1. Introduction

- Gender is a robust category in Afroasiatic languages; there is a binary distinction (masculine vs. feminine).
- Masculine generally has no overt marking, as opposed to feminine.
- Unlike in Semitic, where feminine gender is marked at the right edge of the noun (e.g. Arabic tˤifl ‘kid.MS’ / tˤifl-a ‘kid.FM’), Berber has this peculiar property of using what seems to be a “circumfix” (e.g. afrux ‘boy’ / t-afrux-t ‘girl’).
- Among feminine nouns, either part of this affix may not appear in certain nouns, giving rise to forms like:
  - t-izi ‘time’, t-awda ‘fear’, and t-argʷa ‘stream, brook’
  - l-bhim-t ‘animal’, l-hrf-t ‘profession’, and l-musˤib-t ‘catastrophe’.
- The latter are borrowed nouns, mainly adapted from Arabic with their prefix /l-/ which does not denote definiteness.
- Interestingly, these loans may also exhibit a final vowel (usually [-a], feminine marker in Arabic) instead of suffix [-t] (e.g. l-hrf-a, l-musˤib-a).
- The existence of feminine nouns with only prefixed [t-] may lead to the conclusion that the canonical locus of gender is at the left edge of the noun.
- However, a key fact: feminine nouns of this type all end with a vowel.
- More generally, feminine nouns systematically end either with a vowel or with [t].
- No feminine noun ends with a consonant other than [t] (as opposed to masculine nouns which may end with any type of consonant).
- Based on evidence from native and loanwords morphology, we will propose that:
  - The canonical locus of gender is suffixal.
  - Its alleged circumfixal nature results from a copy of a [+gen] feature to an obligatory affixal position to the left of the nominal stem.
  - That is, a prefixal [t-] appears whenever the noun is feminine and the prefixal position is available.
- The proposal also explains several otherwise unmotivated facts in the nominal morphology:
  - The lack of feminine nouns ending in a consonant other than [t].
  - The complementary distribution, among feminine nouns, of final [t] and a stem final vowel (in triconsonantal stems).
  - The ubiquity of the prefix [l] in borrowed nouns.
2. Setting the problem: Gender inflection at both edges

2.1. Gender and other markers at the left edge

- Almost all studies of Berber morphology focus on the inflectional position at the left edge of the noun, in which not only gender, but also state/case and number can be marked (see Guerssel 1992, Ouhalla 1996, Annaji 2001, Bendjaballah 2011, Bendjaballah & Haiden 2008, Lahrouchi 2011, 2013, Shlonsky 2014, Ben Si Said 2020, among others).

(1) Gender, number and state alternations at the left edge

<table>
<thead>
<tr>
<th></th>
<th>SG</th>
<th>PL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FS</td>
<td>CS</td>
</tr>
<tr>
<td>MS</td>
<td>FM</td>
<td>MS</td>
</tr>
<tr>
<td>'boy/girl'</td>
<td>a-frux</td>
<td>ta-frux-t</td>
</tr>
<tr>
<td>'ox/cow'</td>
<td>a-funas</td>
<td>ta-funas-t</td>
</tr>
<tr>
<td>'mouse'</td>
<td>a-ʁrda</td>
<td>ta-ʁrda-t</td>
</tr>
<tr>
<td>'pigeon'</td>
<td>a-tbir</td>
<td>ta-tbir-t</td>
</tr>
</tbody>
</table>

- The initial (thematic) vowel [a-] in the SG alternates with [i-] in the PL (coupled with -n suffixation).
- In the FM.PL, only initial [t-] appears (suffixed [-t] is replaced by a vowel -i-).
- FS [a-] alternates with CS [u-] in the M.SG forms, while the corresponding PL forms display an invariable vowel [i-].
- In the FM.SG, CS forms display only gender [t-] (without [u-]), similarly the corresponding PL forms lack the vowel [i-] in the CS.
- Table (2) summarizes the distribution of prefixes.

