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Cross-dialect variation in Dinka tonal morphology

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Abstract

This study has two main components: to describe the tone system of the previously-undocumented Hol dialect of Dinka, and to classify an unclassified inflectional category. Dinka, a West Nilotic language comprised predominantly of closed monosyllabic words, has a complex suprasegmental system; vowel length, voice quality, and tone (both lexical and morphological) all operate independently. I first describe the tone system of Hol, which has four distinctive tone categories. Using data from the Hol dialect as well as the Bor South dialect, two of the Bor cluster dialects, I then provide evidence that a tonal change on transitive verbs first identified in the Agar dialect is a separate inflectional category with robust behaviour in the Bor dialect cluster. This study is a starting point for comprehensive examinations of tense-aspect, inflection, and intransitive verbs in Dinka.

Keywords: Dinka, tone, verbal inflection, non-linear morphology

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Abbreviations

AP	antipassive	NTS	non-topical subject
DECL	declarative	PASS	passive
FUT	future	PL	plural
GEN	genitive	PREP	preposition
HAB	habitual	PRF	perfective
IMP	imperative	SG	singular
NEG	negative	UNC	uncountable
NF	non-finite form	X	unclassified inflectional category
NT	null-topic	ZERO	zero (unmarked) inflection

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1 Introduction

This paper describes aspects of the phonology and morphology of tone in two dialects of Dinka, a language with a complex suprasegmental system, which includes both lexical and morphological tone. The aim of this paper is twofold: 1) to describe the tone system of the previously undocumented Hol dialect, and 2) to describe an unclassified inflectional category in the Bor dialect cluster of Dinka and analyse its morphosyntax both in the context of the Bor cluster and in the language as a whole. The dialects described in this paper are Hol and Bor South; however, this paper focuses mainly on the Hol dialect, using data from the Bor South dialect¹ to hypothesize about the Bor dialect cluster at large. Hol and Bor South represent the northernmost and southernmost dialects of the Bor cluster, respectively. Therefore, I hypothesize that what is true for both dialects, as stated in this paper, may be true for the entire dialect cluster.

The paper is organized as follows: Section 1 explains the motivation for undertaking this study and the methods by which I conducted elicitations. Section 2 provides a background of the Dinka language and the behaviour of transitive verbs in Dinka. Section 3 describes the phonology of both the Hol and Bor South dialects. Section 4 describes the unclassified inflectional category, compares it to a similar inflectional category found in the Agar dialect, and analyses its morphosyntax. Section 5 is a discussion and Section 6 contains concluding remarks.

The examples in this paper often contain ideas or concepts that are stereotypically associated with African exoticism (e.g. giraffe, python). These words were used in elicitations for several reasons: a) the fact that these are likely to be native words, as opposed to loan words; b) the words' nuclei contain the longest vowel length grade, which is an ideal environment in which to observe tone; c) the tone of a given word may be useful to place in a specific location in an utterance; and d) the onset and coda can determine the reliability of phonetic analysis of a word. Dinka is not an “exotic” language; it is fascinating due to its particularly complex suprasegmental system. Just like any other natural language, it makes use of its inventory of sounds to express anything found in the human experience.

All acoustic analysis was conducted in Praat (Boersma 2001). Interlinear morpheme-by-morpheme glosses are done according to the Leipzig Glossing Rules.²

¹This dialect is sometimes referred to as *Bor* but I will refer to it as *Bor South* in an effort to distinguish it from its dialect cluster, which is also called *Bor*.

²These can be found at <https://www.eva.mpg.de/lingua/pdf/Glossing-Rules.pdf>

1.1 Motivation

In general, describing any language or dialect has the potential to contribute to understanding about language. Dinka has been studied more than other West Nilotic languages, but there are still many dialects that are entirely undocumented. Any description of Dinka's complex set of independent suprasegmental contrasts potentially contributes to the understanding of the range of suprasegmental contrasts in the human language faculty. Additionally, the fact that (even neighbouring) Dinka dialects can differ both in number of tonemes and in tonal processes—whereas the presence of a binary voice quality and ternary vowel length is considerably more universal—suggests that tone is of particular interest in undocumented dialects of the language.

Additionally, Dinka's transitive verbal paradigm is complex, with inflectional and derivational categories that express the morphosyntactic relationship between topic, subject, and object. The distinction between topic and subject will be explained in Section 2. Therefore, an unclassified inflectional category suggests a specific and potentially undescribed morphosyntactic relationship between the arguments of the verb.

1.2 Methods

The research described in this paper was conducted from December 2019 to August 2020 with four speakers of Dinka: two of the Hol dialect and two of the Bor South dialect. Background on these dialects will be provided in §2. With the exception of three elicitation sessions conducted in the Boston, Massachusetts (USA) area in December 2019, all elicitations were conducted via internet-based video conferencing software. Elicitations were conducted approximately weekly from late January 2020.

The first stage of research on Hol was to establish the underlying tonemes. I hypothesized that the dialect has four tonemes, given the four tonemes of other Bor cluster dialects (Remijsen 2010). However, any contextual behaviour was unknown. This made elicitations potentially difficult, as it was not known where tonemes might neutralize. Tonemes were identified using nouns that were predicted to have the longest-grade vowel length, realized in four contexts, as tones are often realized saliently utterance-finally, and can neutralize utterance-medially (Remijsen 2010).

Throughout data collection, several contexts were consistently used when eliciting nouns. They

are as follows:

- Context 1: ‘X’ (citation form)
- Context 2: ǎ-nòŋ X (‘There is an X’)
- Context 3: dèej ǎ-cǐ X léec/máaan (‘Deng praised/hated the X’)
- Context 4: nòŋ X (‘Is there an X?’)

These contexts were selected according to the following considerations: Context 2 provides an utterance-final environment, whereas Context 3 provides an utterance-medial environment; the behaviour of Dinka tones can differ in these environments. Context 4 provides another utterance-final context, but both Remijsen and Ladd (2008) and I have found that the f₀ range increases in this interrogative context; that is, tones are more clearly audible in this context. Interrogative contexts in Dinka are not marked by a high intonational boundary tone.

Sessions that were conducted in-person in 2019 were recorded; this allowed acoustic analysis of the fundamental frequency (f₀). This study is not quantitative, but as the complex suprasegmental system makes transcription of Dinka difficult, confirming the f₀ patterns was useful in early elicitations. This was also helpful in verifying the presence of contrastive alignment in the tones of the Hol dialect. By the end of February 2020, I had a preliminary description of the hypothesized underlying tonemes of the Hol dialect and various contextual processes (or lack thereof), as well as ‘prototype words,’ eight words crossing each toneme (L, H, HL, LH) with voice quality (modal, breathy), that were used to initially identify each speaker’s realization of the given toneme. I was able to confirm the hypothesized Hol tonemes with my second speaker, with whom I continued exploring the dialect. The inflectional category described in this paper was first elicited with the second speaker of Hol.

Elicitations with the first speaker of Bor South began in late April 2020; elicitations with the second speaker began in late July 2020. These elicitations were very similar, content-wise, to the elicitations of Hol. The data were compared to those of Hol, the idea being that phenomena identified in both dialects may preliminarily be generalized to the dialect cluster as a whole. I first confirmed the tone system of the dialect using methods described for Hol. I then conducted comparative elicitations across dialects, eliciting the same phenomena or contexts.

