Tone in Five
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Tone in Five
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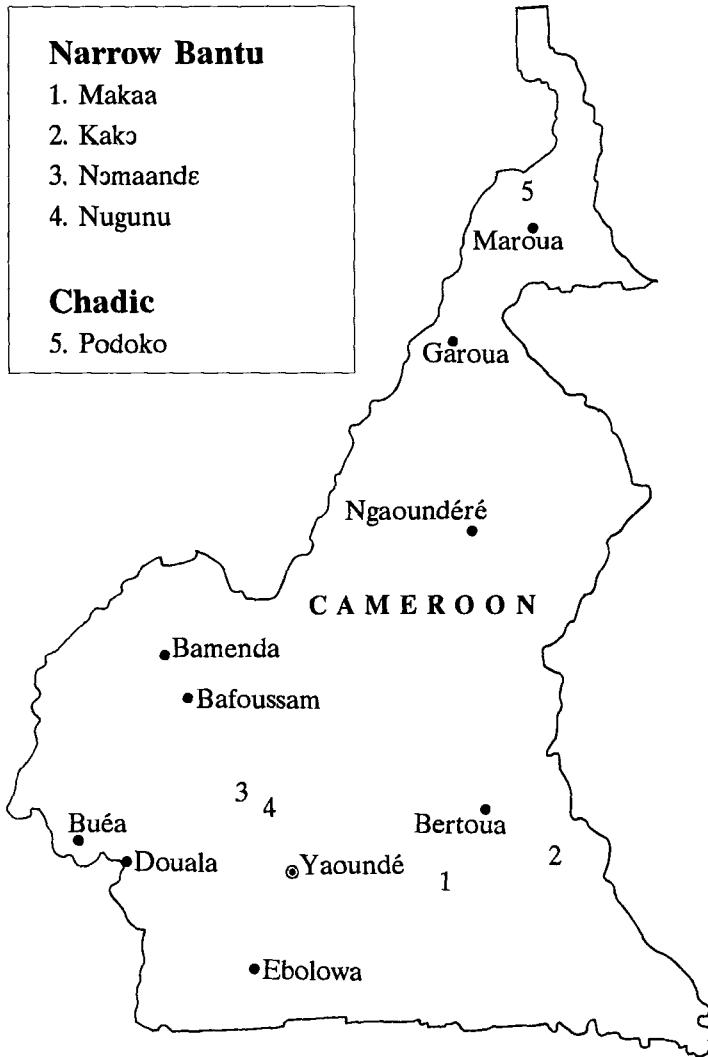
Tonal Behavior of Podoko Verbs in Independent Clauses

Jeanette Swackhamer

Abstract

This paper attempts to be a comprehensive presentation of the tonal behavior of Podoko verbs in unfocused, independent clauses. The basic two-tone system is complicated by the fact that low tones can be downstepped. While some of the downstep is predictable on the basis of depressor consonants, in other cases it is an inherent part of a grammatical marker. The most interesting of these is the clause-initial downstep signaling present tense. Spectrographs are included to confirm this unusual position for downstep.

The interplay between consonants and tone has led to positing four classes which divide into six subclasses. The paper examines the sixteen possible constructions found in independent clauses and the three types of verbal extensions, and includes an appendix of 627 verbs separated into their respective tone classes and subclasses. Finally, the paper presents some data on the interaction between tones and vowels in plural verbs. This, together with a possible historical hypothesis for the genesis of the present verb classes, could be of special interest to Chadicists. In all, this article presents a needed complement to the earlier article on Podoko nouns (Anderson and Swackhamer 1981).

Résumé

Cet article tente de présenter une vue de l'ensemble du système tonal du verbe podoko dans les phrases indépendentes, sans emphase. Le podoko est, à la base, une langue à deux tons, mais le ton bas peut se manifester après une faille tonale. La plupart des cas de ces failles tonales sont prévisibles selon le placement d'une consonne d'abaissement. Cependent, la faille tonale est aussi la marque des catégories grammaticales, la plus répandue de ces catégories étant la faille tonale au début de la phrase qui signale le temps

présent. La présence de cette faille tonale au début de la phrase est établie
par l'aide des spectrogrammes.

Les verbes en podoko se répartissent en quatre classes selon leurs consonnes
et leurs tons, deux de ces classes ayant des sous-classes, ce qui donne six
classes en tout. Puisque l'on tente de présenter une vue de l'ensemble du
système tonal, les 16 formes du verbe dans la phrase indépendente sont
examinées, ainsi que les trois sortes d'extensions. Un appendice de 627 verbes,
répartis selon leurs classes, se trouve à la fin. Pourque cette description soit
complète et qu'elle couvre les intérêts divers, l'influence des voyelles sur le
ton dans le pluriel du verbe est abordée et une hypothèse du développement
des classes tonales est tentée. C'est souhaité que cet article soit le complément
attendu de l'article précédent sur les noms en podoko (Anderson et Swack-
hamer 1981).

This paper[1] attempts to be a comprehensive presentation of the tonal
behavior of Podoko[2] verbs in unfocused, independent clauses. Like many
Chadic languages, Podoko has basically a two-tone system. While some of
the related languages in the Central or Biu-Mandara branch of the Chadic
family have developed into a three-tone system, Podoko has maintained
the two-tone system even though the feature of downstep allows tones to
be realized phonetically on two separate levels. Reasons for analyzing the
tonal data as two tones plus downstep are given, as well as detailing the
way in which Podoko downstep differs from similar systems in Niger-
Congo languages. One of the most unusual features of Podoko is a
clause-initial downstep to mark present tense. The paper presents visual
proof of this downstep position by means of two spectrographs.

A previous paper on tone in Podoko nouns (Anderson and Swackhamer
1981) showed the correlation of consonants to tone, a feature noted in
other Chadic languages. The present paper complements the one on nouns
and shows that the same consonant influence on tone register is also
operative with verbs. What is striking about this correlation, however, is

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[2]Podoko (Parəkwa, as they refer to themselves) is a Chadic language (Central or
Biu-Mandara branch, Wandala group) spoken by 25,000 or more speakers who live in
and around the far northern tip of the Mandara Mountains in the Far North Province
of Cameroon, Mayo-Sava Division, Mora Subdivision. (The estimation of the popula-
tion is taken from immunization records of health-care workers in the area.)

that syllables with a depressor consonant are realized on high tone (with downstep of low tone following) instead of the more expected low tone. The interplay between consonants and tone has led to positing four classes of verbs.

The paper examines the sixteen independent clause constructions and three types of verbal extensions. It includes an appendix of 627 verbs separated into four tone classes plus two subclasses. Some Chadicists will appreciate the section on plural verbs showing the interaction between the tone pattern and the a or ə vowel of the verb. Other Chadicists can consider the possible historical hypothesis advanced to explain how the underlying tone patterns may have evolved from simpler combinations of high and low tones.

1. Three tones in two registers

In Anderson and Swackhamer 1981, three phonetic levels of tone were illustrated. Despite these three levels, Podoko was shown to have a two-tone system since the downstepped low tone occurs only after a high tone (H1) and in the environment of a depressor consonant. Therefore, the distribution of tones is as follows (with L1 indicating a nondownstepped low and L2 a downstepped low tone):

(1)   Phonetic tone distribution

Phonetic
levels   Left-to-right possibilities

1   H1 ———— H1   H1
2   L1 ———— L1   L1
3   L2 ———— L2
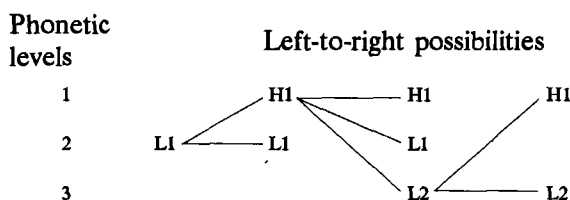
L2 can be phrase initial due to grammatical downstep, which is the subject of this paper. The L (low tone) on the first register can be followed only by a H (high tone) in the first register (value 1) or another L on the same register (2). A H in the first register (height 1) can be followed by another H of the same height, or by a L of the first register (height 2), or a L in the second register (height 3). A L in the second register can be followed only by a H in the first register (height 1) or another L of the same register (height 3). Thus, we are not dealing with a three-tone system, but a two-tone system that has three heights and two registers.

The verbs, which are the focus of this article, follow a pattern similar to that of nouns—there are three tone heights but two tone registers. If the H is followed by a L syllable starting with a depressor consonant, the L is slightly lowered as in (2).[3] If the syllable does not start with a depressor consonant, the L is not lowered, as in (3). For a list of depressor consonants, see §2.

(2)   *A   ndáva   ndavə   nda.*
        2   1 3   3 3   3
       ~AR   ask   RE   INDEF
       Someone asked.

(3)   *A   ndə́la   ndələ   nda.*
        2   1 2   2 2   3
       ~AR   cut   RE   INDEF
       Someone cut it in two.

Podoko displays phonetic downtilt at the end of a phrase with the following results: clause-final L always occurs on level 3; clause-final H after H or nondownstepped L is realized as a falling tone from level 1 to 2; clause-final H after downstepped L occurs on level 2.

Present tense (perfective or imperfective) is marked by two tonal phenomena. The first is a DOWNSTEP feature which precedes the entire clause. The second is a replacive L that overlays the lexical tones of the verb, resulting in tonal neutralization of the various tone classes. In the case of LL and LL H verbs, which already have a L pattern in the past construction, the overlaying of the replacive L in the present tense does not change the lexical tone of the verb. However, the overlaying of the present-tense L on a L verb fails to signal present tense, which in these constructions, is signalled only by the initial downstep feature. For these verbs, therefore, the only difference between past and present is in the downstep feature, as in (4) and (5). The phonetic glide from level 2 up to level 1 before the comma in these examples is one of the options for a H syllable, but only when immediately preceding a comma.

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[3]The following abbreviations are used in illustrations: AR aorist, DS direct speech marker, END end of clause, FS fronted subject marker, FUT future tense, IND indicative mood, IMPV imperative mood, IMPFV imperfective aspect, ~AR nonaorist, NEG negative, OPT optative mood, PRF perfect, PRFV perfective aspect, PRES present tense, PST past tense, RE reduplicaiton, REFL reflexive/reciprocal marker, 1 first person, 2 second person, 3 third person, INDEF indefinite third person, s singular, p plural, i inclusive, and x exclusive.

