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THE PHONOLOGY AND MORPHOLOGY OF THE DAR DAJU DAJU LANGUAGE

by

Arthur J. Aviles
Bachelor of Arts, Moody Bible Institute 1997

A Thesis
Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Arts

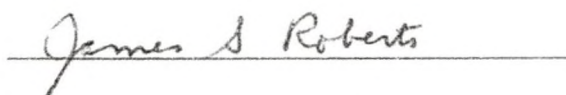
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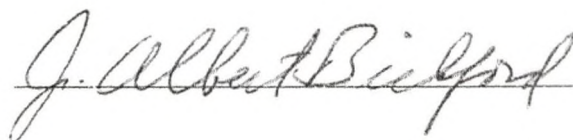
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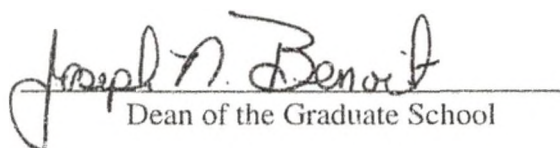
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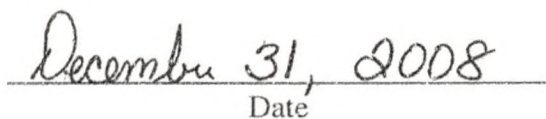

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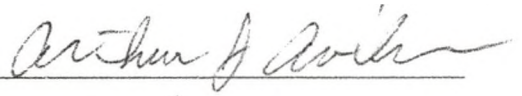
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ABBREVIATIONS

1s	First Person Singular
1d	First Person Dual
1pe	First Person Plural Exclusive
1pi	First Person Plural Inclusive
2s	Second Person Singular
2p	Second Person Singular
3sf	Third Person Singular Feminine
3sm	Second Person Singular Masculine
Cs1 - Cs4	Singular Classificatory Suffixes
Cp1 - Cp4	Plural Classificatory Suffixes
DIS	Distal
DUR	Durative
INF	Infinitive
IRR	Irrealis
ITER	Iterative
NPR	Non-present
PL	Plural
PNCT	Punctual
POSS	Possessive
PURP	Purposive
PR	Present
REFL	Reflexive/Reciprocal

ABSTRACT

A recurring theme among linguists is the need for more languages to be analyzed and more descriptions to be available for a variety of reasons. The main purpose of this thesis is to provide essential information on the Daju Dar Daju language of Chad, Africa that will assist in future language development work among the Daju dar Daju people as well as to provide additional information for possible future work among related languages.

Very little work has been done on the Daju languages as a whole and to date almost nothing on the Dar Daju Daju. The Dar Daju Daju of Chad are a traditional oral society who have, in recent years, expressed a strong desire to see their language developed in print form. In the past two years a working orthography has been established and a limited number of publications printed. During this time literacy work also began among the three language varieties of the Dar Daju Daju. The information provided by this thesis will likely prove helpful in current and future literacy work being done as well as in future publications.

The description I will present is limited to the phonology and morphology of the Dar Daju Daju language and is not intended to be an exhaustive presentation of its grammar. The morphology discussed includes the morphology of pronouns and demonstratives, nominal morphology and lastly, verbal morphology. Information as to its relationship with and similarities to other Daju or Eastern Sudanic language varieties is included where applicable.

Though a limited amount of linguistic information has been published in other Daju language varieties, no publication of linguistic work has been previously made available on the Dar Daju Daju language.

CHAPTER 1

INTRODUCTION

In this thesis I will give an overall picture of the Dar Daju Daju language of Chad, Africa, to assist in future language development work among the Dar Daju Daju people as well as to provide additional information for possible future work among related languages.

Virtually no work has previously been done in the language. Thelwall (1981) did a reconstruction using 210 word word lists from all of the Daju languages with the exception of the Dar Daju Daju. Thelwall refers to vocabularies attributed to various individuals as well as one more extensive study of Nyala. SIL Chad has also completed a language survey which was used to determine the need for future language work among the Dar Daju Daju (Faris 1994). The only other work dealing with Dar Daju Daju is that of Tucker and Bryan (1966: 231-242) who published a description of the Daju languages, including grammatical data, but whose language data was limited by the size of the wordlists.

In this thesis I include an introduction to the Dar Daju Daju language along with a discussion of the phonology, the morphology of demonstratives and pronouns, the noun morphology and the verb morphology.

In this chapter I give a brief history of the Dar Daju Daju people followed by the current linguistic and sociolinguistic situation and a summary of the literacy and development work currently taking place.

The map in Figure 1 shows where the Dar Daju Daju is situated within the country and in relation to other major language groups. Figure 2 is an inset of Figure 1 and provides a view of where the Dar Daju Daju is located in relation to other languages spoken in Chad.