2 Language Background

2.1 Geographical Information

Dinka (endonym: *Thuɔŋjäŋ*) is a West Nilotic language spoken in South Sudan by members of the Dinka ethnic group. As a result of ongoing civil war, many Dinka people live in neighbouring African countries, such as Sudan, Kenya, and Uganda, and there are large communities in other parts of the world, such as the United States and Australia. The full language affiliation is Nilo-Saharan, Satellite-Core, Core, Eastern Sudanic, Southern, Nilotic, Western, Dinka-Nuer, Dinka (Lewis et al. 2016). There are 250,000 speakers of the Bor cluster of Dinka, and a total of around 1.3 million speakers (Lewis et al. 2016, Eberhard et al. 2020). The Bor dialect cluster is also known as South-eastern Dinka (ISO: dks) and consists of four dialects: Hol, Nyarweng, Twic East, and Bor. These are spoken on the east side of the White Nile, south of the Nuer-speaking region pictured in Figure 1. Hol is spoken near Duk Payuel and Duk Padiet; Bor South is spoken in the area near the city of Bor. Tucker and Bryan (1956) note a fifth Bor dialect, Athoc. This is not attested in other sources, and is likely a non-linguistic subdivision of speakers of the Bor South dialect. The map below displays the orientation of several Dinka dialects along the White Nile; Hol and Bor South are outlined with dotted lines, and the other dialect referenced in this paper, Agar, is outlined with a solid line. Dinka dialects are capitalized; other languages (Nuer, Atuot) are capitalized and italicized. Cities are written in lowercase.

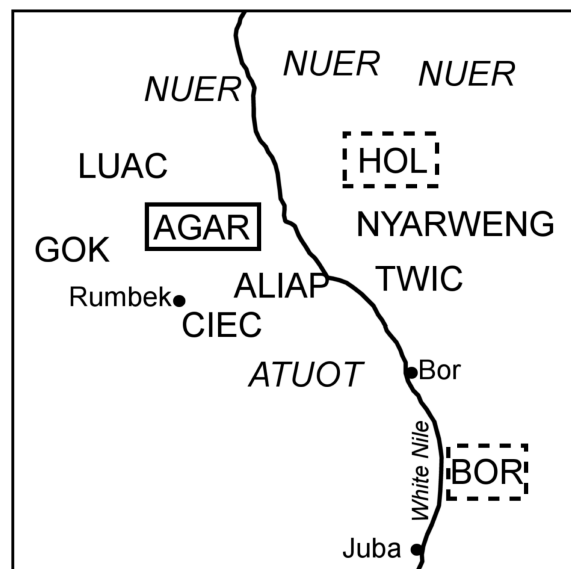


Figure 1: Map of Dinka dialects. Edited from original, provided by Bert Remijsen.

2.2 Dinka syllable and sentence structure

Dinka is of particular interest due to its complex suprasegmental system, which has independently contrastive vowel length, voice quality, and tone. Notably, Dinka provides salient evidence of a ternary vowel length contrast (Andersen 1987, Remijsen & Gilley 2008). Additionally, the specification of tone is both lexical and morphological, distinguishing between, for example, *l̥aaak* ('belt') and *l̥aaak* ('saliva'), but also *màan* (hate\ZERO) and *máan* (hate\2SG). Nominal and verbal inflections are generally expressed by changes in tone, vowel length, voice quality, or a combination thereof.

Dinka is also largely monosyllabic; most content morphemes are closed syllables (CVC). Open monosyllables are uncommon among content words. Function morphemes, however, can be open monosyllables or entirely vocalic (CV or V). Dinka words can be polysyllabic, though this is a minority. Native polysyllabic words often have an *a-* prefix; many polysyllabic words are loan words.

Dinka syllable structure. $C(w)(j)V(V)(V)C$

Though the general Dinka syllable structure is CVC, this is subject to a number of conditions, as seen above. The onset consonant is followed by an optional semivowel. These complex onsets (e.g. *pj-*, as found in *pj̥aaar*, 'scar') have also been described as a simplex onset followed by a diphthong (Andersen 1987). Phonetically, they are identical; however, Remijsen and Manyang (2009) provide several arguments analysing them as complex onsets, and this analysis was also given in Andersen (1993). This paper will treat these as complex onsets. The notation for transcribing Dinka in this paper uses IPA symbols, with the exception of vowel length, which is expressed using one, two, or three vowel symbols, for short, long, and overlong vowel length, respectively. This is the convention used by most of the relevant contemporary literature. Tone and voice quality will be indicated on the first vowel symbol. In this paper, all transcriptions are phonemic unless enclosed by square brackets ([]), in which case they are phonetic. Unless otherwise stated, all examples in this paper are in either the Hol or Bor South dialect, and the dialect will be identified. All examples from papers by Torben Andersen are in the Agar dialect. If no dialect is identified for an enumerated example, it is in the dialect of the previous enumeration.

Dinka sentence structure is relatively fixed. Displayed below is an abridged version of the structure for declarative clauses, omitting irrelevant items. A conjunction is followed by a topic, the declarative prefix, a negative auxiliary if relevant, a finite verb, subject, object, a nonfinite verb if relevant, and an adverb. However, the conjunction, object, nonfinite verb, and adverb are optional;

a declarative utterance in Dinka can consist simply of a topical subject, the declarative prefix, and a verb.

Dinka sentence structure. *Conj. Top. D-Neg V_{fin} S O_{prim} V_{nonfin} Adv.* (Andersen 2007:91)

Notably, topic and subject are not necessarily identical in Dinka (Andersen 1991). *Subject* refers to the semantic subject, whereas *topic* refers to the noun phrase preceding the verb, which may or may not be the subject. The relation between the topic and the subject is marked on the verb. The topic corresponding to the unmarked inflectional category is the subject, leading to the conclusion that the default or unmarked declarative sentence template in Dinka has a subject as its topic (Andersen 1991). It is also possible to have a non-topical subject, which may be the object of a sentence, or another noun. The topic also determines the length of the declarative prefix *ǎ/ǎa*; a plural topic will result in the longer length grade of prefix, whether or not it is the subject of the sentence.

2.3 Transitive verbs in Dinka

Transitive verbs in Dinka appear either in a simple form or in a derived form. The following section provides background information on the documented derivational and inflectional categories of the language. It is important to note that ‘inflection’ and ‘derivation’ in this context refer to specific verbal paradigms in Dinka, which do not govern prototypical inflectional and derivational domains. These paradigms are defined by Andersen (Andersen 1992–1994, Andersen 1993).

2.3.1 Derivational paradigms

An impressively comprehensive explanation of the various derivational paradigms and the characteristics of their respective inflectional paradigms can be found in Andersen (1992–1994). In Dinka, transitive verbs can have derived forms in a number of categories: centrifugal and centripetal, which express motion away and towards the deictic center, respectively; benefactive; antipassive, which shifts the object of the original transitive verb to an adverbial; and benefactive-antipassive, which combines a beneficiary (as in the benefactive) with the demotion of an object (as in the antipassive). A shift in derivational category involves changes to the stem; these are usually length and/or voice quality. Changes in voice quality are often also accompanied by changes in vowel quality (Andersen 2017). (1) displays a derivational shift; the simple derivational category in (1a) changes

to the antipassive derivational category in (1b). In this case, the valency reduction is expressed via a voice quality change, from modal to breathy, and a vowel length change, from long to short. While this paper primarily discusses the simple derivational category, there is some mention of the antipassive; this will be explicitly noted. It is also important to note that some verbs may not have all of the derivational categories; for example, if expression of motion is incompatible with lexical meaning, the centripetal and centrifugal derivations may be nonexistent.

- | | | | | | |
|--------|--|------------|----|---------------------------|------------|
| (1) a. | ràaan ǎ-kwèen | mjèɛɛɛ | b. | ràaan ǎ-kwèn | <i>Hol</i> |
| | person DECL.SG-count | giraffe.PL | | person DECL.SG-count\AP | |
| | ‘The person is counting the giraffes.’ | | | ‘The person is counting.’ | |

2.3.2 Inflectional paradigms

Inflectional categories in Dinka, on the other hand, are determined by the structure or context of the clause, specifically with regards to subject marking. Inflectional changes generally involve changes of vowel quality and length—not voice quality shift—though the plural first, second, and third person inflections, as well as the passive circumstantial topic inflection, use suffixes. Importantly, the same eleven inflectional categories are found in all derivational categories (excluding the passive inflectional category, which is not found in the antipassive). For example, the simple, benefactive, and centripetal derivational categories each have a second person singular inflection. In contrast, derivational categories cannot be crossed in Dinka; for example, motion (centripetal or centrifugal) cannot be combined with the benefactive. Therefore, one potential diagnostic of inflection is its presence in multiple derivational categories.