(4)   Perfective past

Ngɔ́ ndi   takiná laki, a   tɔha tɔhɔ ka.
  1   3   3 3 1   2 2-1 2   2 2   2 2   3
DS   INDEF to^him END ~AR hit   RE   you
Someone said to him, you hit it.

(5)   Perfective present

Ngɔ́ ndi   takiná laki, !   a   tɔha tɔhɔ ka.
  1   3   3 3 1   2 2-1   3   3 3   3 3   3
DS   INDEF to^him END PRES^~AR hit   RE   you
Someone said to him, you may hit it.

In order to prove the presence of these clause-initial downsteps, the preceding two sentences were spoken into a tone analyzer to produce digitalized evidence of their actual phonetic pitch. In order to correctly interpret the resulting spectrographs, the reader must be aware of one phonetic phenomenon. The *h* of the verb *tɔha* 'to hit' causes the preceding *ɔ* to devoice with the result that the tone analyzer does not register its pitch. The pause in speech (signified by a comma) results in an interval between the clause-final *laki* and the clause-initial *a* (where the presence of the tone is crucial). The spectrographs for the two sentences have been abbreviated to show the part where the pitch of *a* can be compared to that of the preceding syllable of the tone frame. The two contrasting spectrographs are presented in (6) and (7).

(6)   Perfective past
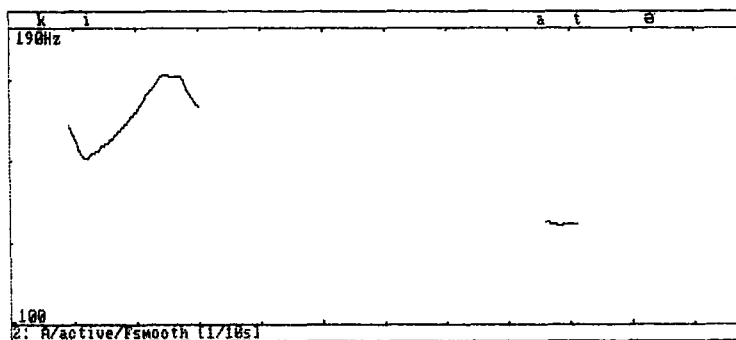
In (6), the upglide on the clause-final syllable *ki* starts at 150 Hz and goes as high as 176 Hz. This upglide is followed by a pause and then a

relatively level L which varies from 131–130 Hz. This example must be compared with (7) to see the difference in the level of the L. In (7), the clause-final upglide starts at 151 Hz and goes as high as 177 Hz, followed by a downstepped L which varies from 106–101 Hz.

(7)   Perfective present
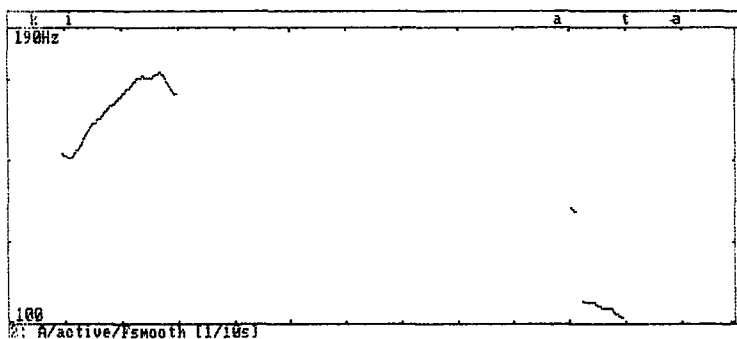
In these two examples, we see two low tones on the same segmental *a* following the same upglide. The difference in their relative tone height, as measured in Hz, is 25–30. The interval is easily perceived and is used in Podoko to signal the lowered downstepped level for L. These clause-initial downstep features are more difficult to perceive at the beginning of a sentence than in the middle. The drop is significant, however, and is evident to Podoko listeners, although it might take some time to get used to a new person's pitch range. The fact is that Podoko speakers do not have much of a problem with this clause-initial downstep feature or they would not use it as an indicator (sometimes the only one) of something as important as present tense.

For the rest of this paper, phonetic downstep is not marked, L is also unmarked, H is marked by an acute accent (´) over vowels, and grammatical downstep is marked by an exclamation point (!).

2. Lexical tone

The perfective past indicative provides the most productive frame for separating verbs into tone classes. By examining this frame, verbs are

separated into four tone classes, two of which have subclasses based on consonant types. The six resulting classes are shown in (8).[4]

(8)   Verb classes based on tone pattern and consonant type

	Tones	Consonant of first syllable
Class 1	LL	D, N
Class 2	LL Ḥ	D, N
Class 3a	HL	D
Class 3b	LH	N
Class 4a	HL Ç	D
Class 4b	LH Ç	N

The formula for the perfective past indicative without an affix is presented in (9).

(9)   Past perfective indicative

          a   v-a   v-ə

One example from each class of verbs in the past perfective construction now follows. The first example is from class 1, which is a straightforward LL class with or without a depressor consonant.

(10)   *A   təha   təhə   nda.*
        ~AR   hit   RE   INDEF
        Someone hit it.

The next example is from class 2, which has a LL pattern, followed by a floating H which, when the first verb has no extensions, associates onto the first syllable of tone reduplicated verb.

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[4] Depressor consonants (D) are listed in (a). All others are nondepressor consonants (N). Ç is a floating tone that causes the tones of one verb to copy over to a second, reduplicated verb.

(a)   b   d   dz   g   gw
        mb   nd   ndz   ng   ngw
             v   z   zl

(11)   *A   ɓaka ɓákɔ nda.*
       ~AR do   RE   INDEF
       Someone did it.

The effects of this floating H also show up in aorist verbs where it docks onto the enclitic pronoun -*nga* (3s). (12) and (13) compare an aorist class 2 verb (LL H̥) with a past perfective class 1 verb (LL).

(12)   Class 2 (LL H̥)

       Ɓaka-ngá
       do-3s
       He did it.

(13)   Class 1 (LL)

       Təha-nga.
       hit-3s
       He hit it.

Classes 3 and 4 both have a lexically associated H. Both are subdivided into two subclasses since the placement of the H can be predicted on the basis of the consonant type of the first syllable. As seen in (8), if the first syllable of the verb contains a depressor consonant, the H is manifested on the first syllable (classes 3a and 4a). If the first syllable contains a neutral consonant, the H is manifested on the the second syllable,[5] regardless of whether that syllable contains a depressor or neutral consonant.

The relationship between consonants and tone has been noted in other Chadic languages. In Ouldeme (de Colombel 1986), a neighboring language to Podoko, and in Mulwi (Tourneux 1982), syllables with a depressor consonant take L, as expected. In Podoko verbs, however, the syllable with the depressor consonant takes H.

Examples from class 3 are given in (14) and (15).

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[5] There are a few verbs with three syllables, very few which have four, and one verb which has five syllables. If a trisyllabic verb contains H and no depressor consonant, the H may optionally appear on the second or third syllable, as in ʸ*madákwa* 'to whiten' and *mətsaká* 'to grill'.

(14)   Class 3a (HL)

    A   *ndáva ndavə nda.*
    ~AR ask   RE   INDEF
    Someone asked.

(15)   Class 3b (LH)

    A   *dəgá*   *dəgə nda.*
    ~AR pound RE   INDEF
    Someone pounded it.

The difference between classes 3 and 4 is that class 4 has a floating copy tone which causes the tones of VI to pattern onto the second verb when the first one has no affix. Class 4 is a very small class. To date, there are only 14 verbs in this class out of a corpus of 627.

(16)   Class 4a (HL ç)

    A   *ndə́ha ndə́hə nda.*
    ~AR fatten RE   INDEF
    Someone became obese.

(17)   Class 4b (LH ç)

    A   *maslá maslə́ nda.*
    ~AR leave RE   INDEF
    Someone left it.

From the above material, we see that verbs in Podoko fall into four tonal classes, with classes 3 and 4 being divided into subclasses due to the consonant type of the first syllable. The following section looks at the total verbal system and the behavior of each of these classes within that system.

3. Grammatical tone

This study is restricted to verbs in independent clauses which have none of their constituents specifically focused. Verbs of this sort may have as many as sixteen forms which distinguish categories of tense, aspect, and mood. The names used in this study for these forms and the elements

which mark them are presented in (18). A few summary remarks may be made to characterize the way each of the forms is marked.

(18)						
1. imperfective present indicative	*! a*	*ʸV-ə*				
2. imperfective unmarked past indicative	*a*	*ʸV-ə*				
3. imperfective marked past indicative	*sa*	*ʸV-ə*				
4. imperfective future indicative	*a !da*	*ʸV-ə*				
5. perfective unmarked past indicative	*a*	*V-a*	*V-ə*			
6. perfective marked past indicative	*sa*	*V-a*	*V-ə*			
7. perfective future indicative	*a !da*	*V-a*	*V-ə*			
8. imperfective marked imperative	*!da*	*ʸV-ə*				
9. imperfective unmarked imperative		*ʸV-ə*				
10. perfective marked imperative	*!da*	*V-a*	*V-ə*			
11. perfective unmarked imperative		*V-a*	*V-ə*			
12. perfect indicative	*a*	*V-ə*	*ç*	*V-a*		
13. perfective present optative indicative	*! a*	*V-a*	*V-ə*			
14. aorist unmarked past indicative		*V-a*	*H̢*			
15. aorist marked past indicative	*sa*	*V-a*	*H̢*			
16. aorist future indicative	*!da*	*Va-a*	*H̢*			

Aorist forms are marked by a floating H which occurs on the first syllable of a following noun or a following third-person indefinite pronoun; nonaorist forms tend to be marked by clause-initial *a*. Aorist forms may further be past (marked by *sa* or unmarked) or future (marked by *!da*). Nonaorist forms are perfective or nonperfective (following definitions of Comrie 1976), imperfective forms being marked by palatalization and perfective forms by reduplication. Perfect has a copy tone which copies the tone of the first verb onto the reduplicated form that follows. Past is optionally marked by *sa* and future is marked by *!da*.