(2) The distribution of nominal prefixes

<table>
<thead>
<tr>
<th></th>
<th>SG</th>
<th>PL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MS</td>
<td>FM</td>
</tr>
<tr>
<td>FS</td>
<td>a-</td>
<td>ta-</td>
</tr>
<tr>
<td>CS</td>
<td>u-</td>
<td>t-</td>
</tr>
</tbody>
</table>
Some nouns show a stable initial vowel (3b), which remains unchanged in SG and PL, FS and CS: we shall refer to it as the “non-thematic” vowel.

(3) Thematic vs. non-thematic vowel (see Dell & Jebbour 1991)

\[
\begin{array}{ll}
\text{SG} & \text{PL} \\
\text{a. ‘mountain’} & \text{FS} \ a-\text{drar} \quad i-\text{drar-n} \\
& \text{CS} \ u-\text{drar} \quad i-\text{drar-n} \\
\text{b. ‘widower’} & \text{FS} \ \text{adgal} \quad \text{adgal-n} \\
& \text{CS} \ w-\text{adgal} \quad w-\text{adgal-n}
\end{array}
\]

2.2. Previous analyses

Guerssel (1992)

- In the FS, initial [a] is analyzed as a kind of "portmanteau" morpheme which realizes two functional heads D and K.
- In the CS, initial [w] stands for D.

(4) [azru] 'rock-FS', [s wzru] 'with the rock', [wzru] 'rock-CS'

- According to Guerssel, the initial site is complex: it realizes two distinct syntactic heads.
- This point of view is further developed in Bendjaballah & Haiden (2008): each head corresponds to a CV unit.
Bendjaballah & Haiden (2008): Kabyle nouns

- In the FS, both CVs of the prefixal site (in bold) are filled (5a), in the CS only the inner CV is (5b).

- Following Lowenstamm (1991), peripheral vowels are analyzed as being underlyingly long.

(5) M.SG
a. FS: [axxam] 'house'
   b. CS: [wɔxxam]

(6) F.SG
a. FS: [θaxxamθ] 'room'
   b. CS: [θɔxxamθ]

- FM marker [θ-] is associated to the outer CV in the FS form (6a), but to the inner CV in the CS (6b).
- [w-] and [θ-] compete for the same position (inner CV) in the CS.
**Lahrouchi (2013)** motivates the selection of [t-] through its lower morphosyntactic position.

(7)  
| DP | DP |
| D | D |
| nP | nP |
| n | w |
| CV | CV |
| t | frux | ∅ |

**Bendjaballah (2011)**

- Non-thematic vowels invade the inner CV of the prefixal site.

(8)  
A non-thematic vowel occupying part of the initial site: [asif] ‘river’ (CS [wasif])

<table>
<thead>
<tr>
<th>C</th>
<th>V</th>
<th>C</th>
<th>V</th>
<th>-</th>
<th>C</th>
<th>V</th>
<th>C</th>
<th>V</th>
<th>C</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>(w)</td>
<td>a</td>
<td>s</td>
<td>i</td>
<td>f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2.3 Loanwords

- In loans (from Arabic or other languages), an [l-] is realized in the same site, **blocking all other markers**.

(9)  
Prefix [l-] in loanwords

| a. lbanju | ‘bathtub’ (Sp. [bano]) |
| lbar‘aʒ | ‘dam’ (Fr [bàraʒ]) |
| las‘l | ‘ancestry’ (Ar [as‘l]) |
| lfor‘dinatur | ‘computer’ (Fr. [ɔridinatɔʁ]) |
| ladris | ‘address’ (Fr. [adrɛs]) |
| b. lkuzina | ‘kitchen’ (Sp. [kosina]) |
| lmus‘ibt–lmus‘iba | ‘catastrophe’ (Ar. [mus‘iba]) |
| lhrft–lhrfa | ‘profession’ (Ar. [hrfa]) |
| lbakitɛ | ‘package’ (Fr. [pake]) |
| loqɛ | ‘time’ (Ar. [wɔt],m) |
| lanba | ‘lamp’ (Sp. [lamp]) |

- We are not aware of any study which has addressed this issue.
Summary  From all of the above, it emerges that:
  ○ Space in the initial site is limited: markers compete for realization in this site.
  ○ Gender marking may be absent from the left edge (when there is an [l-])
  ○ Gender marking is regular; it is always [t-].

● Not so at the right edge of the noun:

2.4 Gender at the right edge

● Less attention has been devoted in published work to gender inflection at the right edge of the noun (but see Idrissi 2000: 109).