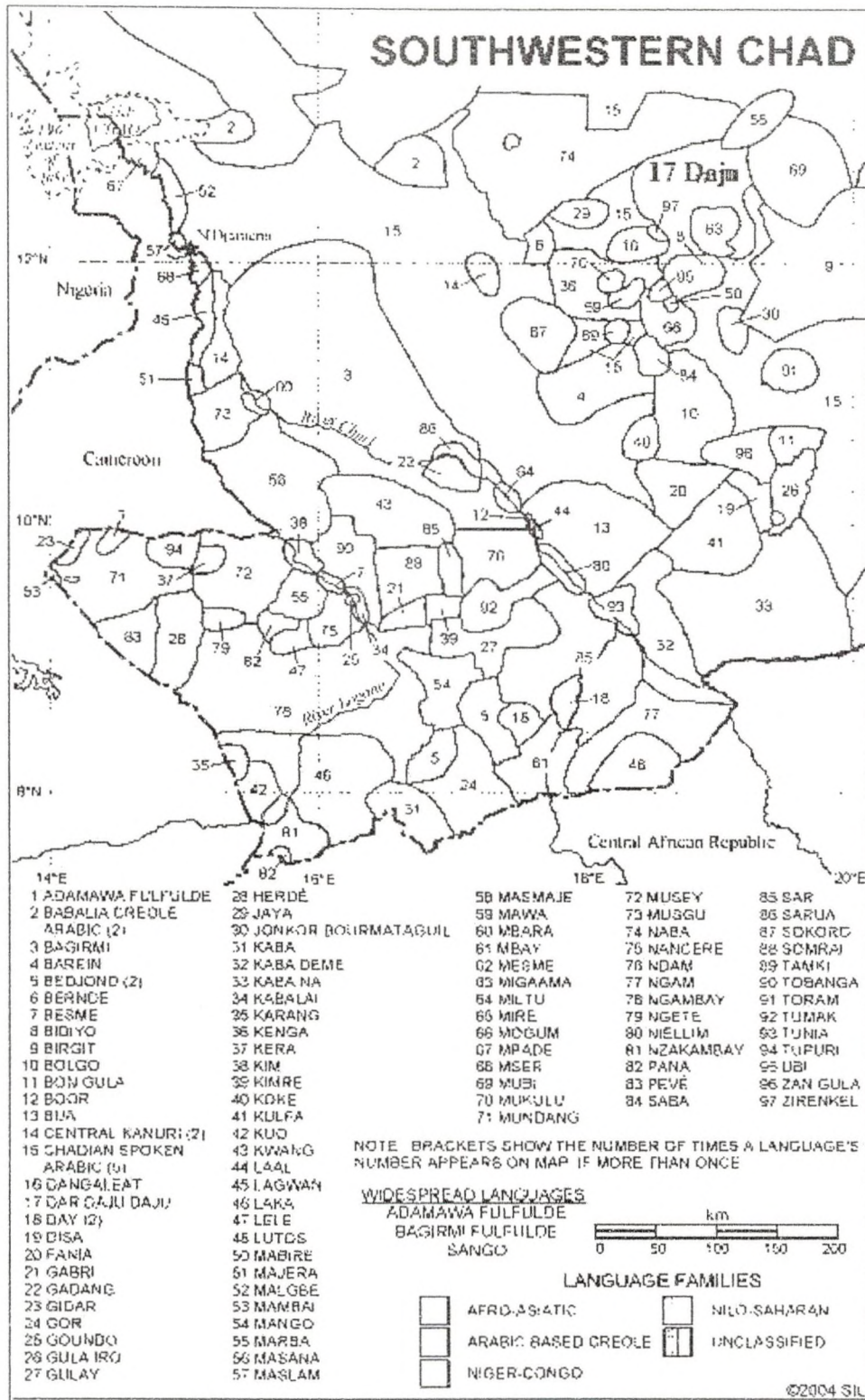


Figure 2: Inset of map in Figure 1 with Dar Daju Daju

The word ‘dar’ is an Arabic word meaning ‘home of’. Thus, Dar Daju Daju literally means ‘Daju from the home of the Daju’ while another Daju language variety, the Dar Daju Sila, refers to the ‘Sila from the home of the Daju in eastern Chad. Dar Daju Daju has several spellings and names including Dadju, Dajou, Daju, Dajo, Saaronge,¹ Gadjira and Daju Mongo (Gordon 2005). Following French spelling conventions, and from my own experience, the term Dadjo is the most widely used name the Dar Daju Daju people use to refer to themselves. In this paper I use the term Dar Daju Daju because it is the most widely-used name for the Dadjo in the various writings on the language.

The Dar Daju Daju is part of the Nilo-Saharan phylum of African languages. Bender (2005:1) divides Nilo-Saharan into six families: Songay, Saharan, Kuliak, Fur, Central Sudanic and Eastern Sudanic. He further divides Eastern Sudanic into the En and Ek groups, based on the first person singular independent pronoun having *n* or *k*.² The En and Ek groups are listed in Table 1.³

Table 1: En and Ek grouping of Eastern Sudanic languages

Ek	En
Nubian	Surma
Nera	Jebel
Nyima	Temein ⁴
Tama	Daju
	Nilotic

The Daju languages are part of the En family. It is further sub-divided into Eastern and Western Daju. Table 2 presents the division of Daju languages into Eastern and Western groups:

¹ Saaronge is said to mean “muslim” (Gordon 2005).

² This division differs from Bender’s (1989) earlier classification dividing Eastern Sudanic into four groups based upon geographic proximity.

³ The Ek group is based upon a retention of the velar element *k* from the Nilo-Saharan first person singular pronoun. The En group represents an innovation of the element *n* in the first person singular pronoun.

⁴ Bender (2005:1) notes that the inclusion of Temein in En is uncertain.

Table 2: Eastern and Western Daju

Western	Eastern
Dar Daju Daju	Liguri
Dar Daju Sila	Shatt
Nyala	
Njalgulgule ⁵	
Lagowa	

The Eastern Daju languages of Liguri and Shatt are located in the Nuba Mountains of Sudan. The Western Daju languages are located from central Chad into southern Sudan (Ende 2007). Thelwall (1981:168) also refers to a now extinct Daju language of Bego which he classifies as being part of Nyala. The Dar Daju Daju people reside in the Guéra region of the country of Chad and have a population of approximately 50,000⁶ while the total number of Daju in Chad and Sudan reaches approximately 350,000 (Gordon 2005).

1.1 History

According to Thelwall (2002), the Shatt and Liguri have roots dating back as far as 100 BC, and southern Darfur was the center of an established Daju state as early as 1200 AD. Some time after 1200 AD the Daju were displaced by the Tunjur and again later by the Fur. Many Daju moved eastward well into the Nuba Mountains, while others moved westward to Chad. The establishment of the Dar Daju Sila people group likely occurred in the early 1600's according to dates found in a manuscript by the French commander Colonel Largeau during the French invasion of dar Sila (Largeau 1913).

The Daju move into Chad was said to be started by Ahmad el-Daj (Largeau 1913) and eventually extended from the eastern border into what is now known as the town of Mongo in the Guéra region. Having been influenced by of Islam in preceding centuries, the Daju people are

⁵ Also spelled as Njangulule and Nyalagulgulge (Thelwall 1981, Bender 2005).

⁶ Gordon's (2005) Daju population figures are projections based upon the 1993 census and on data from SIL Chad. The 1993 figures for the Dar Daju Daju noted a population of 34,000.

almost 100% Muslim, though many continue to practice long-established religious customs which are non-islamic.

The Dar Daju Daju are divided into two cantons with the head of “Canton Daju I” based in the village of Gadjira and the head of “Canton Daju II” based in the town of Eref. The division of the Dar Daju Daju into two cantons occurred in 1951 as a result of the French division of the region into two French sous-préfectures⁷ (Faris 1994:3). Canton I and canton II are approximately 80 kilometers apart and are separated by a mountain range.

1.2 Sociolinguistic Situation

The Dar Daju Daju language can be divided into three regional varieties: Mongo,⁸ Eref and Bardangal. The Mongo and Bardangal varieties are situated in canton I and the Eref variety is situated in canton II. The Eref and Bardangal varieties of Dar Daju Daju are situated 73 kilometers northeast and 51 kilometers southwest of Mongo, respectively. The lexical similarity between the three varieties is over 90 percent, with differences being only phonetic. The major distinction of the Bardangal variety is the deletion of the phoneme /s/ in intervocalic position (Faris 1994:5). Faris (1994) reports that 97 percent of those surveyed in Eref and Bardangal state that they understand the Mongo variety and the same figure holds for Mongo and Eref understanding Bardangal. The lowest level of comprehension was with the Eref variety, as only 80 percent of those surveyed in Bardangal and Mongo stated they understood Eref.⁹

According to Faris (1994:6), the Dar Daju Daju of Mongo only marry others of the Dar Daju Daju ethnicity, while those of Eref and Bardangal intermarry with other ethnic groups. The rate of

⁷ The Dar Daju Daju themselves believe the decision to divide into two cantons was due to the difficulty the sultan at the time had in to communicating with other sub-chiefs because of the occupation by the French.

⁸ The Mongo variety is also known as Gadjira which is situated 2 kilometers southwest of Mongo.

⁹ From personal interaction with people from all three varieties, the level of comprehension with Eref is much higher than this information indicates.

intermarriage is highest among the Daju of Bardangal where only 62.5 percent of the marriages were endogamous.

Chadian Arabic is the major language of trade for the Dar Daju Daju with almost 100 percent of the adult male population speaking it on a regular basis with members of other ethnic groups. Though Chadian Arabic is the major trade language, the level of proficiency in the language is quite low in places. According to Faris (1994:6-7), in Gadira, 70 percent of those interviewed in March of 1994 had proficiency less than FSI¹⁰ level 3. The situation in Eref was quite different in that only 15 percent of those interviewed had an inadequate level of Chadian Arabic.

Over 80 percent of those interviewed continue to speak only Dar Daju Daju in their own homes, while the other 20 percent utilizes Chadian Arabic (Faris 1994:6-7). My personal observation is that the use of Arabic is most greatly felt in the town of Mongo where the intermingling of different ethnic groups is commonplace. In normal village situations the women of the village are mostly monolingual in Dar Daju Daju, and the men almost solely use Dar Daju Daju.

1.3 Literacy and Development

According to UNICEF (2008), the literacy rate in Chad is 41 percent for adult males and 13 percent for adult females. The percentage of children attending primary school is 41 percent for males and 31 percent for females. Secondary school attendance is noted as 23 percent for males and 7 percent for females.

The actual figures are much lower for the Dar Daju Daju people. The Dar Daju Daju are mostly subsistence farmers with some owning small businesses in the town of Mongo. In interviews with the Dar Daju Daju, only 26 percent said they attended school and very few continued beyond elementary school (Faris 1994:6). This continues to be the case today; only a

¹⁰ United States Foreign Service Institute.

small percent of the Dar Daju Daju attend school and less ever complete high school. The percentages cited by Faris certainly only apply to men, with women rarely receiving the benefit of education.