Verbal inflection in Dinka indicates the status of topic and subject in a given utterance. The unmarked inflection, for example, signifies the presence of a topical subject. The non-topical subject (NTS) inflection, on the other hand, indicates the presence of a topical *object* and a non-topical subject. The change from unmarked to NTS is expressed via a change in vowel length and tone, and in some cases a change in vowel quality. The inflectional categories can be seen in (??). The declarative prefix on the verb signifies whether or not the topic is third-person, and if so, whether it is singular or plural. It is not related to the inflectional marking on the stem.³

³While the examples in (2) are grammatically consistent across dialects, one speaker of Bor South consistently produced *míir* as the plural form of ‘giraffe.’

- (2) a. *ràaan* **ǎ-kwèen** *mjèɛɛr* *Both dialects*
 person DECL.SG-count giraffe.PL
 ‘The person is counting the giraffes.’
- b. *mjèɛɛr* **ǎ-kwéeen** *ràaan*
 giraffe.PL DECL.SG-count\NTS person\GEN
 ‘The person is counting the giraffes.’

Inflections are either finite or non-finite, though all but one inflection are finite (Andersen 1992–1994, Andersen 1993). The inflections of the verb *màan*, ‘hate,’ are displayed in (3).⁴ One can also see that pronominal subjects can be omitted, and in these cases, objects are moved into the topic position. The topic position must be occupied in utterances containing the declarative prefix, whether by a noun or by a covert pronoun (not seen here).

- (3) a. *ràaan* **ǎ-màan** *mìiir* *Hol*
 person DECL.SG-hate giraffe.SG
 ‘The person is hating the giraffe.’
- b. *mìiir* **ǎ-méɛɛn** *ràaan*
 giraffe.SG DECL.SG-hate\NTS person\GEN
 ‘The person is hating the giraffe.’
- c. *mìiir* **ǎ-màaan**
 giraffe.SG DECL.SG-hate\1SG
 ‘I am hating the giraffe.’
- d. *mìiir* **ǎ-máan**
 giraffe.SG DECL.SG-hate\2SG
 ‘You are hating the giraffe.’
- e. *mìiir* **ǎ-mèɛɛn**
 giraffe.SG DECL.SG-hate\3SG
 ‘He is hating the giraffe.’
- f. *mìiir* **ǎ-màan-kú**
 giraffe.SG DECL.SG-hate-1PL
 ‘We are hating the giraffe.’

⁴The passive circumstantial topic inflection is missing here, for the reason that it has proven difficult to elicit consistently in both Hol and Bor South. Its regularity in the dialect cluster should therefore be examined carefully in the future.

- g. m̀iir ǎ-m̀aan-k̀á
giraffe.SG DECL.SG-hate-2PL
'You all are hating the giraffe.'
- h. m̀iir ǎ-m̀aan-k̀é
giraffe.SG DECL.SG-hate-3PL
'They are hating the giraffe.'
- i. m̀iir ǎ-m̀aan
giraffe.SG DECL.SG-hate\PASS
'The giraffe is being hated.'
- j. r̀aaan ǎ-c̀í m̀iir m̀áaan
person DECL.SG-PRF giraffe hate\NF
'The person has hated the giraffe.'

The following example displays a declarative prefix that has lengthened to agree with the preverbal NP (the topic), despite the fact that this topic is the semantic object. It can be directly compared to (3c), which has a singular topic and thus a short prefix.

- (4) mj̀èèèr ǎa-m̀aaan
giraffe.PL DECL.SG-hate\1SG
'I am hating the giraffes.'

Vowel quality and length in each inflectional category vary depending on the vowel quality of the inflectionally-unmarked ('zero') form of the verb; this alternation in the simple derivational category is described for the Agar dialect in Andersen (1993). Verbs are also either lexically long or lexically short; that is, within their inflectional categories they alternate either between the short and long vowel lengths, or between the long and overlong vowel lengths. The verb for 'hate,' displayed in (3), has a long stem, whereas the verb for 'slap' has a short stem. Several inflections of 'slap' are displayed in (5). They are consistently one grade shorter than the corresponding forms of *hate* displayed in (3).

- (5) a. r̀aaan ǎ-m̀aṅ m̀iir *Hol*
person DECL.SG-slap giraffe.SG
'The person is slapping the giraffe.'

- b. m̀iir ǎ-méɛŋ ráaan
giraffe.SG DECL.SG-slap\NTS person\GEN
‘The person is slapping the giraffe.’
- c. m̀iir ǎ-m̀aaŋ
giraffe.SG DECL.SG-slap\1SG
‘I am slapping the giraffe.’
- d. m̀iir ǎ-m̀èɛŋ
giraffe.SG DECL.SG-hate\3SG
‘He is hating the giraffe.’
- e. ráaan ǎ-cí m̀iir m̀aaŋ
person DECL.SG-PRF giraffe.SG slap\NF
‘The person has slapped the giraffe.’

It can be difficult to characterise the difference between inflectional and derivational categories in Dinka, because the indication of semantic roles on the verb is partly inflectional and partly derivational. Therefore, it may be difficult to classify a morphophonological change in Dinka as inflectional or derivational. Inflectional and derivational paradigms in Dinka may be more regularly described if classified by the suprasegmental changes on the root, which involve vowel quality and length (often lengthening) in inflection, and voice quality and length (often shortening) in derivation. However, it is worth noting that this is not a failsafe classification. Additionally, and importantly, voice is involved in both derivation and inflection in the language, and does not fit squarely into a single category.

3 The sound systems of Hol and Bor South Dinka

3.1 Segments

The Hol and Bor South dialects have the same segmental inventory, which is provided below in Table 1 (consonants) and Figure 2 (vowels). Dinka has 20 consonant phonemes in five places of articulation. There are no fricatives. In general, the language exhibits consonantal place harmony—for example, a word with /t̪/, which is dental, will not also contain /t/, which is alveolar (Mackenzie 2016).

In Table 1, when there is a pair of consonants, the left member is voiceless, and the right member is voiced. The dialects differ in lexical items, as well as phonetic realizations of phonemes; these differences will be discussed in the following dialect-specific sections. Near-minimal sets of the segments, both consonants and vowels, for each dialect will be provided as well.

Table 1: *The consonant phonemes of Hol & Bor South Dinka.*

	Labial	Dental	Alveolar	Palatal	Velar
Plosive	p b	t̪ d̪	t d	c ɟ	k g
Nasal	m	n̪	n	ɲ	ŋ
Trill			r		
Lateral			l		
Approx.	w			j	ɥ

Dinka has seven vowel qualities, as seen below, which combine with two voice qualities (modal and breathy) and three vowel lengths. There are two restrictions: /u/ is invariably breathy, and /a/ neutralizes with /ɛ/ in the shortest vowel length. In this, paper, the latter neutralization will always be transcribed as /a/, though it is sometimes realized phonetically as [ɛ].

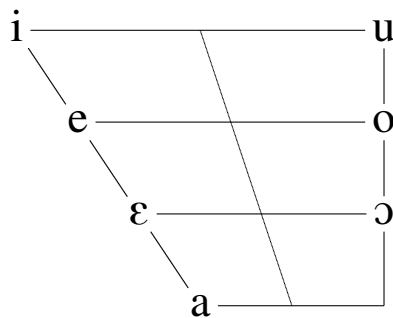


Figure 2: *The vowel phonemes of Hol & Bor South Dinka.*

Hol

Hol Dinka consonants are illustrated by the near-minimal set in (6). This set was elicited with the goal of comparison to Example 2 in Remijsen & Manyang (2009), which displays some of the

same words in the Luanyjang dialect. ‘K.o.’ is an abbreviation used for ‘kind of.’

