Allomorphy in Masarak's second person

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Masarak (also known as Masalit, sometimes spelled Massaleit) is a highly endangered previously undocumented Nilo-Saharan language spoken in Darfur. The language is characterized by complicated agreement patterns, and the imperative, prohibitive and 2nd person agreement systems are particularly complex. These systems exhibit a web of stem alternations and agreement allomorphy conditioned by varying factors, such as verb class, stem phonology, and grammatical properties such as aspect. This paper provides a detailed outline of the morphology and morphophonology of Masarak's imperative, prohibitive and 2nd person systems.

1 Overview of Masarak

Masarak (exonym: Masalit) is an endangered, largely undocumented, Nilo-Saharan language spoken by the Masalit people in Darfur. Masarak is an S-O-V, agglutinating language that exhibits complex agreement properties with both the object and the subject of the verb and has a Nominative-Accusative Case alignment, as shown in (1):

(1) a. ɑmɑ tɪɾo ɑ-ŋo-ɲ-e
    1SG.NOM 3SG.ACC 1SG.SUBJ-love-PRS
    'I love him.'

b. ɑmɑ a-dilɛ-na
    1SG.NOM 1SG.SUB-swim-PST
    'I swam.'

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1 The following abbreviations are used here: SG = singular, NOM = nominative, ACC = accusative, SUBJ = subject, PRS = present, PL = plural, PST = past, PFV = perfective, IPFV = imperfective, IMP = imperative, NEG = negation, PROH = prohibitive, CONT = continuous, 1 = 1st person, 2 = 2nd person, 3 = 3rd person. # is used to indicate the number of subjects and objects, respectively, when -nd/-mb-, a portmanteau morpheme which indicates object agreement, is present.
Additionally, each Masarak verb has two roots. These roots alternate depending on whether the verb is perfective or imperfective.

(2) a. ti-ɲ-eri  
   3SG-eat,-PRS.PERF  
   'He has eaten.'  

b. ti-ɲːn-ari  
   3SG-eat,-PST.IMPRF  
   'He was eating.'

2 Finite Agreement and Root Forms

Transitive verbs with objects not in the 3rd person agree with both their subjects and objects. All other verbs show (roughly\(^2\)) the following agreement paradigm. For the time being, I have left 2SG blank.

(3) declarative agreement prefixes

<table>
<thead>
<tr>
<th></th>
<th>SG</th>
<th>PL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a-</td>
<td>mV</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>kV-</td>
</tr>
<tr>
<td>3</td>
<td>tV-</td>
<td>i-</td>
</tr>
</tbody>
</table>

In the above paradigm, “V” signifies a vowel that is part of the agreement. The form of this vowel is (presently) unpredictable. Though it is consistent across verbal paradigms (i.e., the vowel is the same for all of (4a) and all of (4b)), it is not consistent throughout verbal paradigms (i.e., the vowel is different between (4a) and (4b)). This vowel does not appear in vowel initial stems (4c):

(4)

<table>
<thead>
<tr>
<th></th>
<th>SG</th>
<th>PL</th>
<th>SG</th>
<th>PL</th>
<th>SG</th>
<th>PL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a-</td>
<td>mo-</td>
<td>a-</td>
<td>ma-</td>
<td>a-</td>
<td>m-</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>ko-</td>
<td>--</td>
<td>ka-</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>to-</td>
<td>wo-</td>
<td>3</td>
<td>ta-</td>
<td>3</td>
<td>t-</td>
</tr>
</tbody>
</table>

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2 1SG and 3PL subject agreement are not as straightforward as (2) suggests—however, Chu (2010) proposes a series of phonological rules that can account for 1SG and 3PL subject variation, based on the phonological properties of the left edge of the Masarak verb stem.
2.1 The Forms of Verb Roots

Recall that Masarak verb roots take two forms, depending on aspect. Understanding root alternations is important to understanding imperative and prohibitive verb forms. In the imperative, which root is used will also predict post-stem morphology. Example (5) repeats the perfective/imperfective alternation seen in (2):

(5)  a. ti-ɲɑː:n-ɑɾi  
     3SG-eat₂-PST.PFV  
     'He had eaten.'

         b. ti-ɲ-eri  
     3SG-eat₁-PRS.IPFW  
     'He is eating.'

Not all Masarak verb roots alternate in the same way. Across the language, two main patterns emerge:

(6)  a. Pattern I: the final rime is dropped from the perfective root to form the imperfective.
     b. Pattern II: an imperfective stem-final /n/ alternates with a perfective stem-final /k/.

Occasionally, there is no alternation between imperfective and perfective verb roots. There are even rarer instances of verb roots which alternate according to exceptional rules of suppletion. An example of verb roots which alternate in accordance to Patterns I and II can be found in example (7).