3.1. The grammatical downstep of present tense. Present-tense forms are always distinguished from nonpresent-tense forms. Clause-initial downstep (!) and tonal neutralization of the verb classes mark present tense. Imperfective present may also indicate near future, translated in first-person plural 'Let us do...'; perfective present has optative force. This latter form is used to counter-assert, as in 'He *can* do it'.[6]

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[6]Stative verbs, such as *ngwá* 'to want, to love', *tsəwa* 'to be good', *tsama* 'to know', and *sla ə̧* 'to be sufficient', are not dealt with in this study; but the facts concerning present tense differ slightly in respect to them. Specifically, stative verbs lack imperfective forms altogether and perfective forms, rather than distinguishing past and optative meaning, distinguish present and optative meaning by nondownstepped and downstepped forms, respectively.

Note that the use of tone to mark verbal categories in Biu-Mandara languages is well documented (Wolff 1979). In Mulwi (Tourneux 1982), á marks inaccompli and à marks accompli, which is the opposite of Podoko, whereas Ouldeme (de Colombel 1988) works more like Podoko with forms corresponding to nondownstepped L for aorist and accompli, ə̀ for hortatory, and ə̀ for a potential but nonassumed situation, which corresponds to Podoko downstepped L.

Nondownstepped, unmarked indicative forms (2, 3, 5, 6, 14, 15) have past meanings and may collocate with the time adverb ndágwa 'yesterday' but not with ʸusəɗá 'tomorrow'. Downstepped indicatives (4, 7, 8, 10, 16), on the other hand, do not collocate ndágwa 'yesterday' but may with ʸusəɗá 'tomorrow'.

The sixteen forms of a typical verb from each of the six tone classes are illustrated in (19)–(24).

(19)   Class 1 (LL) paradigm, təha 'to hit'

1.	*! A ʸtəhə vala ndá.*[7]	'Someone is hitting it.'
2.	*A ʸtəhə vala ndá.*	'Someone was hitting it.'
3.	*Sa ʸtəhə vala ndá.*	'Someone was hitting it.'
4.	*A !da ʸtəhə vala ndá.*	'Someone will be hitting it.'
5.	*A təha təhə nda.*	'Someone hit it.'
6.	*Sa təha təhə nda.*	'Someone hit it.'
7.	*A !da təha təhə nda.*	'Someone will hit it.'
8.	*!Da ʸtəhə sləndza!*	'Hit (FUT) the friend!'
9.	*ʸTəhə sləndza!*	'Hit the friend!'
10.	*!Da təha təhə sləndza!*	'Hit (FUT) the friend!'
11.	*Təha təhə sləndza!*	'Hit the friend!'
12.	*A təhə təha sləndza.*	'The friend is hit.'
13.	*! A təha təhə nda.*	'May someone hit it.'
14.	*Təha ndá.*	'Someone hit it.'
15.	*Sa təha ndá.*	'Someone hit it.'
16.	*!Da təha ndá.*	'Someone will hit it.'

(20)   Class 2 (LL Ḥ) paradigm, ɓaka 'to do'

1.	*! A ʸɓakə vala ndá.*	'Someone is doing it.'
2.	*A ʸɓakə vala ndá.*	'Someone was doing it.'
3.	*Sa ʸɓakə vala ndá.*	'Someone was doing it.'
4.	*A !da ʸɓakə vala ndá.*	'Someone will be doing it.'

---

[7]The third person impersonal pronoun *nda* carries a L unless influenced by a floating H following such words as *vala Ḥ* (third person singular direct object).

5.	*A ɓaka ɓákə nda.*	'Someone did it.'
6.	*Sa ɓaka ɓákə nda.*	'Someone did it.'
7.	*A !da ɓaka ɓákə nda.*	'Someone will do it.'
8.	*!Da ʸɓakə sləra.*	'Do (FUT) work!'
9.	*ʸBakə sləra.*	'Do work!'
10.	*!Da ɓaka ɓákə sləra.*	'Do (FUT) work!'
11.	*Baka ɓákə sləra.*	'Do work!'
12.	*A ɓakə ɓaka sləra.*[8]	'The work is done.'
13.	*! A ɓaka ɓákə nda.*	'May someone do it.'
14.	*Baka ndá.*	'Someone did it.'
15.	*Sa ɓaka ndá.*	'Someone will do it.'
16.	*!Da ɓaka ndá.*	'Someone did it.'

(21)   Class 3a (HL) paradigm, *ndava* 'to ask'

1.	*! A ʸndavə vala ndá.*	'Someone is asking for it.'
2.	*A ʸndávə vala ndá.*	'Someone was asking for it.'
3.	*Sa ʸndávə vala ndá.*	'Someone was asking for it.'
4.	*A !da ʸndávə vala ndá.*	'Someone will be asking for it.'
5.	*A ndáva ndavə nda.*	'Someone asked for it.'
6.	*Sa ndáva ndavə nda.*	'Someone asked for it.'
7.	*A !da ndáva ndavə nda.*	'Someone will ask for it.'
8.	*!Da ʸndávə sləra!*	'Ask (FUT) for work!'
9.	*ʸNdávə sləra!*	'Ask for work!'
10.	*!Da ndáva ndavə sləra!*	'Ask (FUT) for work!'
11.	*Ndava ndavə sləra!*	'Ask for work!'
12.	*A ndávə ndáva sləra.*	'The work is asked for.'
13.	*! A ndava ndavə nda.*	'May someone ask for it.'
14.	*Ndava ndá.*	'Someone asked for it.'
15.	*Sa ndáva ndá.*	'Someone ask for it.'
16.	*!Da ndáva ndá.*	'Someone will ask for it.'

(22)   Class 3b (LH) paradigm, *dəga* 'to pound'

1.	*! A ʸdəgə vala ndá.*	'Someone is pounding it.'
2.	*A ʸdəgə́ vala ndá.*	'Someone was pounding it.'
3.	*Sa ʸdəgə́ vala ndá.*	'Someone was pounding it.'
4.	*A !da ʸdəgə́ vala ndá.*	'Someone will be pounding it.'
5.	*A dəgá dəgə nda.*	'Someone pounded it.'
6.	*Sa dəgá dəgə nda.*	'Someone pounded it.'

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[8]Note that in this form, the copy tone of perfect indicative aspect takes precedence over the floating H, the LL of the first verb appearing in the reduplicated verb rather than HL.

7.	*A !da ɗəgá ɗəgə nda.*	'Someone will pound it.'
8.	*!Da ʸɗəgə́ slasla!*	'Pound (FUT) the bone!'
9.	*ʸDəgə́ slasla!*	'Pound the bone!'
10.	*!Da ɗəgá ɗəgə slasla!*	'Pound (FUT) the bone!'
11.	*Dəga ɗəgə slasla!*	'Pound the bone!'
12.	*A ɗəgə́ ɗəga slasla.*	'The bone is pounded.'
13.	*! A ɗəga ɗəgə nda.*	'May someone pound it.'
14.	*Dəga ndá.*	'Someone pounded it.'
15.	*Sa ɗəgá ndá.*	'Someone pounded it.'
16.	*!Da ɗəgá ndá.*	'Someone will pound it.'

(23)   Class 4a (HL ç) paradigm, *ndəha* 'to fatten'

1.	*! A ʸndəhə vala ndá.*	'Someone is fattening it.'
2.	*A ʸndə́hə vala ndá.*	'Someone was fattening it.'
3.	*Sa ʸndə́hə vala ndá.*	'Someone was fattening it.'
4.	*A !da ʸndə́hə vala ndá.*	'Someone will be fattening it.'
5.	*A ndə́ha ndə́hə nda.*⁹	'Someone became fat.'
6.	*Sa ndə́ha ndə́hə nda.*	'Someone became fat.'
7.	*A !da ndə́ha ndə́hə nda.*	'Someone will become fat.'
8.	*!Da ʸndə́hə gana!*	'Fatten (FUT) the squirrel!'
9.	*ʸNdə́hə gana!*	'Fatten the squirrel!'
10.	*!Da ndə́ha ndəhə gana!*	'Fatten (FUT) the squirrel!'
11.	*Ndəha ndəhə gana!*	'Fatten the squirrel!'
12.	*A ndə́hə ndə́ha gana.*	'The squirrel is fat.'
13.	*! A ndəha ndə́hə nda.*	'May someone become fat.'
14.	*Ndəha ndá.*	'Someone became fat.'
15.	*Sa ndə́ha ndá.*	'Someone became fat.'
16.	*!Da ndə́ha ndá.*	'Someone will become fat.'

(24)   Class 4b (LH ç) paradigm, *masla* 'to leave'

1.	*! A ʸmaslə vala ndá.*	'Someone is leaving it.'
2.	*A ʸmaslə́ vala ndá.*	'Someone was leaving it.'
3.	*Sa ʸmaslə́ vala ndá.*	'Someone was leaving it.'

---

⁹Class 4a has a floating copy tone which copies the tone pattern of the first verb onto the reduplicated verb in the perfective aspect when the verb has no affix. However, as numbers 10 and 11 show, this copy is not operative in imperatives, where this class acts like a regular 3a verb: the H shows up in the marked imperative on the first verb but not on the second (No. 10); and the unmarked imperative is marked by neutralization, i.e., there is no H (No. 11). Distinctions between classes 3a and 4a show up again, however, in the optative (No. 13). Both classes show neutralization in the first verb, but class 4a copies the basic HL onto the second verb while class 3a does not.

4.	*A !da ʸmaslɔ́ vala ndá.*	'Someone will be leaving it.'
5.	*A maslá maslɔ́ nda.*[10]	'Someone left it.'
6.	*Sa maslá maslɔ́ nda.*	'Someone left it.'
7.	*A !da maslá maslɔ́ nda.*	'Someone will leave it.'
8.	*!Da ʸmaslɔ́ sləndza!*	'Leave (FUT) the friend!'
9.	*ʸMaslɔ́ sləndza!*	'Leave the friend!'
10.	*!Da maslá maslɔ́ sləndza!*	'Leave (FUT) the friend!'
11.	*Masla maslɔ́ sləndza!*	'Leave the friend.'
12.	*A maslɔ́ masla sləndza.*	'The friend is left.'
13.	*! A masla maslɔ́ nda.*	'May someone leave it.'
14.	*Masla ndá.*	'Someone left it.'
15.	*Sa maslá ndá.*	'Someone left it.'
16.	*!Da maslá ndá.*	'Someone will leave it.'