The Chadian government is encouraging the development of local languages and their incorporation into the education system, but it generally lacks the funding and expertise to accomplish such a task independently. The Fédération des Associations pour la Promotion et le Développement des Langues du Guéra (FAPLG), one of several NGOs engaged in language development work, is currently working with the Dar Daju Daju to promote literacy and literature production.

The Dar Daju Daju are very determined to see the development of their language and have taken steps toward furthering this goal. In June of 2005 they held a general assembly to which all Dar Daju Daju chiefs were invited, where the sultan of Canton Daju I, Moussa Ibedou, encouraged them to assist in the advancement of the Dar Daju Daju. Since that time, with the aid of FAPLG, the Dar Daju Daju have formed their own language association, the Association pour la Promotion et le Développement de la langue Dadjjo (APDLLD), and have begun the process of teacher training for future literacy work. The primary focus of the work at the present is in the Mongo and Eref regions with future work targeting Bardangal.

CHAPTER 2

PHONOLOGY

In this chapter I present an analysis of the Dar Daju Daju phonological system, based on a corpus of approximately 1500 words collected over a period of two years. The corpus began as a word list elicited by Damien Souza and SIL linguists Jim Roberts and Gordon Martin in the Guéra region of Chad. I then revised it with two primary Dar Daju Daju language consultants, Izzo Issa and Issa Youssouf, with input from several others. The transcriptions were also checked in various Dar Daju Daju villages during informal linguistic sessions.

This chapter is divided into five sections covering consonants, vowels, syllable structure, morphophonemics and consonant gemination¹¹.

2.1 Consonants

The twenty six consonants in Dar Daju Daju are shown in Table 3. Phonemes in parentheses occur primarily in words of Arabic origin. Symbols from the International Phonetic Alphabet are used in this table and throughout the thesis.¹²

¹¹ All root forms are written phonemically and all other forms are written phonetically.

¹² The orthography in current use is given in Appendix 4.

Table 3: Consonant phonemes

	Bilabial	Alveolar	Palatal	Velar
Stops, voiceless	p	t	c	k
Stops, voiced	b	d	j	g
Stops, prenasalized	m̥b	n̥d	ɲj	ŋg
Implosives	ɓ	ɗ	ɟ	
Fricatives, voiceless		s		(h)
Fricatives, voiced		(z)		
Nasals	m	n	ɲ	ŋ
Lateral approximant		l		
Tap		r		
Semivowels	w		j	

Dar Daju Daju consonants occur at four points of articulation. All consonants occur word-initially with the exception of /ŋ/. All consonants, with the exception of the implosives /ɗ/ and /ɟ/, occur intervocallically. The palatal consonants /c/ and /j/ are pure stops. A partial distribution of all consonants is shown in Appendix 1.

The /ɟ/ phoneme is less frequent than other implosives, but contrasts with other phonemes and occurs in clearly native words. The phonemes /z/ and /h/ are used in some village and personal names, as well as in a few apparently native words, as presented in section 2.1.3.

2.1.1 Stops

There are four series of non-implosive stops: voiceless, voiced, prenasalized and nasal. These stops contrast in identical or analogous environments word-initially. Examples of verbs are given with the infinitive suffix /-ke/, discussed in section 5.1. The nouns are presented in the singular, all of which take one of four classificatory suffixes: /-ne/, /-ce/, /-e/ or /-i/. The classificatory suffixes are discussed in section 4.1. Contrasts among the bilabials in word-initial position are shown in examples (1) and (2).

- | | | | |
|-----|------------|---------------|----------------------|
| (1) | /pos-ke/ | 'to help' | [poske] |
| | /bod-ke/ | 'to reclaim' | [bodike ~ botke] |
| | /m̄bod-ke/ | 'to whip' | [m̄bodike ~ m̄botke] |
| | /mod-ke/ | 'to perspire' | [modike ~ m̄botke] |
| | | | |
| (2) | /paq-e/ | 'pot' | [page] |
| | /ban-e/ | 'house' | [bane] |
| | /m̄bas-ke/ | 'to slap' | [m̄baske] |
| | /mas-ke/ | 'to dry up' | [maske] |

There are few examples of the phoneme /p/ in word-medial or -final position. Most of the words that contain /p/ medially, including intervocalic root-finally, seem to be loan words.

Contrasts among the alveolars in initial position are shown in examples (3) and (4).

- | | | | |
|-----|-----------|---------------|--------------------|
| (3) | /tod-ke/ | 'to stop' | [todike ~ totke] |
| | /dob-ke/ | 'to attach' | [dobike ~ dopke] |
| | /ndob-ke/ | 'to choose' | [ndobike ~ ndopke] |
| | /nog-ke/ | 'to yawn' | [nogike ~ nokke] |
| | | | |
| (4) | /tam-ke/ | 'to bleed' | [tamke] |
| | /dal-ke/ | 'to miss' | [dalke] |
| | /ndal-ke/ | 'to step on' | [ndalke] |
| | /nal-ke/ | 'to dissolve' | [nalke] |

There are limited instances of the phoneme /t/ in word medial or final position. There is only one root ending with a simple /t/ and a total of six ending in a geminate /tt/. As shown in section 2.5, voiceless stops root finally are most often geminates. The minimal pairs in examples (5) through (7) illustrate root final contrast between /tt/ and /d/. (The underlying forms will be justified in section 2.5.)

- | | | | |
|-----|-------------|------------|------------------|
| (5) | /m̄batt-ke/ | 'to boil' | [m̄battike] |
| | /m̄baad-ke/ | 'to pull' | [m̄baadike] |
| | | | |
| (6) | /sutt-ke/ | 'to rub' | [suttike] |
| | /sud-ke/ | 'to crush' | [sudike ~ sutke] |
| | | | |
| (7) | /ett-e/ | 'tree' | [ette] |
| | /ed-e/ | 'brother' | [ede] |

Palatal contrasts are shown in examples (8) and (9). The phoneme /c/ is absent medially and finally with the exception of /uc-ke/ 'to stay' [ucke].

(8)	/cirm-e/	'chest'	[cirme]
	/jirr-e/	'real'	[jirre]
	/ɲjil-ke/	'to milk'	[ɲjilke]
	/ɲirb-e/	'tongue'	[ɲirbe]
(9)	/cul-ce/	'charcoal'	[culce]
	/jurr-ne/	'crest'	[jurrine]
	/ɲjud-ke	'pick grain'	[ɲjudike ~ ɲjutke]
	/ɲusk-ke/	'to scowl'	[ɲuskike]

Word-initial velar contrasts are shown in examples (10) and (11).

(10)	/kakaw-ce/	'shell'	[kakawce]
	/gag-ke/	'to place'	[gagike ~ gakke]
	/ɲgak-e/	'speech'	[ɲgake]
(11)	/kona/	'we (IN)'	[kona]
	/gon-e/	'eagle'	[gone]
	/ɲgos-ke]	'to smell'	[ɲgoske]

Intervocalic velar contrasts are shown in example (12).

(12)	/ak-e/	'to prepare'	[ake]
	/roŋ-e/	'sun'	[roŋe]
	/aŋg-e/	'name'	[aŋge]
	/bug-e/	'chief'	[buge]

There are eight instances of a simple /k/ intervocalically and eleven instances of an intervocalic geminate /k/. All eight instances of simple /k/ and three instances of geminate /k/ are in nouns, while the other eight instances of geminate /k/ are in verbs. Examples (13) and (14) show contrast between the geminate /k/ and the /g/ in intervocalic root final position in verbs. See section 2.5 for more discussion on geminates.

(13)	/dokk-ke/	'to peck'	[dokkike]
	/dog-ke/	'to prune'	[dogike ~ dokke]
(14)	/m̄bukk-ke/	'to fan'	[m̄bukkike]
	/m̄bug-ke	'to water'	[m̄bugike ~ m̄bukke]

Prenasalized stops are not posited in analyses of the other Daju language varieties, possibly due to the limited corpus of data underlying these analyses. Prenasalized stops contrast with regular stops and simple nasals in almost all positions. All of the prenasalized stops, /m̄b/, /n̄d/, /ɲ̄j/ and /ŋ̄g/ occur word-initially as shown in examples (1-4) and (8-11).

