<table>
<thead>
<tr>
<th>k</th>
<th>t</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>V</td>
<td>C</td>
</tr>
<tr>
<td>a</td>
<td>a</td>
<td></td>
</tr>
</tbody>
</table>
```

[kattab] [kaatab]

```
<table>
<thead>
<tr>
<th>k</th>
<th>t</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>V</td>
<td>C</td>
</tr>
<tr>
<td>a</td>
<td>a</td>
<td></td>
</tr>
</tbody>
</table>
```

[?aktab] [nkatab]

(8) Classical Arabic internal plurals

<table>
<thead>
<tr>
<th>sg</th>
<th>pl</th>
</tr>
</thead>
<tbody>
<tr>
<td>sword</td>
<td>rumḥ</td>
</tr>
<tr>
<td>&quot;sea&quot;</td>
<td>bahṛ</td>
</tr>
<tr>
<td>&quot;star&quot;</td>
<td>nāẓm</td>
</tr>
</tbody>
</table>

Asfour (2001) and Kihm (2003) suggest that CA internal plurals use an empty derivational site located in the template between C₂ and C₃.

(9) Berber internal plurals (Idrissi 2001):

Berber plurals such as: awtul (sg) ⇒ iwtal (pl) “hare”, asrdun (sg) ⇒ isrdan (pl) “mule”, asyrs (sg) ⇒ isyras “bag”, asyun (sg) ⇒ isywan (pl) “rope”, are analysed in the same way.

(10) Kabyle Negative Preterit (Bendjaballah 1999)

<table>
<thead>
<tr>
<th>Aorist</th>
<th>Negative Preterit</th>
</tr>
</thead>
<tbody>
<tr>
<td>work</td>
<td>ḥdām</td>
</tr>
<tr>
<td>“dive”</td>
<td>bbōg</td>
</tr>
<tr>
<td>“go down”</td>
<td>aḡar</td>
</tr>
<tr>
<td>“quote”</td>
<td>ḡdṭr</td>
</tr>
</tbody>
</table>

The Negative Preterit marker /i/ results from the activation of the empty site between C₂ and C₃.

III. Data

The Geminated Imperfective involves verbs that contain:
- no more than three consonants, none of which is a geminate.
- If a verb contains a full vowel it should be in the final position.

Regular verbs (triconsonantal) follow under (11):

(11) Aorist Imperfective

a) Tamazight

| get cold | kröm | karröm |
| plough | krāz | kārāz |
| burn | k|mād | k|māmmād |
| stand up | nkr | nakkār |
| grill | knāf | kānnaf |

b) Tashlhiyt

| hunt | g|mṛ | g|mmmṛ |
| enter | k|m | k|m|m |
These verbs all geminate one stem consonant at the Imperfective. By contrast, verbs under (12) use both gemination and affixation to form their Imperfective:

(12)

a) Tamazight
“fall” ðr tttar
“overnight” ðs nassa
“come from” ðkk takka
b) Tashlhiyt
“kill” nj nqqa
“spend the day” njl kila
“eat” fi jttta
“put out” di tttay
c) Kabyle
“stick” gør ggar
“give” afk tt'ak
d) Tamashek
“fight” ãknas kûnæs
“learn” ãlmæd lûmmæd
“follow” ãlkæm hûkkæm
“destroy” ãhlak hûllæk
“walk” ãrgæh rûggæh

IV. Phonological account

Tashlhiyt Berber unfixed gemination:

- Dell & Elmedlaoui’s (1988) syllable-based analysis:

  “The segment which is geminated in the Imperfective stem is that segment which is syllabified as an onset by Core Syllabification in the basic stem.” (p. 11)

  However, this analysis:
  - Does not involve irregular verbs as given in (12).
  - Is limited to Tashlhiyt Berber where gemination is unfixed.
  - Seems unnecessary in the case the geminated consonant is invariably C₂.

Different kinds of verbs are distinguished in (12):

i. verbs using both gemination and vowel insertion (e.g. Tamashek: nôqq; Tamazight: nôssa, ñtar; Tashlhiyt: ggan, nqqa; ñttay; Kabyle: ggar, ñtôy).

ii. verbs using /t/- affixation and vowel insertion (e.g. Tamazight: ñttag; Tashlhiyt: ñttì; Kabyle: ñt’ak, ñtôy, ñt’rus).

iii. verbs using /t/- affixation, vowel insertion and gemination (e.g. Tamazight: ñttaga, ñtôggwà, ñtakka; Tamashek: ñtôwòt, tôjìï(a); Tashlhiyt: ñttìga).

iv. some verbs change completely (e.g. Tashlhiyt: ñt ⇒kkat, Tamashek: ñkkf ⇒hûkk).