3.2. The inherent downstep of several grammatical words. There are several grammatical words which always occur with downstep to a lowered L. These words are treated as having a downstep feature as part of their lexical specification. Sometimes this downstep precedes the L of the grammatical marker and sometimes it follows it. Whenever the marker follows the grammatical word, its lowering effect is not realized on the word itself, but on the word immediately following it. Some examples of sentences which contain such grammatical markers are given in (25)–(27)

(25)   *!banda* 'if'

!Banda	*ʸɓakə*	*sləri*	*nda,*	*a*	*ngwá*	*ngwə*	*yá.*
3 3	3 3	3 3	3-(1)	2	1	3	2
if	do	work	INDEF	~AR	want	RE	1s

If someone works, I want that.

Note that the clause-final word *nda* in (25), which is not sentence final, has an optional glide to H. This glide before a comma is predictable and is thus a phonetic variant of L in a restricted environment.

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[10]Class 4b acts like Class 4a in that the copy tone copies the pattern of the first verb onto the second verb in the perfective indicatives (Nos. 5–7). These two classes act differently, however, in the perfective imperatives (Nos. 10 and 11), where Class 4a does not copy the underlying tone pattern onto the second verb.

(26)   *!da* (future)

    A   *!da*   *ᵞɓakə* *sləri* *nda.*
    2/3   3   3 3   3 3   3
    ~AR   FUT do   work INDEF
    Someone is going to work.

In (26) *!da* (future) can optionally pull a preceding *a* (nonaorist) down from its normal level 2 to level 3, resulting in phonetic variation, again in a very restricted environment.

(27)   *akə́!* (negative of subordinate clauses)

    A   *ngwá* *ngwə* *yá* *ngə* *ndi*   *akə́!* *ᵞɓakə* *sləra.*
    2   1   3 1   2   2   2 1   3 3   3 3
    ~AR   want   RE   1s   FS   INDEF NEG do   work
    I want that someone doesn't work.

4. Verbal extensions

Jarvis (1989a) divides all verbal extensions into two categories—directionals and object markers. It seems best, however, to make a third category for the reflexive/reciprocal extension *-v-* since it behaves differently than other object markers. The three categories of verbal extensions are discussed in §§4.1–4.3, respectively.

4.1. Directionals. All verbal directionals are marked tonally in one of three ways. Some are marked with an inherent H, some with a floating H, and some with a floating copy tone. Those marked with a floating H seem to be restricted to the labialized affixes plus *ʸ-tsa* 'toward' and *-arə* 'reflexive.' The copy tone copies the basic underlying tone of a verb onto a following reduplicated form of the verb. The extensions cancel the effect of the floating H in class 2 (LL H). The extensions with an inherent H cancel the effect of the floating H following the aorist, but the floating copy tone allows for the floating H of the aorist to associate onto the following word. The following list of extensions (slightly modified) is taken from Jarvis 1989b:2.

(28)   Verbal extensions of Podoko

Inherent H		Floating H		Floating copy tone	
-əlá	'entire'	*(ˀ)(-əl)-u*	'up'	*-(ˀ)əla*	'entire, down'
-adá	'partial'	*-(a/ə)kwa*	'into'	*-ada*	'partial, down'
-ədá	'out (INTR)'	*-ʸatsa*	'toward'	*-aha*	'down (INTR)'
-ədɔ́	(unknown)	*-arə*	'reflexive'	*-asə*	'under'
				-arə	'on'
				-ədə	'toward eye'

Since perfect and imperfective constructions do not usually take verbal extensions, only aorist and various perfective forms are presented. It should be noted that the tone of the first vowel of an extension is the property of the verb and not the extension. As seen from these examples, whenever a verbal extension is added, some neutralization of tone classes occurs and the four classes collapse into two—those that contain an inherent H (classes 3 and 4) and those that don't (classes 1 and 2). The manifestation of H in classes 3 and 4 is totally predictable according to the consonant type of the first syllable and the type of extension added, as illustrated in (29)–(34).

(29)   Class 1 (LL), *ndara* 'to build, make', with extensions *-əlá* 'entire', *-ʸəlu* ʜ 'up', and *-əla* ꞓ 'down'.

PRFV PST	A	*ndar-əlá*	*ndarə*	*nda.*	'Someone made it.'
	A	*ʸndar-əlu*	*ndárə*	*nda.*	'Someone built it up.'
	A	*ndar-əla*	*ndarə*	*nda.*	'Someone built it.'
PRFV PRES	! A	*ndar-əlá*	*ndarə*	*nda.*	'May someone make it.'
	! A	*ʸndar-əlu*	*ndárə*	*nda.*	'May someone build it up.'
	! A	*ndar-əla*	*ndarə*	*nda.*	'May someone build it.'
PRFV IMPV		*Ndar-əlá*	*ndara.*		'Make it!'
		Ndar-əlu	*ʸndára.*		'Build it up.'
		Ndar-əla	*ndara.*		'Build it!'
AORIST		*Ndar-əlá*		*nda.*	'Someone made it.'
		Ndar-əlu		*nda.*	'Someone built it up.'
		Ndar-əla		*nda.*	'Someone built it.'

(30)   Class 2 (LL Ḥ), *ɓaka* 'to do' with extensions -*əlá* 'entire', -*akwa* Ḥ
       'into', and -*əla* ç̧ 'down'.

PRFV PST	A ɓak-əlá	ɓakə	nda.	'Someone did it.'
	A ɓak-akwa	ɓákə	nda.	'Someone did and brought it in.'
	A ɓak-əla	ɓakə	nda.	'Someone did and brought it down.'
PRFV PRES	! A ɓak-əlá	ɓakə	nda.	'May someone do it.'
	! A ɓak-akwa	ɓákə	nda.	'May someone do and bring it in.'
	! A ɓak-əla	ɓakə	nda.	'May someone do and bring it down.'
PRFV IMPV	Bak-əlá	ɓaka.		'Do it!'
	Bak-akwa	ɓáka.		'Do and bring it in!'
	Bak-əla	ɓaka.		'Do and bring it down!'
AORIST	Bak-əlá		nda.	'Someone did it.'
	Bak-akwa		ndá.	'Someone did and brought it in.'
	Bak-əla		ndá.	'Someone did and brought it down.'

(31)   Class 3a (HL), *gəɗa* 'to remain' with extensions -*əɗá* 'partial', -*u* Ḥ
       'up', and -*aha* ç̧ 'down'.

PRFV PST	A gə́ɗ-əɗá	gəɗə	nda.	'Someone remained.'
	A gə́ɗ-u	gə́ɗə	nda.	'Someone remained up (there.)'
	A gə́ɗ-aha	gə́ɗə	nda.	'Someone remained.'
PRFV PRES	! A gəɗ-əɗá	gəɗə	nda.	'May someone remain.'
	! A gəɗ-u	gə́ɗə	nda.	'May someone remain up (there.)'
	! A gəɗ-aha	gə́ɗə	nda.	'May someone remain.'
PRFV IMPV	Gəɗ-əɗá	gəɗa.		'Remain!'
	Gəɗ-u	gə́ɗa.		'Remain up (there)!'
	Gəɗ-aha	gə́ɗa.		'Remain!'
AORIST	Gəɗ-əɗá		nda	'Someone remained.'
	Gəɗ-u		ndá.	'Someone remained up (there).'
	Gəɗ-aha		ndá.	'Someone remained.'

(32)   Class 3b (LH), *dəga* 'to pound' with extensions -*əlá* 'entire', -*akwa*
       Ḥ 'into', and -*əla* ç̧ 'down'.

PRFV PST	A dəg-ə́lá	dəgə	nda.	'Someone pounded it all.'
	A dəg-ákwa	də́gə	nda.	'Someone pounded and brought it in.'
	A dəg-ə́la	dəgə́	nda.	'Someone pounded and brought it down.'
PRFV PRES	! A dəg-əlá	dəgə	nda.	'May someone pound it all.'
	! A dəg-akwa	də́gə	nda.	'May someone pound and bring it in.'
	! A dəg-əla	dəgə́	nda.	'May someone pound and bring it down.'
PRFV IMPV	Dəg-əlá	dəga.		'Pound it all!'
	Dəg-akwa	də́ga.		'Pound it and bring it in!'
	Dəg-əla	dəgá.		'Pound it and bring it down!'
AORIST	Dəg-əlá		nda.	'Someone pounded it all.'
	Dəg-akwa		ndá.	'Someone pounded and brought it in.'
	Dəg-əla		ndá.	'Someone pounded and brought it down.'

(33)   Class 4a (HL ç), *ndəha* 'to fatten' with extensions *-əlá* 'entire', and
        -aha 'down' (no examples of an extension with ɦ).

PRFV PST	*A ndə́h-əlá*	*ndəhə*	*nda.*	'Someone fattened it.'
	A ndə́h-aha	*ndə́ha*	*nda.*	'Someone became obese.'
PRFV PRES	*! A ndəh-əlá*	*ndəhə*	*nda.*	'May someone fatten it.'
	! A ndəh-aha	*ndə́ha*	*nda.*	'May someone become obese.'
PRFV IMPV	*Ndəh-əlá*	*ndəha.*		'Fatten it!'
	Ndəh-aha	*ndə́ha.*		'Become obese!'
AORIST	*Ndəh-əlá*		*nda.*	'Someone fattened it.'
	Ndəh-aha		*ndá.*	'Someone became obese.'

(34)   Class 4b (LH ç), *usala* 'to choose, to look for' with extensions
        -adá 'partial', and *-akwa* ɦ 'into'.

PRFV PST	*A usal-ádá*	*usalə*	*nda.*	'Someone chose it.'
	A usal-ákwa	*úsalə*	*nda.*	'Someone chose to enter in.'
	A usal-áda	*usalə́*	*nda.*	'Someone looked for it downwards.'
PRFV PRES	*! A usal-adá*	*usalə*	*nda.*	'May someone choose it.'
	! A usal-akwa	*úsalə*	*nda.*	'May someone choose to enter in.'
	! A usal-ada	*usalə́*	*nda.*	'May someone look for it downwards.'
PRFV IMPV	*Usal-adá*	*usala!*		'Choose it!'
	Usal-akwa	*úsala!*		'Choose to enter in!'
	Usal-ada	*usalá!*		'Look for it downwards!'
AORIST	*Usal-adá*		*nda.*	'Someone chose it.'
	Usal-akwa		*ndá.*	'Someone chose to enter in.'
	Usal-ada		*ndá.*	'Someone looked for it downwards.'