In initial position the prenasalized stops are being lost in certain geographic areas where people are shifting from Dar Daju Daju to Chadian Arabic, and thus losing consonants that do not exist in Chadian Arabic. This language shift can most clearly be noted in the town of Mongo, the area most affected by Chadian Arabic. Younger speakers generally do not speak Dar Daju Daju, as Arabic has taken over as the language of preference and many adult middle age speakers do not make the prenasalized/nasal distinction. An example of this phenomenon is illustrated with the word /*n̄duce*/ 'flour'. In Mongo this word may be pronounced as either [*n̄duce*] or as [*nuce*] depending on the speaker. This variation does not occur in village settings where the contrast between prenasalized stop and simple nasal is maintained.

2.1.2 *Implosives*

The three phonemic implosives /*b d f*/ occur most commonly in initial position. Contrasts occur before a variety of different vowels. Bilabial contrasts are shown in Examples (15) and (16).

(15)	/bakk-ke/	'to take'	[bakkike]
	/m̄bak-ne/	'neighbor'	[m̄bakine]
	/bak-ne/	'barrel'	[bakine]
	/pakk-ke/	'to shatter'	[pakkike]
(16)	/b̄ild-ke/	'to learn'	[b̄ildike]
	/m̄bid-ke/	'to shoot'	[m̄bidike ~ m̄bitke]
	/bidis-ce/	'saddle strap'	[bidiff̄e]
	/pid-ke/	'to remove'	[pidike ~ pitke]

Alveolar contrasts are shown in examples (17) and (18).

(17)	/d̄aŋ-ke/	'to build'	[d̄aŋke]
	/n̄dal-ke/	'to step on'	[n̄dalke]
	/dal-ke/	'to miss'	[dalke]
	/tam-ke/	'to bleed'	[tamke]
(18)	/d̄aad-ke/	'to win'	[d̄aadike]
	/n̄dad-ke/	'to nibble'	[n̄dadike ~ n̄datke]
	/dadin-ce/	'buttocks strap'	[dadinj̄ce]

Palatal contrasts are shown in examples (19) and (20).

(19)	/ʃir-ke/	‘female cry of joy’	[ʃirke]
	/jul-ke/	‘to lift up’	[julke]
	/ʃirr-e/	‘real’	[ʃirre]
	/cir-ke/	‘to have diarrhea’	[cirke]
(20)	/ʃug-e/	‘something’	[ʃuge]
	/jug-e/	‘men’	[ʃuge]
	/jugjug-ne/	‘shrew’	[jugjugne]
	/cul-ce/	‘charcoal’	[culce]

There are a total of ten examples of the /ʃ/ phoneme. It is, however, found in most word classes, including verbs, nouns, adjectives and interrogative pronouns as shown, respectively, in examples (21) through (24).

(21)	/ʃed-ke/	‘to harvest’	[ʃedike ~ ʃetke]
(22)	/ʃil-dige/	‘darkness’	[ʃildige]
	/ʃug-e/	‘something’	[ʃuge]
(23)	/porʃ-a/	‘slippery’	[porʃa]
	/ʃil-a/	‘black’	[ʃila]
(24)	/ʃan-e/	‘why/what’	[ʃane]

Though implosives are common word-initially, they are rare in non-initial position. Only three words with non-initial implosives are found in the corpus; these are listed in example (25).

(25)	/wad-ke/	‘to swallow’	[wadike ~ watke]
	/kuʙutt-ce/	‘wing’	[kuʙuttice]
	/kuʙ-ne/	‘fruit bat’	[kuʙine]

2.1.3 Fricatives

There are three phonemic fricatives: /s/, /z/ and /h/. As mentioned above, /z/ and /h/ are almost exclusively limited to loanwords.

The voiceless fricative /s/ becomes voiced preceding a voiced consonant as shown in example (26). See section 2.4.1 for more information on regressive assimilation.

- | | | | |
|------|----------|--------|---------|
| (26) | /iis-e/ | ‘dog’ | [iise] |
| | /iis-ge/ | ‘dogs’ | [iizge] |

The voiceless fricative /s/ becomes [ʃ] in two different environments. First, it assimilates to the point of articulation of a preceding palatal nasal, as shown with the word *soge* ‘door’.

Examples (27) and (28) show the phoneme /s/ following other nasals while examples (29) and (30) show the assimilation process.¹³

- | | | |
|------|----------------|-----------------------|
| (27) | [na ŋgem sogɛ] | ‘I measure the door.’ |
| (28) | [na pan sogɛ] | ‘I paint the door.’ |
| (29) | [na dʌŋ ʃogɛ] | ‘I build the door.’ |
| (30) | [na kiŋ ʃogɛ] | ‘I open the door.’ |

The second environment in which the voiceless fricative /s/ becomes [ʃ] is a case of mutual assimilation in which the phoneme /s/ becomes a palatal before the voiceless palatal stop /c/. The phoneme /c/ also becomes a palatal fricative [ʃ], thus /s/ and /c/ mutually assimilate and become [ʃʃ]. This assimilation is shown within words in examples (31) through (34).

- | | | | |
|------|-------------|------------|------------|
| (31) | /kalas-ce/ | ‘ember’ | [kalaʃʃe] |
| (32) | /malas-ce/ | ‘lance’ | [malaʃʃe] |
| (33) | /tuss-ce/ | ‘testicle’ | [tuʃʃe] |
| (34) | /testes-ce/ | ‘pimple’ | [testeʃʃe] |

The mutual assimilation is shown across word boundaries with the verb /is-e/ ‘gave’. Example (35) shows that no assimilation occurs before *kulke* ‘sesame’, a word beginning with a non-palatal, while example (36) shows the assimilation process before the word *culce* ‘charcoal’.¹⁴

¹³ In section 0 I will argue that these verbs end with vowels underlyingly.

¹⁴ As will be shown in section 2.4.5, vowels are deleted word-finally within a phrase, but not phrase-finally. This is what causes the consonants /s/ and /c/ to become adjacent.

(35) [am is kulik ki Musa]
 ‘He gave sesame to Moussa.’

(36) [am iʃʃulic ki Musa]
 ‘He gave charcoal to Moussa.’

In addition to these instances of derived [ʃ], this sound occurs in four Arabic loan words: [ʃaj] ‘tea’, [aʃan] ‘because’, [iʃirini] ‘twenty’, [munʃagne] ‘north’. Two additional instances of [ʃ] which are also likely loan words are [ɛʃkejge] ‘to taste’ and [miʃejge] ‘to eat’, since the suffix [-ej] found in these forms is an allomorph of the loan word suffix morpheme /-aj/, as discussed in section 5.7.1.

The phoneme /z/ occurs lexically in loan words from Arabic and in three apparently native words: /gorzo/¹⁵ ‘gecko’, /izuzwane/ ‘dragonfly’ and /uzurumne/ ‘hornbill bird’. It also occurs in a large number of names for people and villages.

The phoneme /h/ likewise occurs only in words of Arabic origin and only word-initially. It is frequently used in names.

2.1.4 Sonorants

The sonorants include the liquids /l/ and /r/, and two semivowels /w/ and /j/. The tap /ɾ/ is pronounced as a trill when it is geminated. All four sonorants occur word-initially and medially. Contrast between /l/ and /r/ are shown in (37). Geminates also occur as shown in (38) and discussed in further detail in section 2.5.

(37)	/lub-ke/	‘to soak’	[lubike~ lupke]
	/rub-ke/	‘to follow’	[rubike~rupke]

(38)	/kiriŋ-e/	‘seiko fence’	[kiriŋe]
	/ellej-ke/	‘to look up’	[ellejge]

Contrast between /w/ and /j/ are shown in example (39).