- | | | |
|----------------------------------|--------------------------------|-------------------------------|
| (6) a. pǎal ‘knife.SG’ | h. dàal ‘brainstorm\NF’ | o. ŋâaap ‘sycamore.SG’ |
| b. bàl ‘neck tendon.SG’ | i. nàal ‘tired’ | p. ràl ‘nerve.SG’ |
| c. màal ‘meat on hide.SG’ | j. càal ‘resemble\ZERO’ | q. làal ‘k.o. season’ |
| d. tàal ‘cook\ZERO’ | k. jàal ‘go\IMP’ | r. wàal ‘grass.PL’ |
| e. dàal ‘prejudice.SG’ | l. jàaal ‘girl.UNC’ | s. jàal ‘be thirsty’ |
| f. ŋjàaal ‘knee.SG’ | m. kàal ‘fence.SG’ | t. uàal ‘cough\IMP’ |
| g. tàal ‘cut open\ZERO’ | n. gàal ‘wild dog.PL’ | |

A near-minimal set of the vowels of Hol Dinka is displayed in (7). This set was also elicited with the goal of following the example in Remijsen & Manyang (2009) for Luanyjang Dinka.

- | | |
|--------------------------------|-------------------------------------|
| (7) a. lîil ‘trench.SG’ | e. ròok ‘kidney.SG’ |
| b. lèel ‘lure\ZERO’ | f. rôok ‘town.SG’ |
| c. alèel ‘burnt clay’ | g. răak ‘k.o. olive tree.SG’ |
| d. làal ‘k.o. season’ | h. rûuk ‘tie together\NF’ |

The phonemes of the dialect are generally realized as their IPA symbols imply. However, there are several exceptions. The rhotic phoneme /r/ is sometimes realized as [r]. This seems to vary between utterances or between speakers and does not appear to be systematic. These two realizations are not contrastive in any phonological environment. As in Luanyjang Dinka (Remijsen & Manyang 2009), consonants in the syllable coda exhibit some variation. For example, utterance-final plosives may be produced without a release, but they will be realized intervocalically, such as before a preposition. This can be true for liquids and nasals as well, and it can be difficult to hear the coda consonants in citation forms, such as in the near-minimal pair in (8).

- | | |
|--------------------------------|--------------------------------|
| (8) a. ŋjàaal ‘knee.SG’ | b. ŋjàaan ‘testicle.SG’ |
|--------------------------------|--------------------------------|

Bor South

The near-minimal set for the consonants of Bor South is displayed below.

- (9) a. **pàal** ‘divorce\ZERO’ h. **dáal** ‘laugh\IMP’ o. **ŋâaap** ‘sycamore.SG’
b. **bàaal** ‘neck tendon.SG’ i. **nàal** ‘k.o. tendon’ p. **rǎaal** ‘vein.SG’
c. **màal** ‘meat on hide.SG’ j. **cǎaak** ‘milk.UNC’ q. **lâal** ‘k.o. season’
d. **tǎaal** ‘cook\NF’ k. **jǎal** ‘guest.SG’ r. **wàl** ‘pour\ZERO’
e. **dàal** ‘ligament.SG’ l. **ŋâaal** ‘girl.UNC’ s. **jál** ‘yard.SG’
f. **ŋjâaal** ‘knee.SG’ m. **kàl** ‘k.o. table’ t. **uǎal** ‘cough\IMP’
g. **tǎap** ‘tobacco.SG’ n. **gàal** ‘k.o. bird.SG’

The realization of some consonants and vowels differs between Bor South and Hol. The alveolar trill is more regularly realized as a trill in Bor South. The lack of contrast between voiced and voiceless plosives in utterance-final coda position is present in both dialects. It appears that Bor South displays a more common realization of a final plosive as voiced than Hol. This can be seen in the phonological and corresponding phonetic realizations of ‘sycamore’ in (10). Additionally, the realization of /u/ is inconsistent. This has been found in other dialects (Duerksen 1989, Remijsen & Manyang 2009).

- (10) a. /ŋâaap/ b. [ŋâaab]

A near-minimal set of the vowels of Bor South is displayed in (11).

- (11) a. **liil** ‘valley.SG’ e. **riik** ‘tie\ZERO’
b. **lëel** ‘neighbourhood.SG’ f. **ròok** ‘kidney.SG’
c. **lèel** ‘shore (of a river).SG’ g. **róok** ‘town.SG’
d. **lâal** ‘k.o. season’ h. **rǎak** ‘k.o. tree.SG’

- | | |
|---|--|
| <p>c. m̀iir ǎ-m̀aaj</p> <p>giraffe.SG DECL.SG-slap\1SG</p> <p>‘I am slapping the giraffe.’</p> | <p>d. d̀eɛj ǎ-l̀eel m̀iir</p> <p>Deng DECL.SG-provoke giraffe.SG</p> <p>‘Deng is provoking the giraffe.’</p> |
| <p>e. m̀iir ǎ-m̀aaan</p> <p>giraffe.SG DECL.SG-hate\1SG</p> <p>‘I am hating the giraffe.’</p> | <p>f. m̀iir ǎ-l̀eeel ráaan</p> <p>giraffe.SG DECL.SG-provoke\NTS person\GEN</p> <p>‘The person is hating the giraffe.’</p> |

3.3 The tone system of Hol Dinka

This section describes the tonemes and contextual tonal processes of the Hol dialect. It is important to note that in Dinka, the syllable is the tone-bearing unit (TBU); as vowel length increases, the TBU is consequently lengthened (Remijsen 2010). Therefore, the phonetic realizations of the tones vary depending on vowel length. While this paper does not include a quantitative study of these realizations, these variations in tonal realization in the Hol dialect would be interesting to examine in the future.

The Hol dialect has four tonemes: Low (L, ̀); High (H, ́); Fall (HL, ̀́); and Rise (LH, ́̀). Minimal pairs contrasting various tones are displayed in (15).⁶

- | | |
|-----------------------------------|----------------------------------|
| (15) a. l̀aaak ‘belt.SG’ (L) | b. l̀aaak ‘saliva.UNC’ (HL) |
| c. m̀eɛɛn ‘hate.3SG’ (L) | d. m̀eɛɛn ‘hate.NTS’ (H) |
| e. kẁeeen ‘count.1SG’ (L) | f. kẁeeen ‘count.NF’ (LH) |
| g. kẃeeen ‘count.NTS’ (H) | h. kẁeeen ‘count.NF’ (LH) |
| i. m̀aan ‘hate\PASS’ (HL) | j. m̀aan ‘hate\2SG’ (H) |
| k. b̀jɔɔj ‘apron.SG’ (HL) | l. b̀jɔɔj ‘apron.PL’ (LH) |

Notably, the four tones are audibly distinguishable in all four of the contexts described in §1.2. Hol seems to exhibit few of the tone sandhi processes found in other dialects. For example, Dissimilatory Lowering, in which High tones become Low tones when preceded by a high target, occurs in the Luanyjang dialect (Remijsen & Ladd 2008). This does not occur in Hol Dinka. In Agar Dinka

⁶It should be noted that (15e–h), the forms of ‘count,’ are not from the same morphosyntactic context and thus cannot be judged as ideal minimal pairs according to the principles of tonal contrast presented in Snider (2014). However, finding minimal pairs for the Rise (LH) has proven to be difficult in Hol.

(and in Bor South; see §3.4), a Fall tone realized utterance-medially will neutralize with the High tone; this does not occur in Hol.

However, Hol does exhibit Low Absorption, in which a Fall followed by a Low tone will be realized as a High tone followed by a Low tone. Remijsen and Ladd (2008) note that the occurrence of Low Absorption in Luanyjang Dinka depends on the prosodic domain; if the HL and L appear in the same prosodic phrase, Low Absorption will occur. In Hol, Low Absorption occurs both when the following Low tone appears on an infinitive and on an adjective.

- (16) a. ràaan ǎ-cí l̥aak gèel [l̥aak]
 person DECL.SG-PRF saliva protect\NF
 ‘The person protected the saliva.’
- b. dèeŋ ǎ-màan wâaar t̥it [wâaar]
 Deng DECL.SG-hate shoe.SG red
 ‘Deng is hating the red shoe.’

Low Absorption does not appear when the Low tone appears on an adverb.

- (17) ràaan ǎ-t̥iŋ wâaar é-t̥iŋe [wâaar]
 person DECL.SG-hate shoe.SG PREP-there
 ‘The person is seeing the shoe there.’