4.2. Object markers. The object markers are presented in (35).

(35)   1s   *-i(-)*   1x   *-n-*
       2s   *-k-*   1i   *-m-*
       3s   *(ʸ) Ø/-l-*   2p   *-kw-*
                             3p   *-t-*

The vowel preceding the object marker (other than first-person singular
-i-) is *a* if the verb is not palatalized, and *ə* if the verb is palatalized.

The vowel following the object marker can be either *ə* or *a*, the tone of
which is the property of the object marker. Second-person singular *-k-* is
the only person where the quality of the vowel following the marker is
influenced by palatalization; the vowel is *a* if the verb is not palatalized,
and *ə* if palatalized.

The tone of first-person singular (*-i-*) is complex and is explained below
with examples.

If the object marker occurs with a directional, the tone of the object marker is always L, no matter what the tone of the directional is. A class 1 verb is shown in (36) with the direct object marker and a high tone extension. Note that the first-person object marker palatalizes the whole verb. The tone on the affix is not affected by that of the extension; the affix always carries L.

(36)   Object markers occurring with a H tone extension.

Class 1 (LL), *ndara* 'build, create' (PRFV PST)

A ʸndar-i-dá ʸndarə Zəta.	'God created me.'
A ndara-ka-dá ndarə Zəta.	'God created you.'
A ndarəla ndara Zəta. [∅ marker]	'God created him.'
A ndara-na-dá ndarə Zəta.	'God created us (ex).'
A ndara-ma-dá ndarə Zəta.	'God created us (in).'
A ndara-kwa-dá ndarə Zəta.	'God created you (pl).'
A ndara-ta-dá ndarə Zəta.	'God created them.'

If a verb has an inherent H (classes 3 and 4), then the object pronoun is L. As with the directionals, the tone just before the affix is the property of the verb. Paradigms in (37) and (38) show the object marker with classes 3a and 3b, without any other extensions.

(37)   Object markers on verbs with HL.

Class 3a (HL), *zləha* 'accept, receive' (PRFV PST)

A ʸzlə́h-i ʸzləhə nda.	'Someone accepted me.'
A zlə́ha-ka zlə́hə nda.	'Someone accepted you.'
A zlə́ha-lə zlə́hə nda.	'Someone accepted him.'
A zlə́ha-nə zlə́hə nda.	'Someone accepted us (ex).'
A zlə́ha-mə zlə́hə nda.	'Someone accepted us (in).'
A zlə́ha-kwə zlə́hə nda.	'Someone accepted you (pl).'
A zlə́ha-tə zlə́hə nda.	'Someone accepted them.'

(38)   Object markers on verbs with LH.

Class 3b (LH), *dəga* 'pound, beat' (PRFV PST)

A ʸdəg-íya ʸdəgə́ nda.	'Someone beat me.'
A dəgá-ka dəgə́ nda.	'Someone beat you.'
A ʸdəgə́-la ʸdəgə́ nda.	'Someone beat him.'
A dəgá-na dəgə́ nda.	'Someone beat us (ex).'
A dəgá-ma dəgə́ nda.	'Someone beat us (in).'
A dəgá-kwa dəgə́ nda.	'Someone beat you (pl).'
A dəgá-ta dəgə́ nda.	'Someone beat them.'

As seen in the paradigms (37) and (38), if a verb contains an inherent H, the tone following the object marker is L. The object marker works as a normal L affix causing the H to show up on the second verb, except for the first-person singular marked -*i*- (see (40)).

The object marker carries a H if the verb is a class 1 verb (LL), and if the vowel following the object marker is *a* (usually a direct object). The following paradigm shows the same verb, first with the object marker taking *a*, and secondly with *ə*. With this particular verb, *a* is formally a direct object and *ə* an indirect object, but semantically the meaning is the same. The object marker takes a H with a class 1 (LL) verb if the final vowel is *a*, but does not if the final vowel is *ə*.

(39)   Class 1 (LL) verb with object marker taking *a*

Class 1 (LL), *təha* 'hit, beat' (PRFV PST)

A ʸtəh-iyá ʸtəhə nda.	'Someone hit me.'
A təha-ká təhə nda.	'Someone hit you.'
A ʸtəhəla ʸtəhə nda. [∅ marker]	'Someone hit him.'
A təha-ná təhə nda.	'Someone hit us (ex).'
A təha-má təhə nda.	'Someone hit us (in).'
A təha-kwá təhə nda.	'Someone hit you (pl).'
A təha-tá təhə nda.	'Someone hit them.'

(40)   Class 1 (LL) verb with object marker taking *ə*

Class 1 (LL), *təha* 'hit, beat' (PRFV PST)

A ʸtəh-i ʸtə́hə nda.	'Someone hit me.'
A təha-ka təhə nda.	'Someone hit you.'
A təha təhə nda. [∅ marker]	'Someone hit him.'
A təha-nə təhə nda.	'Someone hit us (ex).'
A təha-mə təhə nda.	'Someone hit us (in).'
A təha-kwə təhə nda.	'Someone hit you (pl).'
A təha-tə təhə nda.	'Someone hit them.'

First-person singular -*i*- has a floating tone that associates onto the second verb if it is not followed by *a* and if the verb does not have an inherent H. Thus a H following -*i*- occurs on the second verb in classes 1 and 2 (LL and LL ᴴH as in (40)), but does not occur in classes 3 and 4, as in the HL and LH paradigms in (37) and (38).

For class 2 verbs (LL ᴴ), the floating H associates onto the object marker if the verb otherwise has no affix (except for the first-person object marker, as noted above). (41) shows the tonal behavior of the object marker with a class 2 verb.

(41)   Object markers in a class 2 verb

Class 2 (LL ꞪH), *tala* 'touch' (PRFV PST)

A ʸtal-i ʸtálə nda.	'Someone touched me.'
A tala-ká talə nda.	'Someone touched you.'
A tala-lɔ́ talə nda.	'Someone touched him.'
A tala-nɔ́ talə nda.	'Someone touched us (ex).'
A tala-mɔ́ talə nda.	'Someone touched us (in).'
A tala-kwɔ́ talə nda.	'Someone touched you (pl).'
A tala-tɔ́ talə nda.	'Someone touched them.'

Before leaving the discussion of object markers, consider briefly the tonal behavior of benefactives. The mark of the benefactive is palatalization plus floating H if the vowel of the object marker is ə. This floating Ɦ associates onto the first syllable of the second verb. There is no floating H, however, if the vowel of the object marker is a. The verb then behaves as if it has a normal L affix. This is illustrated with two class 3b verbs (LH), the first of which takes ə after the object marker, the second taking a. The quality of the vowel following the object marker in the benefactive is very important to the tone; the ə benefactive has a floating H that associates onto the first syllable of the second verb, while a works like any other L affix.

(42)   Benefactive with ə vowel

Class 3b (LH), *hwadʼa* 'stir up, mix' (PRFV PST)

A ʸhwadʼ-í ʸhwádə ndi yəwɔ́ páhwa.	'Someone stirred the flour water for me.'
A ʸhwadɔ́-kə ʸhwádə ndi yəwɔ́ páhwa.	'Someone stirred the flour water for you.'
A ʸhwadɔ́-lə ʸhwádə ndi yəwɔ́ páhwa.	'Someone stirred the flour water for him.'
A ʸhwadɔ́-nə ʸhwádə ndi yəwɔ́ páhwa.	'Someone stirred the flour water for us (ex).'
A ʸhwadɔ́-mə ʸhwádə ndi yəwɔ́ páhwa.	'Someone stirred the flour water for us (in).'
A ʸhwadɔ́-kwə ʸhwádə ndi yəwɔ́ páhwa.	'Someone stirred the flour water for you (pl).'
A ʸhwadɔ́-tə ʸhwádə ndi yəwɔ́ páhwa.	'Someone stirred the flour water for them.'

(43)   Benefactive with *a* vowel

Class 3b (LH), *tsasla* 'plant in dry ground' (PRFV PST)

A ʸtsasl-íya ʸtsaslə́ ndi hiyá.	'Someone planted grain in the dry ground for me.'
A ʸtsaslə́-ka ʸtsaslə́ ndi hiyá.	'Someone planted grain in the dry ground for you.'
A ʸtsaslə́-la ʸtsaslə́ ndi hiyá.	'Someone planted grain in the dry ground for him.'
A ʸtsaslə́-na ʸtsaslə́ ndi hiyá.	'Someone planted grain in the dry ground for us (ex).'
A ʸtsaslə́-ma ʸtsaslə́ ndi hiyá.	'Someone planted grain in the dry ground for us (in).'
A ʸtsaslə́-kwa ʸtsaslə́ ndi hiyá.	'Someone planted grain in the dry ground for you (pl).'
A ʸtsaslə́-ta ʸtsaslə́ ndi hiyá.	'Someone planted grain in the dry ground for them.'

The *a* in the benefactive also blocks the floating H of class 2 verbs. (44) is an example of a class 2 verb (LL ḤH), with a benefactive that takes *a*.

(44)   Benefactive with *a* vowel and a class 2 verb

Class 2 (LL ḤH), *ndzaga* 'place an object upright (pl)' (PRFV PST)

A ʸndzagə-ta ʸndzagə ndi yəwá.   'Someone placed the water (containers) for them.'

4.3. The reflexive/reciprocal marker. The affix used in Podoko to mark reflexivity or reciprocity is -*v*-. The vowel before the affix is *a* when the affix immediately follows an unpalatalized verb root; otherwise it is *ə*. The vowel after the affix is either *ə* or *a*, depending upon the verb. There seems to be no way of predicting which final vowel a verb will take. As with the object markers, the reflexive/reciprocal marker (REFL) always takes L when in combination with other affixes. (45) shows the reflexive/reciprocal marker in combination with two other affixes.

(45)   *A   gwats-al-əv-ala   gwatsə nda.*
        ~AR   find-3s-REFL-entire RE   INDEF
        Someone found him.

The reflexive/reciprocal marker takes a L when in combination with other affixes. Otherwise this affix works tonally very much like the middle voice in that a H must be obligatorily present.[11] In class 1 where there is no inherent H, a H is present on the vowel following the affix. In class two (LL ḤH), the floating H associates onto the vowel of the affix. All the other tonal classes have an inherent H, therefore the vowel of the reflexive/reciprocal marker is L.