¹⁵ One might posit that the underlying form is /gorso/ instead of /gorzo/. However, assimilation is generally regressive, not progressive in Dar Daju Daju making this an unlikely possibility.

- (39) /wed-ke/ 'to walk' [wedike~ wetke]
 /jeb-ke/ 'to gather' [jebike~ jepke]

2.2 Vowels

The phonemic inventory contains five vowels, along with their long counterparts, as shown in Table 4.

Table 4: Vowel Phonemes

	Front	Central	Back
High	i, ii		u, uu
Mid	e, ee		o, oo
Low		a, aa	

The mid vowels /e/ and /o/ have allophones [e ε] and [o ɔ] determined by syllable structure: the close allophones [e o] occur in open syllables, and the open allophones [ε ɔ] occur in closed syllables. Examples with close allophones in open syllables are shown in Example (40), while examples of the open allophones in closed syllables are shown in (41).

- (40) /bogirg-e/ 'rooster' [bogirge]
 /koron-i/ 'now' [koroni]
 /led-e/ 'owner' [lede]
 /pen-e/ 'son' [pene]
- (41) /bod-ke/ 'to reclaim' [bɔtke ~ bodike]
 /ndol-ke/ 'to loosen' [ndɔlke]
 /deg-ke/ 'to climb' [dɛkke ~ degike]
 /ged-ke/ 'to crawl' [getke ~ gedike]

These vowels also become open before geminates vowels as shown in example (42).

- (42) /okk-ce/ 'caterpillar' [ɔkkice]
 /ett-e/ 'tree' [ette]

Long vowels also become open in a closed syllable as shown in example (43).

- | | | | |
|------|-----------|-----------|----------|
| (43) | /mees-ke/ | ‘to lose’ | [mɛɛske] |
| | /moos-ke/ | ‘to rot’ | [mɔɔske] |

The [ɛ] and [ɔ] allophones are not shown in surface forms elsewhere in this thesis.

2.2.1 Vowel length

Vowel length is contrastive in both verbs and nouns. Contrastive pairs exist for all five vowels for the verbs as shown in examples (44) through (48).

- | | | | |
|------|-----------|-----------------------|------------------|
| (44) | /baad-ke/ | ‘to be sick’ | [baadike] |
| | /bad-ke/ | ‘to hit’ | [badike ~ batke] |
| (45) | /mees-ke/ | ‘to lose’ | [meeske] |
| | /mes-ke/ | ‘to have intercourse’ | [meske] |
| (46) | /wiis-ke/ | ‘to satiate’ | [wiiske] |
| | /wis-ke/ | ‘to metamorphose’ | [wiske] |
| (47) | /moos-ke/ | ‘to rot’ | [mooske] |
| | /mos-ke/ | ‘to squeeze’ | [moske] |
| (48) | /uur-ke/ | ‘to cough’ | [uurke] |
| | /ur-ke/ | ‘to drink’ | [urke] |

It is important to note the long vowels since only short vowels have been previously posited for any of the other six Daju language varieties.¹⁶ This is not surprising in light of the fact that the analyses of the other Daju languages were based upon limited data sets of 210 words.

Grammatical length distinctions are also used to indicate distance, both spatially and temporally. An example is the distant future. The distant future is formed by taking the non-present form of the verb and lengthening the first vowel of the subject pronoun, as shown in (49) and (50).

- | | | | | |
|------|-----------|------------|--------------------------------|------------|
| (49) | <i>na</i> | <i>osi</i> | <i>naa</i> | <i>osi</i> |
| | 1s | go:NPR | 1s.DIS | go:NPR |
| | ‘I went.’ | | ‘I will go.’ (not immediately) | |

¹⁶ Thelwall (1981:178) does not acknowledge any length distinctions in the other Daju varieties while Ehret (2001) calls for only one lengthened proto vowel, */a:/.

(50) *kona osina koona osina*
lpi go:lpi lpi.DIS go:lp

‘We all went.’ ‘We all will go.’ (not immediately)

The pronouns with short vowels can only be used in a non-future sense while the pronouns with long vowels can only be used with a future sense.

Examples of spatial distances distinguished by vowel length are noted with the demonstratives in section 3.2.¹⁷

2.2.2 Tones

A preliminary study of tones suggests there are two tones: high (H) and low (L). The functional load for tone in nouns is very low; there are no minimal pairs for tone. There are only two patterns on two syllable nouns, namely all high or all low, examples of which are given in Table 5. Three-syllable roots are fairly rare and I have not included them in the analysis.

Table 5: Tone melodies on two-syllable nouns

Low Tone		High Tone	
[sògè]	‘street’	[ísé]	‘herd’
[pìdè]	‘middle’	[wááné]	‘other’
[tùmnè]	‘ostrich’	[cénné]	‘half’
[ùndè]	‘ear’	[éré]	‘foot’
[pì̀̀dcè]	‘twin’		

There are few high tone nouns.

Verbs with short root vowels can take one of two tone patterns. I refer to the two groups as H-tone verbs and L-tone verbs since H-tone verbs contain always begin with a H tone, while L-tone verbs begin with a L tone in most forms.¹⁸ An L-tone verb is shown in the present and non-present tense in Table 6.

¹⁷ The question of whether or not this is indeed grammatical length needs further research.

¹⁸ Verbs with two syllable roots show similar patterns, but further research needs to be done.

Table 6: The L Tone Verb /dòb-kè/ ‘to attach’

	Present		Non-Present	
1s	nà dòbó	L H	nà dòbì	L L
2s	nì dòbó	L H	nì dòbì	L L
3sm	mà dóbò	H L	mà dòbì	L L
3sf	cè dóbò	H L	cè dòbì	L L
1pi	kón dòbcíná	L H H	kón dòbíná	L H H
1pe	òskà dòbcíg	L H	òskà dòbíg	L H
2p	óη dòbcínì	L H L	óη dòbìnì	L L L
3p	às dóbò	H L	às dòbì	L L

The L tone is present on the first syllable of almost all conjugated verb forms. In the present tense, the L tone of the first syllable is replaced by an H tone in the third person forms. The L tone is maintained on the first syllable in all of the non-present tense conjugations.

An H-tone verb is shown in the present tense and non-present tense forms of the verb in Table 7.

Table 7: The H-Tone Verb /ál-kè/ ‘to throw away’

	Present		Non-Present	
1s	nà álè	H L	nà álì	H L
2s	nì álè	H L	nì álì	H L
3sm	mà álè	H L	mà álì	H L
3sf	cè álè	H L	cè álì	H L
1pi	kón álcíná	H H H	kón álná	H H
1pe	òskà álcíg	H H	òskà-álíg	H H
2p	óη álcínì	H H L	óη álnì	H L
3p	às álè	H L	às álì	H L

The H tone is maintained on the first syllable in all forms of the verb. H tone after an L tone has often been observed to be slightly lower than a preceding H, although the H in this position is not necessarily lowered all the time. The conditions under which this automatic downstep is suspended are unclear.

The infinitive form of most H-tone verbs take an L (LL, LLL) pattern. In other words, the lexical tone for most verbs is neutralized in the infinitive form. This is not surprising since most nouns have the L pattern, and the infinitive is the nominalized form.

While verbs with short root vowels only take one of two tone patterns, H or L, verbs with long root vowels exhibit one of three tone patterns, all of which begin with H. The patterns are shown in Table 8. Pattern one, shown as 1a and 1b, has HLH in the present tense and HLL in the non-present tense. Pattern 1b has an epenthetic vowel in the infinitive not present in pattern 1a. Pattern two, shown as 2a and 2b, has H^h H in the present tense and HHL in the non-present tense. Pattern three, shown as 3, has HHL in both the present tense and non-present tense. Because tone in the infinitive form of the verb is often neutralized to L, the contrast is frequently seen only in the conjugated forms.

2.2.3 Interaction between tone and length

There are minimal pairs for vowel length, where the tones are the same, as shown in examples (51) and (52).