This suggests that generally, Hol follows the prosodic domain rules suggested for Luanyjang (Remijsen & Ladd 2008). Remijsen and Ladd also note that speakers differ in the production of Low Absorption when a noun is followed by an infinitive, as in (16a). Therefore, Low Absorption should be investigated further in Hol.

There is also some allotonic variation in the dialect. Before elaborating on that, it is important to note at this point that the Rise and the Fall can be interpreted as consisting of H and L components (Remijsen & Ladd 2008). This is relevant to the allotonic variation, as the final target of a tone can affect the following tone. When the target of the tone preceding a low tone is high, the low tone will be realized as a fall. This is the Low^{FALL} allotone of the low tone, as opposed to the Low^{LEVEL} allotone, which appears following a low target. Figure 3 shows f0 traces of the two allotones, and (18) displays examples of tonal environments in which these allotones occur.

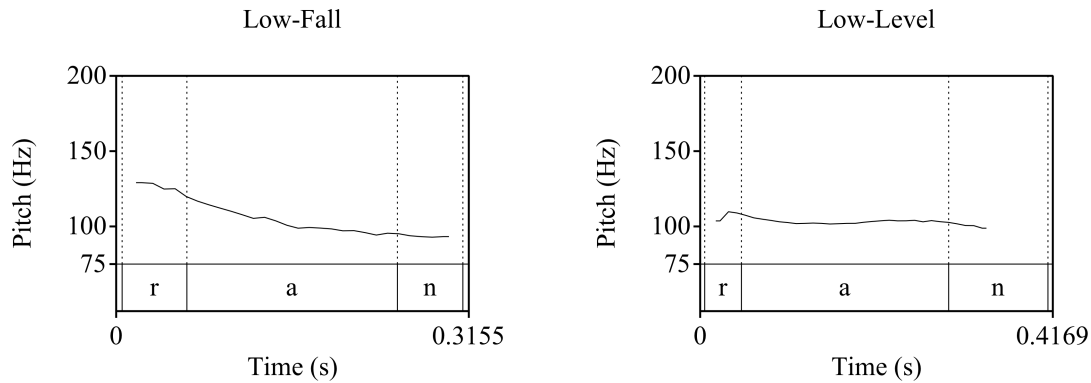


Figure 3: *F0 traces of the two allotones of the Low tone.*

- (18) a. \check{a} -nòŋ ràaan Low^{LEVEL}
 DECL.SG-have person
 ‘There is a person.’
- b. dèeŋ \check{a} -cí ràaan máaan Low^{FALL}
 Deng DECL.SG-PRF person hate\NF
 ‘Deng has hated the person.’

The Low^{FALL} is triggered by a preceding high tone (H) or rising tone (LH), because both have a high final target. However, the Low^{FALL} does not represent a neutralization of the Low and Fall tones. The contrast between the low tone and the falling tone is audible in this context, and is supported by acoustic analysis, substantiating the argument in Remijsen (2013) that tonal alignment is contrastive in falling tones in Dinka; Low^{FALL} is an early-aligned fall, and HL is a late-aligned fall. Figure 4 displays f0 traces of the early-aligned and late-aligned falls in the minimal pair $l\grave{a}aak/l\grave{a}aak$, and (19) displays the context in which they were elicited. One can see in Figure 4 that in the late-aligned fall (the lower graph) the fall on the /a/ of $l\grave{a}aak$ does not begin until about halfway through the vowel, whereas in the early-aligned fall, it begins immediately—arguably during the onset of the syllable. One can also see that the following word, $máaan$, rises in both contexts, which is expected, as both the early-aligned and late-aligned falls have low final targets.

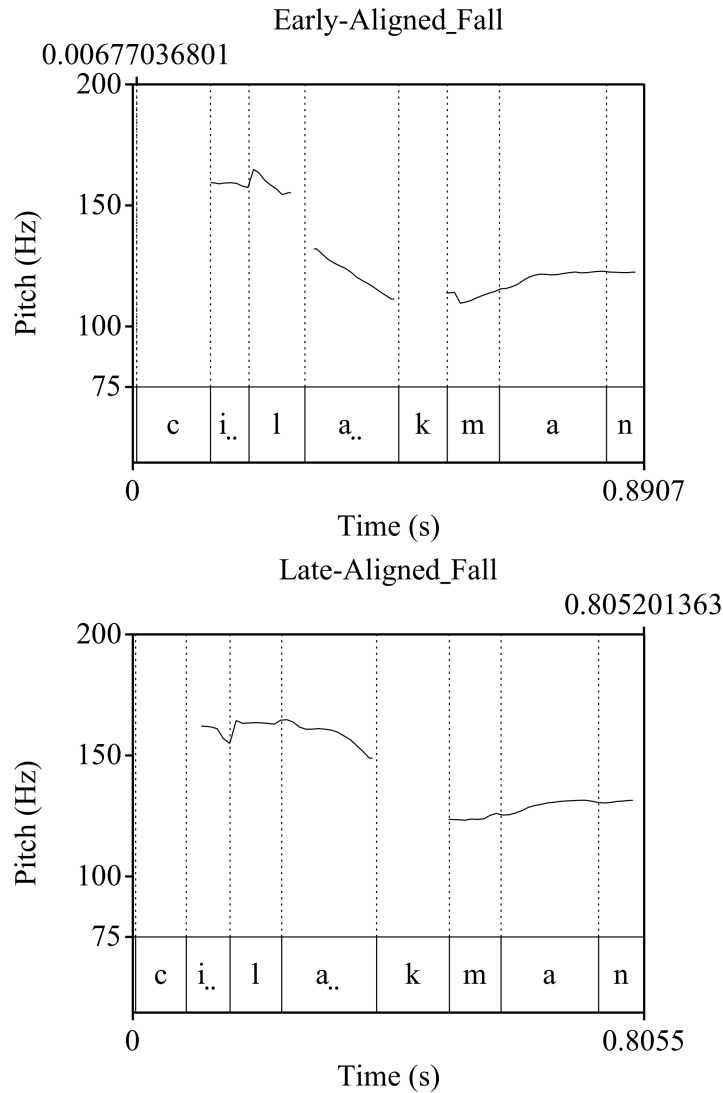


Figure 4: *F0 traces of the Early-Aligned and Late-Aligned falls.*

- (19) a. *dèeŋ ă-cí l̩aak máaan* *Early-Aligned Fall (Low^{FALL})*
 Deng DECL.SG-PRF belt hate\NF
 ‘Deng has hated the belt.’
- b. *dèeŋ ă-cí l̩aak máaan* *Late-Aligned Fall (HL)*
 Deng DECL.SG-PRF saliva hate\NF
 ‘Deng has hated the saliva.’

The high tone has variation as well, similar to that of the low tone. When preceded by a tone with a

low target (L or HL), the high tone will be realized as a rise ($\text{High}^{\text{RISE}}$). When preceded by a tone with a high target, the high tone will be realized as level ($\text{High}^{\text{LEVEL}}$). This can be seen in Figure 5; contexts to elicit these are found in (20).