(46)   Class 1 (LL), *təha* 'hit, beat'

    A   təh-avə́   təhə   nda.
    ~AR hit-REFL RE   INDEF
    One hit oneself.

(47)   Class 2 (LL ḤH), *ɓaka* 'do, make, create'

    A   ɓak-avə́ ɓakə sariyá.
    ~AR do-REFL RE   judgment
    The judgment happened.

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[11]There are two verbs that have two tonal patterns for the *-avə* affix; *ɓaka* 'do, happen, make' and *hama* 'pile up, group'. Both verbs are class 2 verbs (LL Ḥ) and one would expect the *-avə* affix to have a H. This form does exist.

(64)   *A   ɓak-avə́ ɓakə   sariyá.*
    ~AR do-REFL   RE   judgment
    The judgment happened.

(65)   *A   ham-avə́ hamə   nda.*
    ~AR group-REFL RE   INDEF
    People grouped together.

However, these two verbs carry another meaning, and in order to distinguish this meaning, the *-avə* affix does not carry a H.

(66)   *A   ɓak-avə ɓakə ndi   muzá.*
    ~AR do-REFL RE   INDEF blood
    Someone did blood to himself (one cut himself).

(67)   *A   ham-avə hamə ndi   paná.*
    ~AR group-REFL RE   INDEF stalk
    Someone grouped together the stalks.

Thus, it seems that when a verb has two meanings for the *-avə* affix, the intransitive (or middle) form takes the H while the transitive form takes L.

(48)   Class 3a (HL), *dzaɓa* 'sprinkle'

        A   dzáɓ-avə   dzáɓə ndi   mala.
        ~AR   sprinkle-REFL   RE   INDEF oil
        Someone sprinkled himself with oil.

(49)   Class 3b (LH), *məta* 'tear, rip'

        A   mət-ávə   mətə́ nda.
        ~AR   rip-REFL RE   INDEF
        Someone ripped (cut) himself.

5. Tone on plural verbs

Anderson and Swackhamer (1981) have shown that consonants influence tone in Podoko. But what about vowels? Schuh says that the tone class of verbs in Ngizim "is almost entirely predictable from the vowel of the first syllable: if this vowel is *a*, the verb will have a high tone; if it is a high vowel, the verb will have a low tone" (Schuh 1971:34). Newman (1975) argues that it is wrong to postulate a correlation between tone and vowel height in Hausa plurals. In Podoko plurals there is a correlation between vowels and tone. Podoko, as in some other Chadic languages (Frajzyngier 1977:51), manifests a vowel change in the plural form of verbs that have ə in the first syllable (Jarvis 1986). Thus *ɓala* 'increase, multiply' becomes *ɓəla* in the plural, and *fətsa* 'escape', becomes *fatsa*. An -*aw* suffix can also be added (Jarvis 1986). If a singular verb already contains *a* in the first syllable, there is no tone change from the singular to the plural.

(50)   *A   ndáva ndavə ndi   d̃afá.*
        ~AR   ask^s RE   INDEF fufu
        Someone asked for fufu.

(51)   *A   ndávawa ndavawə ndi   d̃afá.*
        ~AR   ask^p   RE   INDEF fufu
        People asked for fufu.

From these two examples, we see that a cacv construction maintains the same tonal pattern from singular to plural. If, however, the verb contains an inherent H and has either the schema cə́cv or cəcv́v, then the H becomes a floating H in the plural, as in (52)–(57). This floating H associates onto the first syllable of the second verb for no observable reason.

(52)   Floating tone production in plural verbs

    sg   ⇒   pl

    cácv ⇒ cacv ʜ

    cəcv́ ⇒ cacv ʜ

(53)   *dəgá* (sg); *daga* ʜ (pl) 'pound'

    A   dəgá   dəgə ndi ʸngwə́ɓa.
    ~AR pound^s RE   INDEF okra
    Someone pounded the okra.

(54)   *A   daga   dágə ndi ʸngwə́ɓa.*
    ~AR pound^p RE   INDEF okra
    Many people pounded the okra.

(55)   *zlə́nga* (sg); *zlanga* ʜ, *zlangawa* ʜ (pl) 'put horizontally'

    A   zlə́nga zləngə ndi nafá.
    ~AR place^s RE   INDEF wood
    Someone was able to place the pole horizontally.

(56)   *A   zlanga zlángə ndi nafá.*
    ~AR place^p RE   INDEF wood
    Someone was able to place the poles horizontally.

(57)   *A   zlangawa zlángawə ndi nafá.*
    ~AR place^p   RE   INDEF wood
    Someone placed the poles horizontally.

6. Historical hypothesis

It is difficult to say what the historical underlying forms of the verbs were. The Podoko language seems to avoid a ʜ ʜ sequence in the surface structure. Having ʜ at the beginning of an utterance is also avoided. Besides the unmarked imperfective imperatives of classes 3a and 4a, there are only six morphemes (with mostly modal meanings) which are realized with an utterance-initial ʜ.

(58) Utterance-initial H morphemes

bí	'perhaps'
dá	'on'
ndá	(plural)
má	'even'
mú	'may'
sáyɔ́	'must' (borrowed from Fulani)

The underlying forms may be posited as LL, LH, HL, and HH, but with another L added at the beginning of all verbs to prevent a H from appearing syllable-initial on the surface. This added L spreads everything to the right one syllable, causing the last tone to float. If the floating tone is L, it disappears while a floating H remains, as indicated in (59).

(59) Isolation forms of verbs

	Historical		+L		Surface
Verb class 1	LL	→	LLL	→	LL
Verb class 2	LH	→	LLH	→	LL Ḥ
Verb class 3	HL	→	LHL	→	LH
Verb class 4	HH	→	LHH	→	LH Ḥ

The Ḥ of Class 4 verbs has become ç in present-day surface forms. The placement of the H in classes 3 and 4 is dependent upon the consonant type of the first syllable. If the first consonant is a depressor consonant, the H is placed on that syllable. If the first consonant is not a depressor consonant, the H is displaced onto the second or one of the subsequent syllables. While the preceding historical hypothesis has the advantage of seeming fairly simple and straightforward, comparative evidence with other Chadic languages may reveal a more complicated explanation for present-day forms in Podoko.

7. Residue

There are a few verbs such as *kasa* 'to take, carry, catch, seize' which seem to have two different tonal patterns. The meaning 'to take, carry' never occurs without an affix, and the tonal pattern is that of a Class 1 (LL) or Class 2 (LL Ḥ) verb.

(60) *A   kəs-əlá   kəsə   nda.*
      ~AR take-out   RE   INDEF
      Someone took it out.

(61) *A   kəs-əla   kəsə   nda.*
      ~AR carry-down RE   INDEF
      Someone carried it down.

The meaning 'to catch, seize' does occur without an affix, and the tone
pattern is that of a Class 3b (LH) verb.

(62) *A   kəsá   kəsə   nda.*
      ~AR seize   RE   INDEF
      Someone seized it.

These were probably two verbs historically, 'to take, carry' having a LL
pattern, and 'to catch, seize' having a LH pattern. Lamang (Wolff 1983:100)
has two morphemes, *kla* 'to take' and *ksa* 'to catch, seize.' Even though
most verbs in Podoko have a very large semantic field due to the exten-
sions, it seems best to treat *kəsa* as two separate morphemes in two
different lexical tone classes.

(63) *kəsa* (LL) 'to take, carry'
      kəsa (LH) 'to catch, seize'

8. Conclusion

In this paper, the Podoko tone system has been examined in detail with
special focus on tone changes due to verbal marking. At first glance, it
seems to be a three-tone system, but once the distribution of these tones
in various environments is studied, it is found to be a two-tone system with
the additional feature of downstep. In contrast to many of the languages
of the world, downstep in Podoko affects only L. Also, it is unusual that
the tone register is reset when going from a downstepped L to H instead
of waiting for a pause (as in many other downstep languages). When these
two phenomena are considered together, one might be tempted to consi-
der the lowering as just a lowered tone instead of a lowered register. This
is not the case, however, because all Ls after a lowered L occur on the same
lowered level. The phenomenon is indeed the lowering of an entire
register which we call downstep, even though the lowering only lasts until
the next H.

In passing, various clause- and sentence-final tonal variants (often referred to as intonation) were noted. Of more importance to the purpose of this paper, the interaction of consonants and tone in Podoko led to the positing of various verb classes. It was only after positing underlying tonal patterns for each of these classes (including floating high and floating copy tones) that most occurrences of clause-medial downstep could be predicted on the basis of the presence of depressor consonants. The remaining cases of clause-medial downstep were found to be limited to the lexical form of a restricted set of grammatical words. A possible historical hypothesis is presented for how the present underlying forms of Podoko verbs might have evolved from earlier patterns.

This paper also looked into the grammatical downstep feature which occurs at the beginning of present tense clauses. The presence of the lowered register was shown by comparing two spectrographs. The only difference between the two was the presence or absence of the lowering indicating present as against past tense.

Finally, the paper included data on the sixteen possible constructions in independent clauses in each of the six tone subclasses, and the three types of verbal extensions with the perfective and aorist constructions. This paper thus provides the long-awaited complement to Anderson and Swackhamer 1981 on Podoko nouns.