(51) [músínè] ‘doe’
 [múúsínè] ‘sorrel’

(52) [kárímnè] ‘west’
 [kárímnè] ‘outcast’

There are however, no minimal pairs differing only in tone, where length is the same and tone is different. That is, whenever there is a difference in tone there is also a difference in the segments.

Table 8 shows a number of contrastive pairs for vowel length with their tones in the first person singular present tense and non-present tense. Tone will not be transcribed in the balance of this thesis.

Table 8: Vowel length contrast among verb with tones included

#	Verb	Gloss	Tone	Verb	Gloss	Tone
1a	áálkè	'to sharpen'	HHL	álkè	'to throw away'	HL
	nà áálé	'I sharpen'	HLH	nà álé	'I throw away'	HL
	nà áàli	'I sharpened'	HLL	nà áli	'I threw away'	HL
1b	éébíkè	'to trample'	HHHL	èbkè	'to pick fruit'	LL
	nà éébé	'I trample'	HLH	nà ébè	'I pick fruit'	HL
	nà éèbi	'I trampled'	HLL	nà ébi	'I picked fruit'	HL
2a	mèèskè	'to lose'	LLL	mèskè	'to have intercourse'	LL
	nà méésé	'I lose'	HLH	nà mésè	'I have intercourse'	HL
	nà méési	'I lost'	HHL	nà mési	'I had intercourse'	HL
2b	ùùrkè	'to cough'	LLL	ùrkè	'to drink'	LL
	nà úùró	'I cough'	HLH	nà úró	'I drink'	HL
	nà úúri	'I coughed'	HHL	nà úri	'I drank'	HL
3	mòòskè	'to rot'	LLL	mòskè	'to squeeze'	LL
	nà móósò	'I rot'	HHL	nà mósò	'I squeeze'	HL
	nà móósi	'I rotted'	HHL	nà mósi	'I squeezed'	HL

2.3 Syllable Structure

The maximum syllable template is CVVC.¹⁹ The onset is optional word-initially, but not elsewhere, and all words end in open syllables. Examples of open and closed syllables are shown in Table 9.

Table 9: Syllable Structure of Dar Daju Daju

Open syllable :	pa.ke	'to kill'	i.se	'head'
	so.ce	'tear'	si.me	'pregnancy'
	pii.de	'middle'	koo.ki.ne	'cliff'
Closed syllable:	bor.ne	'hyena'	bog.dos.ke	'to encounter'
	or.ke	'to see'	un.de	'ear'
	mees.ke	'to win'	piid.ce	'twin'
	aal.ke	'to sharpen'	uur.ke	'to cough'

¹⁹ The VV is only for long vowels.

Closed syllables with long vowels are fairly rare; some examples are: *kariibne* ‘outcast’, *meeske* ‘to lose’ and *wiiske* ‘to satiate’. Stress is generally on the first syllable of the word.

2.4 Morphophonemic Rules

In this section I only include the general rules of the language. Specific rules that apply only to certain word classes are discussed later in relation to those classes.

2.4.1 Regressive voicing assimilation and /i/ epenthesis

One of the main driving forces behind the morphophonemic rules in the language is that it does not allow phonetic sequences of obstruents that differ in voicing, or sequences of a voiceless obstruent followed by a voiced sonorant. The language has two strategies available in order to repair violations produced by word formation: voicing assimilation and epenthesis of [i]. The choice of which repair strategy to choose is quite possibly idiolectal or dialectal as both are used for the same structures. People use one or the other, but the two forms do not alternate for the same speaker. I have not been able to determine the criteria for the differing strategies.

The first strategy is regressive voicing assimilation:

Regressive Voicing Assimilation: Obstruents assimilate to the voicing of a following consonant.

This is a general rule which I mentioned in section 2.1.3 with the phoneme /s/ becoming [z] before a voiced consonant, as shown in example (53).

(53) /maɫas-ge/ ‘spears’ [malazge]

In addition to these allophonic effects the rule also has morphophonemic effects that apply only when /i/ Epenthesis does not, as shown in examples (54) and (55). The words *kapagi* and *retine* are provided to show that voiceless stops occur in intervocalic-position.

- (54) [abike~apke] 'to tie'
 [kapagi] 'a little'
- (55) [todike~totke] 'to stop'
 [retine] 'trap for catching fish'

If the underlying forms in the examples that show variation are /ap-ke/ and /tot-ke/, there would be no rationale as to why some people voice the stop after epenthesis of /i/. As shown by the forms that do not show variation, there is no general constraint against intervocalic voiceless stops. So I assume that the underlying forms are /ab-ke/ and /tod-ke/, and Regressive Voicing Assimilation applies to derive the surface forms [apke] and [totke].

Currently Regressive Voicing Assimilation applies in only five sequences: /b/, /d/ and /g/ before /k/ and /s/ before /g/ or /n/.

As noted above, there is a second strategy for dealing with disallowed sequences of obstruents: epenthesis of /i/.

/i/ Epenthesis: The vowel /i/ is epenthesised between obstruents that differ in voicing, or between a voiceless obstruent followed by a voiced sonorant.

The epenthesis of /i/ breaks up the the disallowed sequences and only applies when Voicing Assimilation does not as shown in examples (56) and (57).

- (56) [ndacke~ndajike] 'to hit'
- (57) [makke~magike] 'to exchange'
 [dɔkine] 'skin'

If the /i/ was posited as underlying then one would have to posit roots to end in /i/ which does not fit the normal pattern of the language. There is also phonetic rational for epenthesis to break up a consonant cluster while there is no phonetic rational for deleting a vowel resulting in a more complex syllable structure. The change of the syllable structure when /i/ is epenthesised causes the open vowels /ɔ/ and /ɛ/ to become close in open syllables as discussed earlier in section 2.2.

After voiceless stops epenthesis is obligatory²⁰ as shown in examples (58) and (59).

(58) /kok-ne/ 'snake' [kokine]

(59) /ret-ne/ 'fish trap' [retine]

2.4.2 /i/ epenthesis in consonant clusters

Epenthesis also occurs in words with clusters of three consonants.

CCC Epenthesis: When sequences of three consonants arise through word formation rules, /i/ is epenthesized between the second and third consonants.²¹

Examples are shown in (60) through (63).

(60) /magj-ne/ 'a rich person' [magjine]

(61) /urs-ke/ 'to understand' [ursike]

(62) /kojd-ne/ 'bull' [kojdine]

(63) /usk-ce/ 'cinder' [uskice]

CCC Epenthesis bleeds Regressive Voicing Assimilation, causing it to not apply as shown in example (64).

(64) [ɓalgike] 'to stir'

2.4.3 Vowel rounding

Vowel Rounding: The vowel /i/ becomes [u] before /m/ or /w/.

Vowel Rounding is most clearly seen with the non-present suffix /i/ as shown in examples (65) through (66).

²⁰ Regressive Assimilation never occurs with the voiceless stops in the same environment.

²¹ An exception to this rule occurs with the Cp3 plural suffix /-tige/ in which the epenthetic /i/ is placed before the first and second consonants. Examples of this are the words /pugd-e/ 'knife' and /od-e/ 'place' which become [pugittige] and [ottige] respectively in the plural. A possible solution for this is that a geminate cannot be broken.

- (65) na is-i ma 'I gave it.' [na isu ma]
 1s give-NPR it
- (66) ma or-i watir-i 'He saw the car.' [ma oru watiri]
 3s.m see-NPR car-Cs4

2.4.4 Voiced stop nasalization

Voiced stops become nasals in examples (67) through (70).

- (67) /maktab-ne/ 'office' [maktamne]
 (68) /dob-ma/ 'attach it!' [domma]
 (69) /kurgud-ne/ 'maggot' [kurgunne]
 (70) /cagcaq-ne/ 'drizzle' [cagcaŋne]

This rule can be stated as follows:

Voiced Stop Nasalization: Voiced stops become nasals when preceding a nasal.