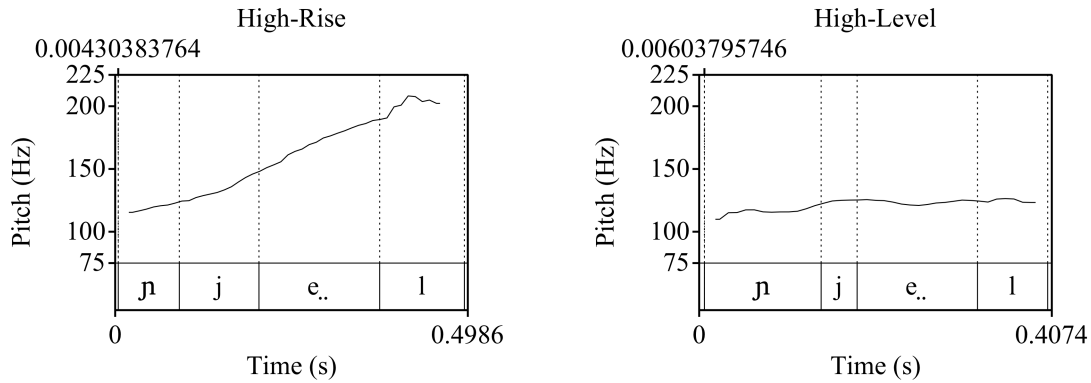


Figure 5: *F0 traces of the rising and level allotones of the high tone.*

- (20) a. $\text{n}\ddot{\text{o}}\eta$ **$\text{nj}\acute{\text{e}}\text{e}l$** $\text{High}^{\text{RISE}}$
 have python.SG
 ‘Is there a python?’
- b. $\text{d}\ddot{\text{e}}\eta$ $\check{\text{a}}\text{-}\text{c}\acute{\text{i}}$ **$\text{nj}\acute{\text{e}}\text{e}l$** $\text{m}\acute{\text{a}}\text{a}n$ $\text{High}^{\text{LEVEL}}$
 Deng DECL.SG-PRF python.SG hate\NF
 ‘Deng has hated the python.’

The rising tone (LH) also exhibits allotonic variation. In all environments except for Context 4 (the polar existential interrogative), it is a mid-level tone. In Context 4, it is realized as a late-aligned rise. Figure 6 displays the f0 traces of the two allotones, while (21) displays the contexts in which they are realized.

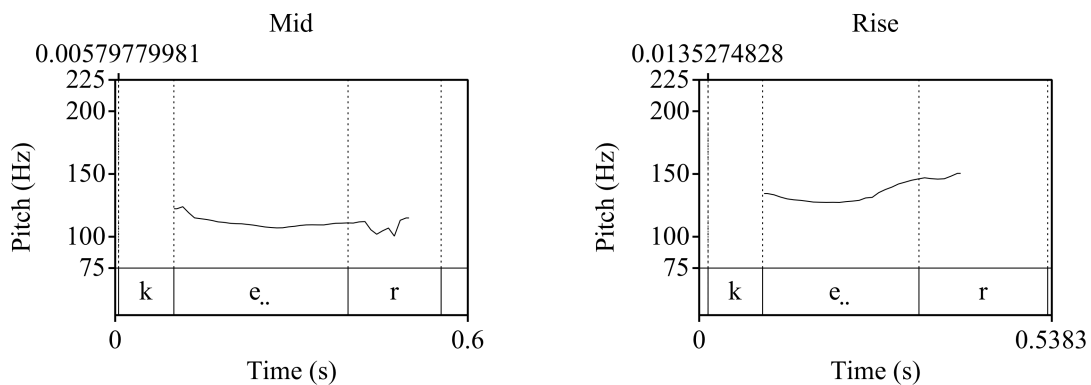


Figure 6: *F0 traces of the mid-level and rising allotones of the rising tone.*

- (21) a. $\check{\text{a}}\text{-n}\check{\text{o}}\eta$ $\text{k}\check{\text{e}}\text{e}\text{r}$ *Mid*
 DECL.SG-have branch.SG
 ‘There is a branch.’
- b. $\text{n}\check{\text{o}}\eta$ $\text{k}\check{\text{e}}\text{e}\text{r}$ *Rise*
 have branch.SG
 ‘Is there a branch?’

The High^{RISE} and Rise allotone of the LH tone exhibit contrastive alignment similar to that of the Low^{Fall} and Fall tones. While both involve a rise, the rise of the High^{RISE} begins earlier in the vowel, whereas the rise of the Rise begins more than halfway through the vowel. It is worth noting that the examples in Figure 7 are the f0 traces of words with the same vowel length, vowel quality, voice quality, and context—*njjeel*, ‘python,’ and *kjeer*, ‘branch.’ The contexts are (20a) and (21b), respectively. One can see that while the rise of the Early-Aligned rise begins even before the vowel, the rise of the Late-Aligned rise begins more than halfway through the vowel.

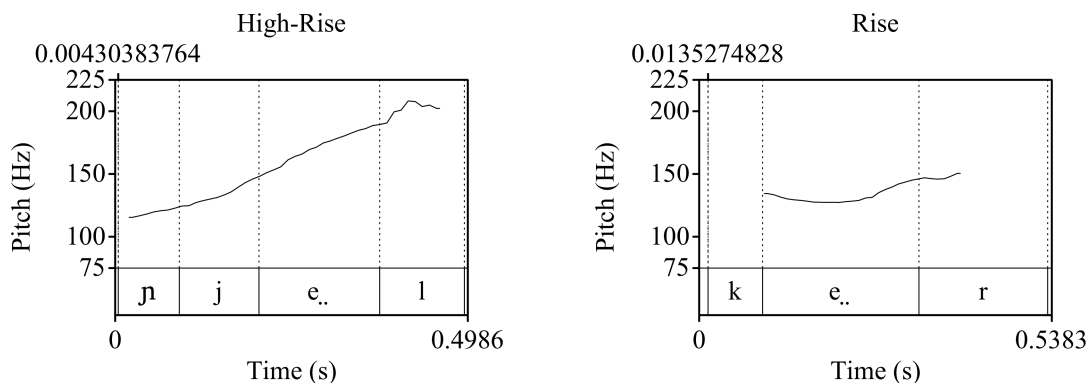


Figure 7: F0 traces of the Early-Aligned Rise (H) and Late-Aligned Rise (LH).

To summarize: the Hol dialect has four tones—L, H, HL, and LH—which have allotonic realizations in several contexts but which do not neutralize except in the case of Low Absorption. In addition, these data on Hol provide some evidence of contrastive alignment in the contour tones of the dialect. Vowel length also affects the realizations of the tones, but this has yet to be explored systematically.

verb-initial and displays no declarative prefix. The loss of the declarative prefix can signify simply that the sentence is interrogative (Andersen 2011). This is the difference, for example, between (21a) and (21b)(though it is worth noting that this section discusses the morphology of transitive verbs, whereas (21b) is a polar question). The first step is therefore to show that this inflectional category is not simply a redundant marker of an interrogative (which would already be indicated simply by the lack of the declarative *ã*). The example below displays the unmarked inflection of the verb, identical to that found in (3a); the difference is that the declarative prefix is absent.

- (24) a. *ràaan màan miiir* *Both dialects*
 person hate giraffe.SG
 ‘The person who hates the giraffe’

In both dialects, the postnominal positioning of *màan miiir* produced a modificational interpretation, though one speaker of Bor South judged this acceptable as the interrogative. Therefore, the interpretation of *máan ráaan miiir* does not rule out the possibility that the inflection marks the interrogative context. However, the inflectional category is found in an additional subordinate (and non-interrogative) context, following the conjunction *kù*, ‘and,’ seen in (25).

- (25) *kù máan ráaan miiir* *Both dialects*
 and hate\X person\GEN giraffe.SG
 ‘and the person hated the giraffe’

This second context is identical to the first, except that it is preceded by a conjunction. However, this utterance is extracted from its context, which is displayed in (26).

- (26) *ɲjéeel ă-cí jàal kù máan ráaan miiir* *Both dialects*
 python.SG DECL.SG-PRF leave\NF and hate\X person\GEN giraffe.SG
 ‘The python left, and the person hated the giraffe.’

An alternate form of the expression in (26) is produced by using the same tense-aspect marking in both clauses. Notably, the unclassified inflectional category disappears.

- (27) *ɲjéeel ă-cí jàal kù ràaan ă-cí miiir máaan* *Both dialects*
 python.SG DECL.SG-PRF leave\NF and person DECL.SG-PRF giraffe.SG hate\NF
 ‘The python left, and the person hated the giraffe.’

A subordinate clause with the unclassified inflection can also be used when the first clause appears in the future tense-aspect:

- (28) ɲjéel ǎ-bí jàal kù **máan** ráaan mìir *Both dialects*
 python.SG DECL.SG-FUT leave\NF and hate\X person\GEN giraffe.SG
 ‘The python will leave, and the person will hate the giraffe.’