(7)  Alternation Patterns
     Pattern I (rime-drop)
     a. g-imin-ɑ  
        2SG-kick.PFV-PST  
        'You had kicked.'

         b. g-im-1  
        2SG-kick.IPFW-PRS  
        'You are kicking.'

     Pattern II (n/k alternation)
     a. t-oín-ɑ  
        3SG-pour.PFV-PST  
        'She had poured.'

         b. t-oik-e  
        3SG-pour.IPFW-PRS  
        'She is pouring.'

2.2 The Forms of Verb Stems

Masarak has two verb classes (which I have dubbed) G-Class and L-Class. A given verb is marked in the lexicon (or otherwise pre-syntactically) as either G-
or L-Class. Therefore, class membership is unpredictable. Verb class determines the form of the 2SG indicative, imperative, prohibitive and participial verb. Root-alternation patterns do not have a bearing on verb class.

Masarak has five total 2SG agreement allomorphs \{/ɡ/, /∅/, /dʒ/, /l/, and /lV/\}. Which allomorph will be used depends on the phonological properties of the left edge of the verb stem and verb class. The breakdown of which allomorph belongs to which verb class is as follows:

\[(8)\]
\[\begin{align*}
\text{a. G-class} & & \{/dʒ/, /∅/, \text{and} /g/\}^3 \\
\text{b. L-class} & & \{/l/ \text{and} /lV/\}
\end{align*}\]

L-Class verbs, when compared to the paradigm presented in (3), appear **completely regular** in that the agreement prefix only alternates between an underlying consonant (/l/) and the combination of that consonant with a vowel (/lV/). G-Class verbs do not. It is impossible to predict which allomorph will be used based on left-edge phonology alone. This is supported by evidence from causatives in Masarak. Masarak causative verbs are distinguished by the causative marker -n- or -nd-, which appears at the left edge of the verb stem, following agreement prefixes\(^4\). Example (14) shows a (near) minimal pair which proves that more than left-edge stem phonology is needed in determining the shape of the agreement prefix for Masarak verbs. Note that -rinaj-takes it's agreement prefix, /∅/, from the G-Class set, while -rinip- takes it's agreement morpheme, /lal/, from the L-Class set. Example (14) shows the shape of a Masarak causative verb. Note that the causative verb contains the additional morpheme, -n-, directly following the verb root, -osiŋ-.

\[(9)\]
\[\begin{align*}
\text{a. } & \emptyset-\text{rinaj-}\text{-a} & 2\text{SG}-\text{say-PST} \\
\text{b. } & \text{lq-}\text{rinij-}\text{-a} & 2\text{SG}-\text{sleep-PST}
\end{align*}\]

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3 The seemingly unrelated phonemes /dʒ/, /∅/, and /g/ are related (I believe) in the following way:

Masarak phonology does not allow for complex consonant clusters, and, unlike all other agreement morphemes, I do not believe the G-Class 2SG morphemes have an underlying vowel. When the stem starts with a vowel, this is not a problem, and the underlying /g/ can be added without forcing the root to undergo phonological change. When the stem begins with a consonant, the underlying /g/ is eliminated completely, to prevent the realization of an ungrammatical *ɡC. When the stem begins with /s/, I believe the /s/ and /g/ merge to form /dʒ/ (\(/\text{ɡs}/ \rightarrow /\text{dʒ}/\), a phoneme which appears elsewhere in the language.

4 Wood (2010)
(10)  a. adam masarak t-osin-ɑ
    Adam Masarak 3SG-learn-PST
    'Adam learned Masarak.'

          b. adam tiro masarak to-n-osin-ɑ
     Adam, him, Masarak 3SG-CAUS-learn-PST
     'Adam taught him Masarak.'

In the causative pair -ɑɾ- 'come' and -nɑɾ- 'bring' ('cause-to-come'), the
agreement allomorph shifts from [ɡ] to [ɔ] once the causative -n- is added to the
base. Both (15a) and (15b) show agreement allomorphs from the G-Class set,
revealing that the addition of causative morphology only alters the phonological
shape of the verb stem (i.e., it does not effect verb class, or allow for the selection
of agreement allomorphs between G- and L-Class sets).

(11) a. ɡ-ɑɾ-ɑ                              b. ɔ-ɾ-ɑɾ-ɑ
    2SG-come-PST      2SG-CAUS-come-PST
    'You came.'        'You brought (it).'

2.2.1 Declarative Allomorphy

G-Class allomorphy is predictable, but irregular. When the verb stem begins with
a consonant other than /s/, the 2SG agreement allomorph is [ɔ]. When the verb
stem begins with /s/, the allomorph is [dʒ]. Elsewhere, the allomorph is [ɡ].