(10) Gender marking at the right edge: C-final stems => form feminine with [-t]

<table>
<thead>
<tr>
<th>Stem</th>
<th>Masculine</th>
<th>Feminine</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.SG</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>FM.SG</td>
<td></td>
<td>-t</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example</th>
<th>Stem</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>isli 'groom'</td>
<td>t-isli-t</td>
<td>feminine</td>
</tr>
<tr>
<td>aʕzri 'teenager'</td>
<td>t-aʕzri-t</td>
<td>feminine</td>
</tr>
<tr>
<td>ifili 'string'</td>
<td>t-ifili-t</td>
<td>feminine</td>
</tr>
<tr>
<td>azuknni 'oregano'</td>
<td>t-azuknni-t</td>
<td>feminine</td>
</tr>
</tbody>
</table>

(11) Gender marking at the right edge, V-final stems: masculine+[-t] => feminine

<table>
<thead>
<tr>
<th>Stem</th>
<th>Masculine</th>
<th>Feminine</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.SG</td>
<td>√</td>
<td></td>
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</tr>
</tbody>
</table>

Summary:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Stem C-final</th>
<th>Stem V-final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masculine N</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Feminine N</td>
<td>√</td>
<td>-t</td>
</tr>
</tbody>
</table>
- Unlike at the left edge:
  - Gender is always marked; but
  - Gender marking is variable: it is either [-t] or a final vowel.

- Note that final vowels do not necessarily imply feminine gender.

- We will now show that the tools presented above predict the variability of gender marking at the right edge.

3. analysis

3.1. Basic cases

(12) M.SG V-final nouns

\[
\begin{array}{ccccccc}
\text{C} & \text{V} & \text{C} & \text{V} & - & \text{C} & \text{V} \\
\end{array}
\]

(13) Corresponding F form:

\[
\begin{array}{ccccccc}
\text{C} & \text{V} & \text{C} & \text{V} & - & \text{C} & \text{V} \\
\end{array}
\]

(14) Thematic vs. non-thematic nouns - reminder

<table>
<thead>
<tr>
<th>SG</th>
<th>PL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ‘mountain’</td>
<td>a-drar</td>
</tr>
<tr>
<td></td>
<td>u-drar</td>
</tr>
<tr>
<td>b. ‘widower’</td>
<td>adgal</td>
</tr>
<tr>
<td></td>
<td>w-adgal</td>
</tr>
</tbody>
</table>

(15) Non-thematic vowel invading initial site (blocking number inflection)

\[
\begin{array}{ccccccc}
\text{C} & \text{V} & \text{C} & \text{V} & - & \text{C} & \text{V} \\
\end{array}
\]
• Prediction: at the right edge, too, a final vowel can spread to occupy the final site, thereby blocking gender inflection [-t].

(16) Non-thematic vowel invading final site, blocking [-t]

\[
\begin{array}{cccccccc}
\text{t} & \text{a} & \text{r} & \text{a} & \text{w} & \text{s} & \text{a} & \text{t} \\
\text{C} & \text{V} & \text{C} & \text{V} & \text{C} & \text{V} & \text{C} & \text{V} \\
\end{array}
\]

• This derives vowel-final feminine nouns.

=> A feminine noun can be either vowel-final or [t]-final.

3.2. Support form loans

• The obligatoriness of gender marking at the right edge is also true of loanwords, where - as will be recalled - [l] blocks all inflection at the left edge.

• Again, one finds either a final vowel or a final [t], and sometimes variation between the two.

(17) V-final feminine loanwords

- l'kuzina ‘kitchen’ (Sp. [kosina])
- lmuš't-Imuš'išba ‘catastrophe’ (Ar. [muš'iba])
- lhrft-lhrfa ‘profession’ (Ar. [hrfa])
- lbaqitf ‘package’ (Fr. [pake]f)
- loqtf ‘time’ (Ar. [waqt]f)
- l'änba ‘lamp’ (Sp. [lamp])

• Sometimes, loans with original masculine gender become feminine because they are vowel final: [lpartma]f ‘apartment’ [Imagaza]f ‘store’ (both M in French).