This is true of the habitual as well, as seen in (29). Andersen (2007) analyses the habitual auxiliary *éé*⁷ as a fusion of the declarative prefix and the unmarked (ZERO) form of the verb.

- (29) a. ɲjéel ée jàal kù **máan** ráaan mìir *Both dialects*
 python.SG HAB leave\NF and hate\X person\GEN giraffe.SG
 ‘The python leaves, and the person hates the giraffe.’

However, the inflection is seemingly prohibited in present-tense, as seen in (30).⁸

- (30) a. ɲjéel ǎ-jàl kù ráaan ǎ-màan mìir *Both dialects*
 python.SG DECL.SG-leave and person DECL.SG-hate giraffe.SG
 ‘The python is leaving, and the person is hating the giraffe.’
 b. * ɲjéel ǎ-jàl kù máan ráaan mìir
 python.SG DECL.SG-leave and DECL.SG-hate\X person\GEN giraffe.SG
 ‘The python is leaving, and the person is hating the giraffe.’

The high-toned form of the verb—and the accompanying postverbal case-marked subject and the optional object—appears in both lexically long and lexically short verbs. In all cases, the form of the verb is identical to the unmarked (‘zero’) form of the verb, except that it has a high tone. The zero form of transitive verbs in Dinka invariably has a low tone. The following examples provide evidence of the inflectional category under investigation in both short- and long-stem verbs. (31a–d) display short-stem verbs, and (31e–h) display long-stem verbs. The left column is the interrogative construction with the inflection in question, and the right column is the corresponding declarative. (31) describes both Hol and Bor South.

⁷Agar form: èe

⁸One speaker of Bor South judged (30b) as acceptable. However, this speaker produced (30a) consistently when prompted with the translation.

- (31) a. **nàk** ráaan m̀iir
kill\X person\GEN giraffe.SG
‘Is the person killing the giraffe?’
- b. ráaan ǎ-**nàk** m̀iir *Both dialects*
person DECL.SG-kill giraffe.SG
‘The person is killing the giraffe.’
- c. **lát** ráaan m̀iir
insult\X person\GEN giraffe.SG
‘Is the person insulting the giraffe?’
- d. ráaan ǎ-**lát** m̀iir
person DECL.SG-insult giraffe.SG
‘The person is insulting the giraffe.’
- e. **kwèen** ráaan m̀iir
count\X person\GEN giraffe.SG
‘Is the person counting the giraffe?’
- f. ráaan ǎ-**kwèen** m̀iir
person DECL.SG-count giraffe.SG
‘The person is counting the giraffe.’
- g. **ṣòot** ráaan m̀iir
point_at\X person\GEN giraffe.SG
‘Is the person pointing at the giraffe?’
- h. ráaan ǎ-**ṣòot** m̀iir
person DECL.SG-point_at giraffe.SG
‘The person is pointing at the giraffe.’

This inflectional category is also present in intransitive verbs, predicate adjectives—which behave like verbs—and antipassive forms. The inflection’s presence in the antipassive derivational category has not yet been examined exhaustively, but provides further evidence that this is an inflectional category, as inflectional categories are consistently present across derivational categories (Andersen 1992–1994). Examples of the inflection in an intransitive verb, a predicate adjective, and an antipassive form are below.⁹

- (32) a. **n̄in** ráaan
sleep\X person\GEN
‘Is the person sleeping?’
- b. ráaan ǎ-**n̄in** *Both dialects*
person DECL.SG-sleep
‘The person is sleeping.’
- c. **b̄er** ráaan
be_tall\X person\GEN
‘Is the person tall?’
- d. ráaan ǎ-**b̄er** *Hol*
person DECL.SG-be_tall
‘The person is tall.’
- e. **b̄ar** ráaan
be_tall\X person\GEN
‘Is the person tall?’
- f. ráaan ǎ-**b̄ar** *Bor South*
person DECL.SG-be_tall
‘The person is tall.’

⁹The antipassive form of ‘cook’ represents an interesting violation of the place harmony mentioned in §3 and should be explored further.

- c. kù **nák** márjàal t̀òk
 and kill\X Marial\GEN goat.SG
 ‘and Marial is killing a goat.’

(Andersen 2011:14)

Just as in the Bor dialects, the inflection can follow clauses in multiple forms of tense-aspect (i.e. habitual, past, and future) but take its tense-aspect, at least contextually, from the clause. This suggests that inflection is entirely separate from tense-aspect in Dinka, and furthermore, that something is different about present tense-aspect in the language. Notably, (34c) appears to be in the present tense; this use is likely prohibited in the Bor dialects.

There are several additional differences between this inflection in the Bor dialects and the inflection described in Agar. In Agar, the inflection under investigation appears only in verbs with a short stem (Andersen 2002). It also appears in a negation context. In the following examples of the Agar dialect, (35a) displays a long-stem verb, which exhibits neither the inflection nor the case-marked post-verbal subject. (35b) exhibits the unmarked form of the verb, which is identical to the form in (35a).

- | | |
|---|--|
| (35) a. t̀aal ja mjèet
cook girl food
‘Is the girl cooking food?’ | b. ja à-t̀aal mjèet
girl DECL.SG-cook food
‘The girl is cooking food.’ |
|---|--|

(Andersen 2011:12–13)

(36a) exhibits the inflection in a negation context, and (36b) contrasts the negation of a long-stem verb, which does not exhibit the inflection, given its low tone.

- | | |
|--|---|
| (36) a. màrjàal à-c̀è nák t̀òk
Marial DECL-NEG kill\X goat.SG
‘Marial is not killing a goat.’ | b. t̀iik à-c̀è t̀aal r̀iinj
woman DECL-NEG cook meat
‘The woman is not cooking meat.’ |
|--|---|

(Andersen 2011:14)

(Andersen 1992–1994:47)

In investigating the transitive verb system, I have come across no other deviations in inflectional categories similar to this, where an inflection appears in lexically short verbs and not in lexically

glossing systems differ slightly between the papers cited in (34); transcriptions are adjusted to be consistent with the rest of this paper.

long verbs, or where the inflection differs drastically across dialects. Allowing for tonal differences—because the Agar dialect only has three tones—the other inflectional categories in Hol and Bor South seem to be roughly identical to those described in the Agar dialect in Andersen (1993).

Regarding negation, there are two key differences: in Hol and Bor South, negation does not consistently involve a verb with a high tone, and the word order is different, as seen below:

- (37) a. *dèeŋ ă-c̣ịi ṃiir ṇák* *Both dialects*
 Deng DECL.SG-NEG giraffe.SG kill\X
 ‘Deng is not killing the giraffe.’
- b. *dèeŋ ă-c̣ịi ṃiir ṃáj* *Bor South*
 Deng DECL.SG-NEG giraffe.SG slap\X
 ‘Deng is not slapping the giraffe.’
- c. *dèeŋ ă-c̣ịi ṃiir ṃàŋ* *Hol*
 Deng DECL.SG-NEG giraffe.SG slap
 ‘Deng is not slapping the giraffe.’
- d. *ṭiik ă-c̣ịi cẉịin ṭaal* *Both dialects*
 woman DECL.SG-NEG food cook
 ‘The woman is not cooking food.’

In both Hol and Bor South, the transitive verb appears utterance-finally, following the object of the sentence. This form of the verb is identical to either the unmarked inflection or the unclassified inflection, depending on the verb. Though this negation actually does exhibit some of the behaviour that Andersen describes—though inconsistent, it appears in short-stem verbs only—the word order is different. In the Agar dialect, the transitive verb appears utterance-medially, directly after the negation auxiliary and before the object, as seen in (36b). One can see that ‘kill’ changes tone for both Hol and Bor, while ‘slap’ changes only for Bor South, and ‘cook,’ a long-stem verb, is not modified in this context.

The order of the verb and object can be reversed in Bor South to mirror that of the Agar dialect, but in this context the form of the verb has a high tone and a lengthened vowel in Bor South, identical to the NTS form of the verb. Though it is glossed in (38) as such, it is possible that this is not the NTS inflection, but instead a separate homophonous inflection, given the lack of postverbal subject; this should be investigated further.