(12)  a. ɲɑːn- 'eat'                         b. ʃoɾn- 'fight'
    i. ɡɲɑːn-ɑ                      i. dʒiɾn-ɑ
       2SG-eat-PST       2SG-fight-PST
    c. -imin- 'kick'
       i. ɡ-imim-ɑ
       2SG-kick-PST

L-Class allomorphy is completely regular. When the verb stem begins with
a vowel, the 2SG agreement allomorph is /l/. Elsewhere, the 2SG agreement
allomorph is /lv/. This is the same pattern that follows from the agreement
morphemes displayed across other persons and numbers in the language.

(13)  a. ɑiɲ- 'enter'                        b. -siɲ- 'step on'         c. -dzɡel-
    i. l-ɑiɲ-ɑ                       i. li-siɲ-ɑ                     i. li-dʒiɲel-ɑ
       SG-enter-PST      2SG-enter-PST     2SG-wake.up-PST
3 Imperative Forms

Masarak has a morphologically dedicated second singular as well as second plural imperative system. Recall that in declarative verbs, both number and person are contained within the agreement prefix. In perfective imperative verbs the plural is distinguished by the verbal suffix -i. The morpheme -i does not indicate the plural elsewhere in the language. Note that there is no number feature contained in the imperative marker lu-. Note, additionally, that the verb root in (18) is inflected for the perfective aspect.

(14) a. məŋ ndisɪŋɔ lu-torɔŋ
   you.SG door IMP-open.PFV
   'You, open the door!'

b. ki ndisɪŋɡo lu-torɔŋ-i
   you.PL door IMP-open.PFV-PL
   'You all, open the door!'

Like the declarative 2SG, the Masarak imperatives show a wide range of allomorphy and a similar pattern regarding the regularity of verb classes. In G-Class verbs, the imperative morpheme is either /k/ (when the verb stem begins with a vowel) or /∅/ (elsewhere). L-Class imperatives (unsurprisingly) show the same patterns for allomorph selection as L-Class 2SG verbs. The imperative morpheme is either /l/ (before a vowel) or /lV/ (elsewhere). This conclusion, again, is supported by causative evidence. Just as in 2SG declarative verb, the addition of a causative morpheme only affects stem phonology, and does not influence class membership.

(15) G-Class allomorphy:

<table>
<thead>
<tr>
<th>Stem initial</th>
<th>Allomorph</th>
<th>Example:</th>
</tr>
</thead>
</table>
| /s/          | ∅         | ∅-sorɔn(-i) IMP-kick(-PL) 'You (all) kick!'
|              |           |          |
| C, non-/s/   | ∅         | ∅-ndil(-i) IMP-tell(-PL) 'You (all) tell it!'
| V            | k         | k-ɔɾiŋ(-i) IMP-run(-PL) 'You (all) run!' |
(16) L-Class allmorphy:

Stem initial: Allomorph: Example:

C IV l-a-dʒiŋ(-i)
IMP-sing(-PL)
'You (all) sing!'

V l l-iŋ(-i)
IMP-die(-PL).
'You (all) die!'

Like the declarative forms of the verb, Masarak imperatives also show a perfective/imperfective root alternation. Note that example (21) follows the final-rime-dropping pattern described in (6). Note that the perfective imperative, kulo, is marked with an additional suffix, -o, which I gloss as a continuous marker.

<table>
<thead>
<tr>
<th>(17)</th>
<th>a. k-ułon</th>
<th>b. k-ul-o</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMP-take.PFV</td>
<td>IMP-take. IPFV-CONT</td>
<td></td>
</tr>
<tr>
<td>'Take (it)!'</td>
<td>'Continue taking (it)!'</td>
<td></td>
</tr>
</tbody>
</table>

Due to this continuous marker, Masarak imperfective imperatives cannot be pluralized with the addition of the suffix -i. Instead, the suffix -e must be used. It is possible that this -e is really a combination of the continuous -o and the plural morpheme -i.

A final note regarding Masarak imperatives is the unusual syncretism between Masarak imperatives and participial forms. Masarak has both imperfective and perfective participial verb forms. Imperfective participials are completely syncretic with imperfective imperatives in the language. Likewise, perfective participials are syncretic with perfective imperatives. An example of this can be seen on the following page, in (23):

(18) a. ki: k-a-dʒiŋ-o ɲugur-u ken
you.PL 2SG-sing-PST food-ACC make.PFV
'You sang after preparing the food.'

a’. ɲugur-u ken
food-ACC make.IMP
'Make food!'

b. adam kupo roko ambro undi-kela
Adam fish sell.IPV I.ACC 3SG>1SG-see-PST
‘Adam saw me while selling the fish.’

b'. kupo **roko**
  fish **sell.IMP**
  'Continue selling the fish!'

4 Prohibitive Forms

Masarak has a morphological prohibitive construction that is distinct from all forms of the imperative and all negation strategies found in the declarative. The most common method involves the placement of the morpheme `-del-nde-` at the end of the verb. Negation can also be indexed by the word **kuje**. Examples of these negation strategies can be found below.