(18) Vowel-final feminine loan

\[
\begin{array}{cccc}
l & \text{hrf} & \text{a} & \text{t} \\
\text{C} & \text{V} & \text{C} & \text{V} \\
\end{array}
\]
(19)  Same noun, [t]-final: /a/ cannot associate, only one position

       l       hrf  a       t
   |      |          |        |
  C   V  C   V -   V -   C   V

- We do not know why [t-] is blocked from the left edge in these cases, only that [l] blocks it as it does all other inflection.

- Possibly, since loans are not inflected for state, they simply lack the first of the two prefixal CVs:

(20)  No place for gender-marking prefix [t-] in loans

       l       hrf  a       /t/
   |      |          |        |
  C   V -   V -   C   V

To summarize, loans show that

- Final vowels and [t] alternate in gender marking.

- Assuming [l] occupies the only initial CV, [t-] is blocked from appearing at the left edge.

  => appears only in its canonical position, at the right edge.

4. Thematization

- loans carrying [l-] can undergo a process of thematization in evaluative morphology; and the blocking of regular inflection by [l] is undone:

(21)  Thematized loans

<table>
<thead>
<tr>
<th>Loan</th>
<th>Augmentative</th>
<th>Diminutive</th>
</tr>
</thead>
<tbody>
<tr>
<td>l-muss</td>
<td>a-l-muss</td>
<td>t-a-l-muss-t ‘knife’</td>
</tr>
<tr>
<td>l-kamjun</td>
<td>a-l-kamjun</td>
<td>t-a-l-kamjun-t ‘truck’</td>
</tr>
<tr>
<td>l-gar'aʒ̩</td>
<td>a-l-gar'aʒ̩</td>
<td>t-a-l-gar'aʒ̩-t ‘garage’</td>
</tr>
<tr>
<td>l-brmil</td>
<td>a-l-brmil</td>
<td>t-a-l-brmil-t ‘barrel’</td>
</tr>
</tbody>
</table>

- We interpret this as the addition of another inflectional site on top of the lower one; as well as the final site in diminutives.
(22) A thematized loan

\[
\begin{array}{lllll}
(t) & a & l & muss & (t) \\
| & C & V & C & V & - & C & V & - & - & (C & V)
\end{array}
\]

5. Concluding remarks

▪ All feminine nouns are marked on the right edge either by [t] or by the occupation of the gender position by the stem final vowel.

▪ This position is always realized.

▪ Its realization by the vowel or [t] is an unpredictable, idiosyncratic property of the feminine noun, (as opposed to the realization of [t] at the left edge, which is completely regular).

▪ We therefore designate the final position as the basic/canonical position.

▪ The initial [t] is the realization of a copied gender feature; it is realized unless blocked by [l].

Extension: An alleged circumfix also appears in verbs (in color).

(23) Verbal paradigm [nkr] ‘rise’

<table>
<thead>
<tr>
<th></th>
<th>Sg</th>
<th>pl</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>nkr-ʁ</td>
<td>n-nkr</td>
</tr>
<tr>
<td>2</td>
<td>M  t-nkr-t</td>
<td>t-nkr-m</td>
</tr>
<tr>
<td></td>
<td>F  t-nkr-m-t</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>M  i-nkr</td>
<td>nkr-n</td>
</tr>
<tr>
<td></td>
<td>F  t-nkr</td>
<td>nkr-n-t</td>
</tr>
</tbody>
</table>

▪ However, one can assume that the initial [t] stands for 2p (as evidenced by the two 2p plurals); only the 2nd [t] is a feminine marker.

▪ In the 3p.f.sg, feminine [t] can appear at the left edge because there is no person marking (see Harbour 2007: Person dominates gender/number and pushes them to the right edge).
\[ t_{-}nkr \Rightarrow t_{-}nkr-m_{PL}-t_{GEN} \quad \emptyset-nkr \Rightarrow t_{GEN}-nkr \]
\[
\begin{array}{c|c}
m_{PL},t_{GEN} & t_{GEN} \\
\end{array}
\]
‘you(f.pl) rose’ \quad ‘she rose’

- Under this view, verbs, unlike nouns, have a canonical position at the left edge.

(There are complications, but they’re for future research!)

References