Voiceless stops do not become nasals before nasals, but rather undergo epenthesis as stated earlier in section 2.4.1.

2.4.5 Vowel deletion and /i/ epenthesis

Word final suffixal vowels are deleted in examples (71) and (72).

- (71) na dej-e fug-e [na dej fuge] 'I fabricate something.'
 1s fabricate-PR something-Cs3
- (72) na oro banan̄ga
 na or-e ban-an̄ga [na or banan̄ga] 'I see my house
 1s see-PR house-1p.POSS
- (73) am ŋgan-e fug-e kiyar-a ki nan̄ga [am ŋgan̄ fug kiyar ki nan̄ga]
 3s buy-PR something good to 1s

'He is buying something good for me.'

This rule can be stated as follows:

Word Final Vowel Deletion: Word final suffixal vowels are deleted in non-phrase final position.

Word final vowel deletion occurs with each of the classificatory suffixes /-ne/, /-ce/, /-e/ and /-i/ (see section 4.1), as well as with the adjectival suffixes /-a/, /-iko/ and /-no/.²² The same is true for the final vowel of the infinitive suffix /-ke/, the final vowel on the imperfect singular, and the final vowel on adjectives and adverbs. All of these vowels delete when they are followed by another word, but not phrase finally. Root vowels however, do not delete word finally. The /-i/ of the non-present suffix also does not delete word finally. Final vowel deletion is shown with each of the four classificatory suffixes in examples (74) through (77).

- (74) *ce gage dumsine odan*
ce gag-e dums-ne odan [ce gak dumsin odan] ‘She puts the garbage here.’
 3sf put-PR garbage-Cs1 here
- (75) *ce gage cul-ce odan* [ce gak culic odan] ‘She puts the charcoal here.’
 3sf put-PR charcoal-Cs2 here
- (76) *ce gage teŋ-e odan* [ce gak teŋ odan] ‘She puts the cow here.’
 3sf put-PR cow-Cs3 here
- (77) *ce gage watir-i odan* [ce gak watir odan] ‘She puts the car here.’
 3sf put-PR car-Cs4 here

If vowel epenthesis is posited in these cases, the vowel quality would be expected to be predictable, but it is not.²³ Therefore, I posit the direction of the rule should be deletion and not epenthesis based upon the non-predictability of the vowel quality.

Word Final Vowel Deletion can create an unacceptable word-final CC consonant sequence which is repaired by epenthesis of the vowel [i] to create an allowable syllable structure.²⁴ In example (78) the final vowel is deleted from the noun /sug-ne/ ‘market’ and an [i] is epenthesized.

²² The adjectival suffixes are always affixed directly to the stem of the adjective. The suffixes /-a/ and /-iko/ are for adjectives modifying singular and plural nouns respectively. The suffix /-no/ suffix forms a predicate adjective.

²³ The vowels deleted word final are /e/, /i/, /a/ and /o/.

²⁴ Regressive voicing assimilation also occurs with the word *wed* ‘walk’.

This rule can be stated as follows:

Word Final Vowel Deletion: The vowel /i/ is epenthesized between the first and second consonants when the word final suffixal vowels are deleted.

(78) na wed-e ki sug-ne ki mongo [na wet ki sugin ki mongo]
Is walk-PR to market-Cs I at Mongo

‘I am walking to the market in Mongo.’

2.4.6 Coronal assimilation rule

A coronal stop, whether oral or nasal, assimilates completely to a preceding consonant of identical sonority.

Coronal Assimilation: A coronal stop assimilates completely to a preceding consonant that is alpha sonorant.

This can be seen in examples (79) through (85).

(79) /am os tiro/→[am os siro]

‘He is not going.’

(80) /na is tingga/→[na is siŋga]

‘I give (it) to him.’

(81) /na uc tiro ki sugne/→[na uc ciro ki sugne]

‘I am not staying at the market.’

(82) /am dob-t-i/→[am doppi]

‘He tied (repeatedly).’

(83) /am log-t-i/→[am lokki]

‘He clapped (repeatedly).’

(84)	/ber-ne/	'slave'	[bere] ²⁵
	/ber-ge/	'slaves'	[berige~berge]
(85)	/sel-ne/	'bird'	[selle]
	/sel-ge/	'birds'	[selige~selge]

This only occurs across word or morpheme boundaries as shown in example (86) in which the /t/ does not assimilate to the preceding coronal consonant.

(86)	/testes-ce/	'pimple'	[tɛstɛtʃe]
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2.5 Consonant Gemination

Voiceless obstruents, liquids and nasals can occur as geminates: phonetically long consonants. Geminates always occur in intervocalic position and are rarely root internal. Examples of geminates that are root internal and not at morpheme boundaries are shown in example 87. The examples shown in (87) are all native Dar Daju Daju words.

(87)	/ellej-ge/	'to look up'	[ellejge]
	/kirriŋ-e/	'seiko fence'	[kirriŋe]
	/serran-e/	'today'	[serane]

Many geminates occur at morpheme boundaries and can be explained by the assimilatory rules presented in section 2.4. Examples are shown in Table 10. Voiceless geminates occur for the stops /t/, /c/ and /k/ as well as for the voiceless fricative /s/. Instances of the liquids /l/ and /r/ are also frequent along with some instances of nasal gemination;²⁶ see section 2.4.6 for more information.

²⁵ The geminate /t/ is phonetically a trill.

²⁶ Coronal assimilation causes the /-ne/ suffix to sometimes surface as [ne]. An example is /gɑŋ-ne/ shoulder which becomes [gɑŋne]. Likewise, a preceding liquid can cause this suffix to become [-le] or [-re].

Table 10: Geminates across Morpheme Boundaries

	Underlying form	Surface form	Gloss
tt	/od-tige/	[ottige]	'places'
	/lud-tige/	[luttige]	'waist'
cc	/tac-tige/	[taccige] ²⁷	'swamps'
	/toc-tige/	[toccige]	'foreheads'
kk	/dog-ke/	[dokke]	'to prune''
	/log-ke/	[lokke]	'to applaud'
	/nog-ke/	[nokke]	'to yawn'
ss	/gis-t-as-ke/	[gissaske]	'to keep lightingfire'
ll	/bel-ne/	[belle]	'razor'
	/lol-ne/	[lolle]	'marrow'
	/ɲjel-ne/	[ɲjelle]	'torch'
rr	/bisgir-ne/	[bizgire]	'mane'
	/er-ne/	[ere]	'leg'
	/mar-ne/	[mare]	'crocodile'
nn	/bon-ne/	[bonne]	'boubou' ²⁸
	/gudgud-ne/	[gudgunne]	'stump'
ɲɲ	/gaɲ-ne/	[gaɲɲe]	'shoulder'

Not all geminates, however, can be accounted for by the rules presented so far. It would be desirable to avoid positing geminates in underlying forms, but it does not appear possible to completely avoid them.

The bulk of the remaining geminates occur root finally followed by consonant or vowel-initial suffixes. We need to determine whether it is possible to derive these geminates from non-geminates.

Among the stops, /tt/ and /kk/ are easiest to explain. In verbs, the voiceless stops /t/ and /k/, when root-final, always occur as geminates. They contrast only with voiced stops as shown in examples (88) and (89); they do not contrast with single voiceless stops.

²⁷ Because coronal stops assimilate completely to a preceding coronal obstruent with the same point of articulation, the Cp3 /-tige/ suffix can surface as [cige] or [sige].

²⁸ This is a type of outfit the Dar Daju Daju men wear.

- (88) [sudike ~ sutke] 'to crush'
 [sutkike] 'to rub'
- (89) [dogike ~ dokke] 'to prune'
 [dokkike] 'to peck'

We could account for the lack of root final single /t/ and /k/ in verbs by claiming the underlying forms of the geminates are in fact single stops, with the following rule geminating stops before the morpheme break.

Gemination: Voiceless stops geminate before a morpheme break.