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Appendix

Tone Class 1

ᵞɓəɓara 'harden'
ɓəla¹ 'increase'
ɓəla² 'relate'
ɓəla³ 'light'
ɓala 'catch with glue'
ɓawa 'call, escort'
ɓaza 'have a miscarriage'
dəfətəla 'fall'
da 'sprout (new leaves)'
pəta 'overdo something (un-necessarily, unwisely)'
ᵞpəta 'miss, fail to do'
pətsa 'change, explain, translate'

pəsa 'pour (something powdery or powderable) for him, give him'
ᵞpəsa 'drizzle, sprinkle'
pəhwa 'break off (a limb)'
pəla¹ 'untie, release'
pəla² 'pay back'
pəla³ 'roof, thatch'
pərsla 'dislocate (a limb)'
pa 'put, take, give, close (wound)'
pahwatsa 'break up'
pasla 'peel off, crack off'
pava 'winnow'
fəta¹ 'blow (greeting)'

ᵞfəta¹ 'dry (sprouted grain for beer)'
fəta² 'shave'
ᵞfəta² 'remove (something that is stuck on)'
fətsa 'escape'
fa 'place, put (sg. object)'
fusla 'remove'
təɗama 'calm'
təfa¹ 'give, get (fire)'
təfa² 'spit'
təha¹ 'hit'
təha² 'ripen'
tərɗa 'sadden, anger'
təra 'be unable'

təwa 'measure (with part of the body)'
tava 'last, stay a while'
tula 'perform a rite'
tsəɓa 'greet respectfully'
ʸtsəɓa 'plant, set upright'
ʸtsəɗa 'excrete'
tsəkəra 'warm oneself'
tsəka 'revive'
ʸtsəka 'remove, place upon'
tsəkwa[1] 'alight'
tsəkwa[2] 'dress, undress'
tsəkwa[3] 'begin'
tsəha[1] 'miss'
tsəha[2] 'dig'
tsəhwəra 'sit on heels'
ʸtsəhwa 'gather several small quantities'
tsəhwaɗa 'exceed limits'
tsəhwala[1] 'clean leaves'
tsəhwala[2] 'rinse'
ʸtsəra 'slip away'
ʸtsəwa 'drink last drop, drain'
ʸtsəngwa 'descend'
tsa 'take, give a portion'
ʸtsa 'come (here)'
tsaɓa 'eat (soup or porridge)'
tsaka[1] 'speak out from heart'
tsaka[2] 'stop'
tsakwa 'become informed'
ʸtsakwazla 'clean (e.g. nails, teeth, ears)'
tsaha 'take, remove in bits (something that is stuck)'
tsama 'know'
tsisla 'break off small particles'
kədəfətəla 'fall'
kasa 'carry, take (sg. object)'
kəsla 'swell'
ʸkəsla 'calm'
kəla[1] 'destroy (in battle)'
kəla[2] 'move house'
kəla[3] '(i) be broken'
ka 'lower'
kata[1] 'sift (flour)'
kata[2] 'protect'
katsa 'stop, stand'
katsaɓa 'gather something wet or soft'
kasa 'sift (sand)'
kala 'settle (price), utter (lie)'
ʸkala 'compare, confuse'
kwəɓa 'tan'
kwəfa 'heat, boil (a liquid)'
ʸkwətsa 'cut into pieces'
kwəra 'borrow, lend, predict'
ʸkwaɗa 'get ready'

ʸsəɓa 'put in (something pointed)'
səɗa 'put on, take off (e.g., clothes)'
səkala 'sing'
səkwa 'buy'
ʸsəsəra 'harden'
ʸsəna 'get used to'
sa 'come'
sapa 'pound of outer shell'
saha 'provoke'
həɗa 'bury'
hərɗa 'cut off body part (ear, nose)'
həra 'skin'
həna 'lie down, spend the night, spend time'
ha[1] 'be born, give birth'
ha[2] 'hem, embroider'
hatsakwa 'get ready to leave'
hala[1] 'avoid'
hala[2] 'glean'
hima 'scare'
hwəɓa 'put on the stomach, upside down'
hwəpa 'be eaten by insects'
hwətsa 'pour liquid'
hwəla 'cry, scream'
sləha 'explode'
sləla 'leave one path to follow another, mislead'
slərta 'get stuck'
sləmda 'scorch'
sla[1] 'suffice'
sla[2] 'cut'
sla[3] 'smooth, spread, rub'
sla[4] 'happen'
slaha 'growl, scold'
slala 'cut off branches'
ləɓa[1] 'soak'
ləɓa[2] 'become fat gradually'
ləfa 'blind'
la 'accompany, guide'
rəwa 'die (pl. subject), tire'
rəva 'rot'
rəzla 'be familar with'
rənda[1] 'slough off'
rənda[2] 'eat a lot'
yaɓa 'flow in small quantity'
yaha 'choose'
wəla[1] 'accomplish, finish'
wəla[2] 'take by surprise'
wəla[3] 'be devoted'
wəra 'return, bring back'
wakala 'enlighten'
ʸwasa 'scatter, disperse, disintegrate'
wara 'lead (animals)'

wiya 'walk, wander'
ʸmətsa 'forget'
mərsa 'blacken'
ʸməza 'come upon, find'
ʸmatsa 'extinguish'
mala 'become'
ʸna 'appear, be invented, come into circulation'
naka 'look'
ʸbələ ʸbəla 'be difficult'
bərha 'drive'
bəra 'repeat, redo'
ba 'weave'
baka 'bend over'
bahwa 'bark'
buzla 'take a mouthful'
dəhəɗa 'chew cud'
dərɗa 'become paralyzed'
dara 'destroy'
dədara 'pack down'
ʸdəgwəna 'dirty'
ʸdənga 'place firmly'
da 'go'
dara 'hammer in, embed'
ʸdanga 'exert'
dzəha 'be sturdy'
dza 'hurt'
ʸdza 'exceed'
dzaka 'teach, learn'
dzawa 'lose, forfeit'
gəsla 'swell'
ga 'do, happen'
gəha 'incite'
gala 'praise'
gara 'equal, resemble'
giya 'bother'
gwəla 'reduce'
gwərɗa 'twist'
gwatsa 'obtain, find'
gwasa 'reach'
vəla[1] 'give'
vəla[2] 'sell'
va[1] 'give'
va[2] 'pass the year'
vaka 'pass the day'
vara 'save, buy back'
viya 'delay'
vusa 'erase, cross out'
zəla 'chat'
zəvəra 'be light-headed'
za 'disappear, lose, destroy'
ʸza 'move'
zaha[1] 'provoke'
zaha[2] 'grind well'
ʸzawa 'advance'
zufa 'drown'
zləla 'appear'
zlərba 'extend outward'

zla¹ 'rejoice'
zla² 'finish'
zlaɓa 'interlock'
zlaha 'take out (honey)'
zlaya 'be just, customary'
mbaɽla 'slip from'
mbara 'have fear (of, for)'
mbala¹ 'sharpen'
mbala² 'spread abroad'
mbara 'go (pl.)'
mbuta 'wrap up'
ndala¹ 'cut'
ndala² 'jump, fly'
ndarɗa 'pilfer'
ndaza 'cook well'
nda 'be'
ʸnda 'swallow, block'
ʸndaka 'group together'
ndaha 'read'
ndasla 'cool'
ndara 'build, make'
ʸndawa 'block up'
ʸnduva 'lessen'
ʸndzara 'sort'
ndza 'sit, stay'
ngara 'cook in small quantity'
ʸngarawa 'despise'
nga 'set a trap'
uɓasa 'laugh, smile'
uza 'eat (something that doesn't have to be chewed), swindle, wear out'

Tone Class 2

ʸɓasa´ 'suck'
ɓaka´ 'do, happen'
ɓasla´ 'be replete'
ɓala´ 'weave'
dambala´ 'leave'
daha´ 'make, sew'
dasla´ 'store, prepare, repair'
dula´ 'keep fire smoldering'
ʸpada´ 'roll up, wrap up'
pata´ 'persuade, flatter, court'
para´ 'wash'
fada´ 'come together, group, coil up'
futa´ 'blow'
ta´ 'cook'
tapa´ 'taste, do a little'
taka´ 'try'
ʸtakwala´ 'crumple'
tala´ 'touch'
tsakwada´ 'lie in wait for, catch'
ʸtsahwana´ 'store up'
tsawa´ 'reach, arrive at'

kaɗa´ 'kill'
kwama´ 'desire, miss'
ʸkwatsa´ 'tear into pieces'
kwala´ 'refuse'
kwara´ 'rule, organize'
sa´ 'drink'
sula´ 'grill, roast, fry (in a receptacle)'
haya´ 'thank, be satisfied with'
hama´ 'pile up, group'
hadakwa´ 'dig a hollow'
hwambara´ 'embrace'
hwandza´ 'gather up hurriedly'
slara´ 'work, cultivate'
slaɗa´ 'sweep'
slafa´ 'pray'
ʸslahwa´ 'tie up, fasten'
wada´ 'swear'
wala´ 'speak'
mala´ 'reconcile, help'
bangwatsa´ 'batter'
ʸdanga´ 'be in fighting position'
daka´ 'be tactful'
ʸduda´ 'encircle'
dza´ 'measure'
dzaɓa´ 'repair something torn or cracked'
ʸdzaha´ 'assemble, gather'
dzala´ 'turn, twist'
dzama´ 'think'
ʸdzama¹ 'meet'
ʸdzama² 'think'
dzava´ 'pile up'
gasa´ 'take, catch'
gama´ 'meet, surround'
gwarsa´ 'sprain'
gwa´ 'compare'
gwata´ 'guard, wait'
gwasla´ 'guard, wait for'
vusa´ 'put in ashes'
zagwa´ 'shake hands'
mbaɽla´ 'do something before someone else'
ʸndzawa´ 'bite, burn'
ngarsla´ 'coagulate'
ngwaɓa´ 'wear out, weaken'
ngwaɗa´ 'tie, bind'