(19) a. ama: njugu-u a-ŋa:n-ɑ
    I food-OBJ 1SG-eat-PST
    ‘I ate the food.’

   b. ama: njugu-u a-ŋa:n-nde
       I food-OBJ 1SG-eat-NEG
       ‘I didn’t eat the food.’

(20) a. habutu gim
    something here
    'Something is here.'

   b. habutu gim kuje
       something here NEG
       'There’s **nothing** here.'

The prohibitive is formed by adding the prohibitive suffix `-an` to a verb already inflected for person and number. Like the imperative prefixes, the prohibitive suffix cannot index person or number. To index person and number in prohibitive verbs, the agreement prefixes found in the second person declarative—which do contain both person and number features—must be utilized. Because number is indicated on the agreement prefix of the prohibitive verb, the suffix `-i`, used to index plurality in the imperative, cannot be used with the prohibitive. The chart in (21) shows how prohibitives are formed, and provides a comparison between prohibitive and declarative second person verb forms.

(21) | Prohibitive | Declarative |
    | ɑ-rinan-ɑn | ɑ-rinan-ɑ |
    | 2SG-say-PROH | 2SG-say-PST |
    | 'Don’t say!' | You said (it).' |

    | ki-rinan-ɑn(-*i) | ki-rinan-ɑ |
    | 2PL-say.PFV-PROH | 2PL-say-PST |
    | 'Don’t say!' | 'You all said (it).' |
5 Conclusions

This paper has demonstrated that Masarak verbs can be divided into two classes, which I have dubbed the G- and L-Classes. Class membership is unpredictable, and assigned before syntax. L-Class verbs show a regular agreement pattern across all persons, including 2SG. G-Class verbs, however, do not show a regular agreement pattern in 2SG. However, even though G-Class allomorphy is irregular, it is still completely predictable. Across the second person, class membership and the phonology of the left-edge of the verb stem are necessary to predict 2SG agreement allomorphy. This information—class membership and stem phonology—will determine the phonological shape of the 2SG declarative, imperative, prohibitive and participial verb form.

All declarative and prohibitive verbs utilize the same agreement prefixes, which are marked for both person and number. The imperative agreement prefixes, however, are not marked for number, and so, in imperative verbs, plurality is indexed by the addition of the plural-marker -i.

Theoretical questions remain surrounding two aspects of 2SG agreement. The first is the question of which features the pure agreement suffixes (shown in declarative and prohibitive verbs) share with the imperative morphemes. Recall that G-Class verbs use the allomorphs /k/ and /∅/ to mark imperative verbs. In the declarative paradigm, /k/ and its agreement allomorph are marked with a plural feature. L-Class verbs use the allomorphs /l/ and /lV/ to mark imperative verbs. In the declarative paradigm, /l/ and /lV/ are marked with a singular feature. Example (22) compares the declarative and imperative forms of relevant G- and L-Class verbs.

(22) 

<table>
<thead>
<tr>
<th>Class</th>
<th>Declarative Singular</th>
<th>Declarative Plural</th>
<th>Imperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-Class</td>
<td>g-ariŋ-ɑ</td>
<td>k-ariŋ-ɑ</td>
<td>k-ariŋ(-i)</td>
</tr>
<tr>
<td></td>
<td>2SG-run-PST</td>
<td>2PL-run-PST</td>
<td>IMP-run(-PL)</td>
</tr>
<tr>
<td></td>
<td>'You ran.'</td>
<td>'You all ran.'</td>
<td>'(You all,) run!'</td>
</tr>
<tr>
<td>L-Class</td>
<td>lɑ-dʒiŋ-ɑ</td>
<td>ka-dʒiŋ-ɑ</td>
<td>la-dʒiŋ(-i)</td>
</tr>
<tr>
<td></td>
<td>2SG-sing-PST</td>
<td>2PL-sing-PST</td>
<td>IMP-sing(-PL)</td>
</tr>
<tr>
<td></td>
<td>'You sang.'</td>
<td>'You all sang.'</td>
<td>'(You all) sing!'</td>
</tr>
</tbody>
</table>

The second is the question of the identical form of Masarak imperative and participial verb. Example (23) gives an example of this syncretism, using both an imperfective imperative/participial pair while (24) gives an example of a perfective imperative/participial pair.
(23) a. adam kuŋo roko ambro andi-kela
Adam fish sell.PTCP 1.ACC 3SG>1SG-see-PST
'Adam saw me while selling the fish.'

b. kuŋo roko
fish sell.IMP
'Continue selling the fish!'

(24) a. ki: ka-dʒiŋ-a nugar-u ken
you.PL 2SG-sing-PST food-ACC make.PFV
'You sang after preparing the food.'

b. nugar-u ken
food-ACC make.IMP
'Make food!'

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