v. other verbs use unusual affixes (e.g. Tamashek: ñnn ⇒jûnn, Tashlhiyt: ñj ⇒jttìa)
- Jebbour (1996):

*Prosodic account*: for any verb to undergo gemination the output should contain two light syllables.

### V. Templatic account

#### Tri-consonantal verbs

(13) CVCV Model (Lowestamm 1996).

Within CVCV model templates consist of a strict alternation of CV units.

(14) Berber peripheral vowels

Following Kabbaj (1990), Lowenstamm (1991), Bendjaballah (1999, 2000) and Idrissi (2000), Berber peripheral vowels are analysed as being phonologically long; they are associated with two V slots:

<table>
<thead>
<tr>
<th>skeletal level</th>
<th>CV CV</th>
<th>CV CV</th>
<th>CV CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>segmental level</td>
<td>I</td>
<td>U</td>
<td>A</td>
</tr>
<tr>
<td>phonetic realiza</td>
<td>[i]</td>
<td>[u]</td>
<td>[a]</td>
</tr>
</tbody>
</table>

This parameter is limited to the skeletal tier. It has no effect on the phonetic lengthening of the vowels.

(15) - Why does C₃ never geminate at the Imperfective stem?

(16) Imperfective Template

C₁ V [C V] C₂ V C₃ V

(17) Tamazight

(a)

C₁ V C V C₂ V C₃ V
n k  a  r

[ŋkkər]

- Berber peripheral vowels

Following Kabbaj (1990), Lowenstamm (1991), Bendjaballah (1999, 2000) and Idrissi (2000), Berber peripheral vowels are analysed as being phonologically long; they are associated with two V slots:

(b)

C₁ V C V C₂ V C₃ V

*n[kər]*

(18) Sonority effect

Verbs that geminate C₁ instead of C₂ in Tashlhiyt all contain sonorants (liquids or nasals) in C₂ position.

(19) "Any segment is prohibited to geminate at the Imperfective stem in Tashlhiyt Berber if it is the most sonorous segment in the basic stem."

C₁ germination: a “subsidiary” operation that overcomes prohibited C₂ gemination. Cf. Tiberian Hebrew “compensatory lengthening” (nominal derivation: naggar “carpenter”, sippur “story” opposed to paaraaj “horseman” and baaheret “white spots on the skin”; verbal derivation: kitteb “write” vs. beerak “bless”).

### VI. Mono- and bi-consonantal verbs

The so-called irregular verbs derive their Imperfective with a combination of different operations. Their Imperfective size depends on their aorist form. That is to say:

*the shorter the aorist form is, the more numerous the operations used to transform the verb are.*

Minimality Word Constraint in Prosodic Morphology (cf. McCarthy & Prince 1986 et seq.): each word contains at least one foot (or two moras).
(20) mono- and bi-consonantal representations:

**a) Tamazight**

\[C \ V \Rightarrow C \ V \ C \ V \ C \ V \]

\[\text{g} \quad \text{[g]}\]

\[C \ V \ C \ V \Rightarrow C \ V \ C \ V \ C \ V \ C \ V \]

\[\text{n} \ \text{[n\#a]}\]

**b) Kabyle**

\[C \ V \ C \ V \Rightarrow C \ V \ C \ V \ C \ V \ C \ V \]

\[\text{fi} \quad \text{[t\#fay]}\]

\[C \ V \ C \ V \Rightarrow C \ V \ C \ V \ C \ V \ C \ V \]

\[\text{g} \ \text{[g\#ar]}\]

**c) Tamashek**

\[C \ V \ C \ V \Rightarrow C \ V \ C \ V \ C \ V \ C \ V \]

\[\text{\[\#æ3\]}\]

**VII. Tamashek triconsonantal verbs**

Triconsonantal Imperfective forms given in (11c) use both \(C_2\) gemination and vowel insertion (vowel lengthening according to Heath 2004). They need one slot more in their template:

(21) Tamashek

\[C_1 \ V \ [C \ V \ C_2 \ V \ C_3 \ V] \Rightarrow C \ V \ C \ V \ C \ V \]

\[\text{æ} \ \eta \ \nu \ \alpha \ \omega \]

(23) Classical Arabic plurals

“habitant” saakin sukkaan
“student” taalib tullaab
“reader” qaari‘ qurraa‘
“worker” ‘aamil ‘ummaal
Questions:
- Why don’t all triconsonantal verbs in Berber use both sites?
- Under what conditions are both sites activated?
- Which site stands for the head of the formation?

Conclusion

- Mono- and bi-consonantal verbs are templatically constrained at the Imperfective stem.
- Gemination, affixation and vowel insertion are used to fill the Imperfective template.

References:
Lowenstamm, J., 1996. CV as the only syllable type. In J. Durand & B. Laks (Eds.), *Current Trends in Phonology : Models and Methods*. 419-441. CNRS, ESRI, Paris X.