Tone Class 3a

bártsa 'apply a compress, sponge'
bárda 'hurry, chase (to catch)'
báya 'pay'
bázla 'push'
bángwa 'pour from a container with a small mouth'
báta 'eat (powder)'

básla 'castrate'
báza 'unearth'
búta 'fan'
dóka 'wall together'
dáya 'know, recognize'
dága 'enrich'
dángwa 'make blurred, dim'
dáɓakwa 'break off heads of grain with short stalk'
ʸdáfa 'curse'
dágara 'repair'
ʸdágwava 'observe'
dángwasla 'shake (a person)'
dúfa 'blunt'
dzárva 'flow, pour (from one vessel to another)'
dzárhwa 'pound (in the mortar)'
ʸdzóra 'look at, watch, visit'
ʸdzódzana 'slander'
dzóga 'hit (with an object)'
dzógwa¹ 'pray'
dzógwa² 'be able'
dzógwa³ 'join (two things of the same kind, especially string, rope)'
dzóva 'mix, unite'
dzángwa 'nod'
ʸdzá 'exist, happen, be'
dzáɓa 'sprinkle'
dzáɓala 'trickle'
ʸdzáɓala 'whip'
ʸdzáɗa 'pick out'
dzáɗaha 'decorate'
dzáwa¹ 'aim'
dzáwa² 'bring grain out from water'
dzáma 'do first grinding'
dzába 'become ill'
dzágwa 'provoke'
dzúɓa 'cover the bottom rock of granary with mud'
góɗa 'get stuck, stopped, miss, delay'
góla 'grow'
górha 'frighten'
górda 'fall out (hair)'
górva 'chase'
góda 'shake'
ʸgóɗza 'move, shake'
gógara 'tremble'
gógazla 'lose heart'
góza 'curse'
gózla 'cut, divide, distribute'
gáɓa 'associate with'
gára 'try'
gáɗza 'eat something dry'
gwóɓa 'bend'
gwóɓa 'rot'

gwávəta 'cook beans'
gwáɗa¹ 'make an apparition'
gwáɗa² 'convoke someone'
ʸvátsa 'be crafty'
várɗa¹ 'build well'
várɗa² 'cause to suffer'
vársla 'crush'
várdahwa 'scrape'
várzla 'scrape (to clean)'
váraha 'vomit'
ʸvávəda 'be well formed'
váza 'exceed'
vála 'run, hurry'
ʸvádagalaha 'writhe in grief'
zə́ha 'make wrong side out'
ʸzə́ha¹ 'accept, receive, wel-
  come, reply'
zə́rka 'lose weight'
zə́wa 'carry something heavy,
  have bad luck'
zə́va 'do something several times'
zámbəra 'call workparty together'
zə́nga 'hate'
zə́ 'turn'
záɗa 'spend wastefully'
zákwa 'force to do'
zála 'drag'
zámba 'cheat'
zámbara 'push down'
zlə́ɗa 'push around'
zlə́ha² 'knock over'
zlə́la 'pierce, make a hole'
zlə́rda 'dislodge, fire'
zləga 'sow'
zlə́zlava 'swim'
zlə́nga 'place/lay (horizontally),
  bar'
zlá 'help'
mbə́ɗa¹ 'change'
mbə́ɗa² 'collapse, fall'
mbə́ɗa³ 'pour (e.g., grain)'
mbə́ɗa⁴ 'speak'
mbə́la¹ 'spread out, lay out'
mbə́la² 'be too much'
mbə́lala 'dry'
mbə́rzla 'crack'
mbə́rza 'hate'
mbə́ra 'overwhelm'
mbə́wa 'cover over'
mbə́ɗa 'gather, pick (pl. object)'
mbə́ha 'take, catch (pl. object)'
mbə́va 'rise, raise'
mbúte 'catch (an infectious dis-
  ease)'
ndə́ɓa 'burn'
ndə́ɗa 'drip'
ʸndə́ha 'mark'
ndə́la 'cut in two'

ndə́gwa 'count'
ndə́va¹ 'run out, end'
ndə́va² 'console, explain'
ndə́va 'ask'
ndúla 'miss'
ndzə́ɗa¹ 'remove something
  fixed or stuck'
ndzə́ɗa² 'come out or appear in
  number'
ndzə́ga 'place a solid object
  (upright)'
ndzə́va 'plant, stick together'
ʸndzúma 'soak'
ngə́ɗa 'clear (a field)'
ʸngə́ɗa¹ 'hunt, catch, invite'
ʸngə́ɗa² 'incur, contract'
ngə́sla 'break, snap, pick'
ngə́la 'prevent'
ʸngə́ra 'block'
ngə́zla 'break, shatter'
ngə́ 'stick to'
ngə́la 'cross, climb'
ngwə́za 'smoke'
ngwə́ 'want, like, love'

Tone Class 3b

ɓahwá 'hide'
ʸɓəslá¹ 'forge'
ʸɓəslá² 'go bad (food)'
ɓəzá 'spoil, destroy'
ɓəsá 'tolerate, endure'
ʸɓəsá 'forgive, excuse'
ɓəzlá 'make several, pile up'
ʸɗətsá 'squeeze out (a liquid),
  strain'
ɗəgá 'hit'
ʸɗəzá 'do a rite for protection'
ʸɗəzlá 'build (with stones or
  bricks)'
ɗatsá 'cut (i.e., hair)'
ɗalá 'cut in strips'
ɗabá 'follow, accompany'
ɗíká 'squeeze together'
ʸpədá 'peel'
pəsá 'unseal granary'
pəláha 'clean beans'
pərátsa 'tear'
pərɗá 'dislocate joint'
ʸpəzá 'rub to clean'
patsá 'clear a field'
paká 'lift up something flat'
paslá 'kill (pl.)'
palá 'final weeding'
pavá 'arrive'
piyá 'hold, take hold of'

ʸfədá 'cut off the head of grain
  (for threshing)'
fərtá¹ 'escape'
fərtá² 'blow'
fíkwá 'whistle'
tədá 'pull'
tətára 'build a foundation'
təká 'practice'
təkwə́la 'tie up bundles'
tərɓá 'cause to suffer'
təmá 'be left over'
təgwá 'count'
təvá 'redden'
təmbá 'chase after'
təmbára 'make round'
tangwá 'shake'
taɓára¹ 'separate by shaking'
taɓára² 'fatten for slaughter'
takáɗa 'calm'
takwása 'tie up leg'
takwásla 'knock down'
tasá 'pound to take off outer
  shell'
tahá 'appear, show'
tamáha 'think'
tavá 'show'
ʸtsəɓá 'kill'
ʸtsədá 'make pointed'
tsəká 'cause fire to blaze'
ʸtsəkwá 'think'
tsəhá 'begin to eat'
tsəhwáɗa 'make furrows'
tsərásla 'smash (bones)'
tsəwá 'be good, beautiful'
tsəná 'hear, understand, obey'
tsəbá 'follow'
tsabásla 'draw, spot'
ʸtsədá 'immunize'
tsapá 'praise'
tsapára 'slap'
tsafá 'plait'
tsatsá 'repair'
tsakála 'beg'
tsakwásla 'hoe hurriedly'
tsakwára 'grow quickly'
tsahála 'pronounce'
ʸtsahwá 'tighten'
tsaslá¹ 'pour'
tsaslá² 'sow during drought'
tsará 'be good, kind'
tsifá 'dampen'
tsislá 'build with stone'
tsufá 'pay homage to'
kəkáɗa 'massage'
kəkára 'crow'
kasá 'catch,'
ʸkəslápa 'squash flat'

kəlá[1] '(tr) break something hard and long'
kəlá[2] 'return'
kərdá 'grind'
kəzlá 'close'
kafá 'pay'
kawára 'do second cultivation'
ᵞkwədə́tsa 'squeeze'
ᵞkwədá 'carve'
ᵞkwədásla 'dissolve by kneading'
kwəkwára 'make blisters'
kwəsláha 'cough'
kwərá 'measure'
kwəbá 'have sexual relations'
kwəvá 'fear'
ᵞkwəzá 'set (sun)'
kwəzlə́hwa 'stretch'
kwəzlá 'rinse (the mouth)'
kwadáha 'boil, cook'
kwaslá[1] 'crack off'
kwaslá[2] 'boil something thick'
kwamá[1] 'wear out, overcome'
kwamá[2] 'slander'
kwandzáka 'scrape the surface only'
safáha 'wear out'
səgá 'grow, increase'
səngwá 'cradle'
sadá 'brush off'
ᵞsafá 'breathe'
satá 'comb'
satára 'become dry'
sangá 'clean out (a dish)'
sudá 'poison'
hətsákwa 'lift something heavy'
hərdá 'scrape'
hərgá 'insult'
ᵞhərzá 'be near'
ᵞhəmgá 'incline'
ᵞhədzá 'scrape'
ᵞhadzá 'nauseate'
halá 'grow old'
ᵞhwədá 'take by surprise'
hwəhwə́ra 'enlarge a hole'
hwərə́ɓa 'chew'

hwərsá 'crush (into powder)'
hwəyá 'damage (by water)'
ᵞhwədzá 'shake up'
hwədzáɓa 'disorder'
hwəvá 'crush (into powder)'
hwəmbə́ta 'dent'
hwəmbá 'infect'
hwəndzáɓa 'chop up'
hwəɓá 'stir up'
hwədá 'stir, mix'
hwəsá 'carry corn to the thresh-ing floor'
hwaláɓa 'stir up'
sləkáwa 'obey, respect'
slərdá 'take off leaves'
sləvá 'bail out all water'
sləngədá 'choke'
slaslá 'calculate'
slihá 'smear'
ləkwá 'take (pl.)'
lahá 'be curious, respect'
laɓá 'mix'
lahá 'dig'
rəɓá 'be fertile'
rədá 'pick all'
rətá 'shred'
rəhá[1] 'fill'
rəhá[2] 'dance, stamp'
rəzlá 'acquaint'
ratsá 'cut several times'
yəɓá 'flatter'
yaɓá 'pour, flow'
ᵞyadá 'sort out'
wəlá[1] 'cut, wound'
wəlá[2] 'begin sowing'
wərá 'open'
mətá 'split, tear'
mətadá 'lick, lap'
ᵞmatsá 'die'
matsá[1] 'exceed'
matsá[2] 'take hold of'
ᵞmatsədá 'suck'
matsaká 'grill (not in a recep-tacle)'

matsará 'remove (oneself) unnoticed'
məzá 'crush, level'
ᵞməzá 'sniff, smell'
ᵞmadákwa 'whiten'
madáha 'decorate'
masá 'wipe, smear'
mará 'illuminate, show'
ᵞmagwá 'roof with stalks'
mazá 'fight'
nəká 'see'
nəngá 'see'
naká 'see, look'
ᵞnaná 'despise'
uɓə́la 'keep watch'
upadá 'chew'
ufá[1] 'heat, boil'
ufá[2] 'itch'
ufadá 'play (a wind intrument)'
ᵞutsə́ka 'sprinkle'
ᵞusá 'confuse'
usá[1] 'stir'
usá[2] 'arrive at'

Tone Class 4a

də́gəza 'flow abundantly'
válaha 'scold severely'
mbə́la 'depart, send, throw'
ndə́ha 'become fat'
ngwə́lma 'get better, cure'

Tone Class 4b

ᵞparáka 'jump, bound'
tədá 'pour, draw (liquid)'
ᵞtəzá 'prick, pierce'
tsərvá 'run away'
hwəlvá 'make a loud noise'
matsədə́ka 'shine'
məzá 'be in superfluity'
maslá 'leave'
usalá 'look for'