- (38) a. *dèeŋ ǎ-c̣ìì nɛ́k ṃiir Bor South*
 Deng DECL.SG-NEG kill\NTS giraffe.SG
 ‘Deng is not killing the giraffe.’
- b. *dèeŋ ǎ-c̣ìì mɛ́eŋ ṃiir*
 Deng DECL.SG-NEG slap\NTS giraffe.SG
 ‘Deng is not slapping the giraffe.’

This is not true for Hol, where the the utterance in (38) is not found. Therefore, I postulate that in the Bor dialects, the form of the verb found in (37a) and (37b) is not the same inflectional category as in the interrogative and subordinate contexts, despite the tonal change. It may be that this is the same inflection as the negation context in Agar, and that the tonal changes interpreted as one inflectional category in Agar in fact represent two inflections.

In summary, the inflectional category as described in Hol and Bor South exhibits robust behaviour: all of the contexts with a tone change of the verb from low to high occur with a non-topical, case-marked subject, followed by an optional object, in verbs with both short and long stems. Since the object is optional, the necessary and sufficient constituent is the subject, which must follow the verb; it cannot be topical. If an object appears, it must follow the subject. For these reasons, I call this inflection the *null-topic inflection* (NT). It is always identical to the unmarked form except that the tone is high; it always occurs before the nominal constituents of the clause; its subject, which is third person and non-pronominal, is tonally marked for case if possible, and its object, where applicable, is third person and non-pronominal.

4.1 On the post-verbal subject

The null-topic inflection is accompanied by a tonally-marked postverbal subject. This paper will not examine the regularity or sub-regularities of the tonally case-marked forms. This has been described in the Agar dialect in Andersen (2002) and deserves its own systematic exploration in the Bor dialect cluster. Like the verbal inflection, this form of the subject is marked solely by tone. In Hol and Bor South, the null-topic inflection appears invariably with the tonally-marked subject. This form of the noun is glossed as genitive, as is the convention in Andersen (2019). This is due to the fact that the marked form of a given noun, if it exists,¹¹ is identical in both a possessive (genitive)

¹¹Some nouns do not have a case-marked form that is different from the unmarked form.

and a post-verbal context.

Besides the inflectional category being examined in this paper, the case-marked form of the subject noun is associated with one other verbal inflectional category: the non-topical subject inflection of the verb. The examples below display the different contexts in which this case-marked subject is found: (39a) displays the genitive context; (39b) displays the NTS form, and (39c) shows the null-topic inflection.

- (39) a. $\text{ɲin} \quad \text{dɛ} \quad \text{raa:n}$ *Both dialects*
eye.SG PREP person.GEN
'the eye of the person'
- b. $\text{mi:ir} \quad \text{ǎ-mɛ:ɛ:n} \quad \text{raa:n}$
giraffe.SG DECL.SG-hate.NTS person.GEN
'The person is hating the giraffe.'
- c. $\text{ma:n} \quad \text{raa:n} \quad \text{mi:ir}$
hate.NT person.GEN giraffe.SG
'Is the person hating the giraffe?'

5 Discussion

The environments in which the null-topic inflection is found raise questions about tense in Dinka. Tense-aspect (past, perfective, habitual, and future) is expressed in Dinka via function morphemes and auxiliary verbs, which take the spot of the finite verb; the transitive verb appears in its non-finite form (Andersen 2007, Andersen 2014). Present tense, in contrast, is essentially unspecified in a morphological sense, as there is nothing resembling a tense-aspect marker; however, it can be described as functionally specified. That is, the absence of another tense-aspect marker is the specification for present tense.

In the contexts involving a subordinate phrase in which the null-topic inflection is present, it appears that a tense-aspect auxiliary must be present; if it is absent—i.e. if the first clause is present-tense—the null-topic inflection is prohibited. Since the null-topic inflection can appear in the present tense, in its interrogative context, this suggests that the subordinate clauses may require specification for tense-aspect, even if it comes from a previous clause. This, combined with the fact that present tense appears to be morphologically unmarked, suggests that the present tense may be semantically vacuous; a present-tense inflection such as the null-topic inflection in a subordinate clause may be able to gain tense-aspect from the preceding clause. Hyman and Watters (1984) note a relationship between auxiliary forms, focus markers, and tense-aspect constraints across the African continent.

However, focus markers are integral to their analysis, and the relationship between focus and tense-aspect in the Dinka verbal system has not been comprehensively explored. Research on focus in Dinka has concentrated on the role of nominal constituent order (Andersen 1991, Andersen 2015). Additionally, it is not clear that truth values, key to Hyman and Watters (1984) are connected to focus or to tense-aspect in Dinka, though this should be examined in the future. Nonetheless, evidence of a dependency between tense-aspect and focus—which might be or seem to be entirely unrelated in other languages—suggests that two potentially unrelated areas of morphosyntax can be connected. Therefore, it is possible that the presence of the null-topic inflection, at least in its subordinate context, is contingent on certain tense-aspect conditions.

There is also an issue regarding the declarative prefix, which has been described as not occurring in subordinate clauses (Andersen 1991, 2007). In fact, this is one of the main characterisations of subordinate clauses in the language. However, the prefix can clearly occur in subordinate clauses, though it may be redundant; this is seen in (27) and (30). Purely with regards to the constituent order, however, the absence of the declarative prefix is unsurprising. When it is present, the prefix always agrees with the topic (preverbal NP). The null-topic inflection has no topic by definition, so it is not possible for the prefix to appear.

Also of note is the fact that the tone of the inflectional category examined in this paper is the same as the NTS form—that is, high tone. Both inflections have a high tone and take a postverbal subject marked tonally for case. A detailed study of the high tone in the morphology of transitive verbs across four-toned Dinka dialects would be interesting, as it might yield evidence for a relation between the high tone and morphological marking. Finally, it is worth noting that a majority of the inflectional categories in Dinka have the object—or in the case of the passive circumstantial topic inflection, a third noun that is neither the subject nor the object—as the topic, as opposed to the subject. In fact, out of the 12 inflectional categories (including the null-topic inflection) there are 8 with an topical object, two with a topical subject, one with a third noun as topic, and one with no topic. While there are numerous reasons to analyse the ‘zero’ inflection as unmarked, the fact that the majority of inflections have a topical object, suggests that an investigation of inflectional categories in natural speech should be conducted, via textual analysis of the Bor dialects.

6 Conclusions & Next Steps

In this paper, I have described the tone system of the Hol dialect of Dinka, a four-toned dialect with allotonic variation and only one identifiable toneme neutralization. I have also argued that a tone change of a transitive verb first identified in the Agar dialect can be classified as a null-topic inflectional category, at least in the Hol and Bor South dialects. The presence of this inflectional category has implications for the marking of present tense-aspect and potentially for the description of declarative sentences in Dinka.

There are numerous directions for further research. This paper began by stating that because the dialects described are the northernmost (Hol) and southernmost (Bor South) dialects of a cluster (Bor), one can hypothesize that the conclusions drawn may be true for the entire cluster. Of course, this must be examined; the tone systems of the other dialects of the Bor cluster (Nyarweng and Twic) should be comprehensively documented, and the null-topic inflection should be described in the dialects as well. In terms of the Hol dialect, a quantitative analysis of the tone system of the dialect should be conducted, to see how the tonemes relate phonetically to the corresponding tonemes in other four-toned dialects, such as Bor South. The null-topic inflection should be described across derivational categories, both to verify its status as inflectional and to examine its behaviour across the shifts in length, tone, and voice quality that occur in the different derivations. This will also be helpful to account for the tonal morphology of the inflection with regards to the vowel grade system laid out by Andersen (Andersen 1993, Andersen 2017). Tense-aspect and possible related licensing constraints should be explored in the Bor dialects, particularly in Bor South, where there is evidence that the dialect may not differentiate between past and perfective. Since the null-topic inflection appears to be present in intransitive verbs and what are referred to as copulative verbs (Andersen 2019), another future step is a comprehensive study of intransitive verbs, particularly in the Bor dialect cluster.

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