Under this analysis, the underlying form of 'to crush' would be /sud-ke/ while the form for 'to rub' would be /sut-ke/.

In nouns the voiceless velar stop /k/ appears as a simple stop in eight roots preceding the Cs1 suffix /-ne/ and as a geminate in three roots preceding the Cs2 suffix /-ce/. Examples are shown in example (90); in these examples /i/ has subsequently been epenthesized.

- (90) /kuk-ne/ 'grandfather' [kukine]
 /jukk-ce/ 'seed' [jukkice]

One possible way to account for the geminate stops would be to complicate the germination rule:

Gemination: Voiceless stops geminate before a morpheme break followed by a voiceless stop.

This rule also allows for the simple /k/ to remain non-geminated before the Cs3 suffix /-e/ as shown in example (91).

- (91) [uke] 'mouth'

This rule will not, however, account for the remaining stops. While there are no examples of root-final simple [p], the only example of a geminate [pp], shown in example (92), occurs before a Cs1 /-ne/ suffix unlike the voiceless velar geminate [kk].

(92) [kuppine] 'hoof'

For this example, we would need to posit the underlying form /kupp-ne/ with a root final geminate. This would be parallel to root final consonant sequences in forms like /usk-ce/ [uskice] 'cinder' discussed in section 2.4.2.

In the case of /t/ there is one instance of a simple /t/ before a Cs1 /-ne/ suffix: *retine* 'trap for fish'. This agrees with my observations regarding the simple /k/ that it occurs before the Cs1 /-ne/ suffix, but not before the Cs2 /-ce/ suffix. However, with the Cs3 /-e/ suffix both simple [t] and geminate [tt] occur in the same environment as shown in examples (93) and (94).

(93) [joŋgote] 'toad'

(94) [satte] 'calabash'

The geminate occurs root final in eight roots, while the simple [t] occurs root final in only one root. If the geminates were created by a gemination rule, we would need to explain why the /t/ does not geminate in (93). One possible solution is to posit the [te] sequence of [satte] as being the Cs2 /-ce/ classificatory suffix²⁹ which assimilates to the preceding /t/ by way of the coronal assimilation rule discussed in section 2.4.6. Another possible explanation is that gemination only occurs in stressed syllables. Since stress, as mentioned earlier in section 2.3, occurs on initial syllables, the root final syllable in (52) is not stressed, and would therefore not be geminated. This solution however, does not apply everywhere as shown in examples (95) through (97) which have simple consonants following a stressed syllable.

(95) [uke] 'mouth'

(96) [are] 'hole'

(97) [jale] 'young man'

Furthermore, if the gemination rule were limited to voiceless stops in stressed syllables, the word *uke* 'mouth' should change to a geminate which it does not. At this point I cannot account for the

²⁹ See section 4.1 for more information on the Cs2 suffix.

geminated [tt] in forms like (94). It would be best to account for them by rule since they are more common than the nongeminated [t]. If, however, the rule is generalized to apply to these forms, we cannot explain why the /k/ does not geminate in forms like (95).

One of the greatest difficulties faced by the hypothesis that all root-internal geminates are phonologically derived from simple consonants is the geminate [ss]. Simple [s] occurs finally in 19 roots, while geminate /ss/ occurs finally in five roots. A minimal pair is shown in example (98).

- (98) [ɖaske] ‘to sprout’
 [ɖassike] ‘to resemble’

If these geminates came from underlying /s/, it would be difficult to explain why a simple [s] occurs in the majority of forms. It could be argued that the [s] in [ɖaske] ‘to sprout’ comes from an underlying /z/. The difficulty with this analysis is that /z/ is extremely rare, occurring only in loan words. When the minimal pairs presented in examples (98) are conjugated they maintain their contrast³⁰ as shown in example (99).

- (99) [jukkic aan ɖasi waj an] ‘That seed sprouted like this one.’
 [jukkic aan ɖassi jukkic waane.] ‘That seed resembled another seed.’

The most reasonable solution seems to be that the occurrences of geminate [ss], like geminate [pp], come from underlying geminates.

In nouns, when the geminate /ss/ is followed by the Cp1 plural suffix /-ge/, it becomes a simple [s] and devoices the following stop,³¹ whereas the single /s/ becomes voiced. Regressive assimilation cannot affect the geminate /ss/, and therefore the voiceless [s] causes the following /g/ to devoice. Examples are shown in Table 11. The simple /s/ never occurs with the plural Cp2 classificatory suffix /-inje/, but the geminate /ss/ does, and surfaces as a geminate.

³⁰ This contrast is maintained in the other geminate stops as well.

³¹ If the plural suffix /-ge/ was underlying /-ke/ there would be no explanation for the voicing in [malazge].

Table 11: Geminate /ss/ with Plural Suffix

Underlying form	Surface form with Cp1 suffix /-ge/	Surface form with Cp2 suffix /-ingge/	Gloss
/cabass-ge/	[cabaske]	[cabassingge]	'plant'
/kabuss-ge/	[kabuske]	[kabassingge]	'lung'
/malas-ge/	[malazge]	---	'lance'
/kalas-ge/	[kalazge]	---	'ember'

Another analysis of the data in Table 11 would be to claim that the [z] in [malazge] 'lance' and [kalazge] 'ember' was underlyingly /z/, and the [s] in [cabaske] and [cabassingge] was underlyingly simple /s/. Under this analysis, the /s/ in /cabas-ge/ would cause devoicing of the following voiced stop. The difficulty with this analysis is three-fold. First, as noted already for the nouns, /z/ is extremely rare, occurring only in loan words. Second, voicing assimilation, as presented in section 2.4.1, is regressive, not progressive. Third, we would need to explain why the /s/ geminates in [cabassingge] but not in [cabaske]. Since there are only a few roots that pattern like /cabass/, the most straightforward analysis is to claim that they are underlyingly geminate.

The nonnasal sonorants /r/ and /l/ present another difficulty for the hypothesis that all geminates are phonologically conditioned. Though there are very few instances of gemination of the nonnasal sonorants, there are instances of contrast between a simple liquid and its geminated counterpart as shown in examples (100) and (101).

(100) /elej-ke/ 'to despise' [elejge]
 /ellej-ke/ 'to look up' [ellejge]

(101) /par-ke/ 'to tear' [parke]
 /parr-ke/ 'to take a day of rest' [parrike]

A case could be made for the minimal pairs [elejge] 'to despise' and [ellejge] 'to look up' being loan verbs based upon the presence of [ej] in the stem, as noted in section 5.7.1. The form [parrike] 'to take a day of rest' however, shows no indication of being a loan word. Since the geminate /ll/ and /rr/, like /pp/, are rare, it is reasonable to posit them in the underlying forms.

CHAPTER 3

PRONOUNS AND DEMONSTRATIVES

In this chapter I discuss the morphology of the Dar Daju Daju pronouns and demonstratives. I also include information from related languages that may be helpful in the present analysis.

3.1 Pronouns

I first present my analysis of the morphology of the subject, object, possessive and relative pronouns of the language. One of the more interesting aspects of the system is the presence of gender. Though gender in the pronoun system is fairly rare in the Eastern Sudanic languages, Tucker and Bryan (1966:14) do note its existence.³²

3.1.1 Subject pronouns

Table 12 gives the full subject pronoun paradigm.

Table 12: Subject Pronouns

		Singular	Dual	Plural	
				Exclusive	Inclusive
1 st Person		na	koka	oska	kona
2 nd Person		ni		oŋa	
3 rd Person	Masc	ma~am		sa	
	Fem	ce~ ac			

In the third person singular there is a gender distinction: *ma* in the masculine, but *ce* in the feminine. The third person singular forms often transpose the vowel and the consonant.³³

³² Tucker and Bryan do not specify which particular languages have gender.

³³ The transposition of the vowel and the consonant does not appear to have any particular function and varies from speaker to speaker.

Though Table 12 shows the full subject pronoun paradigm, it does have gaps in the second and third person dual and there is no contrast between second and third person plural. If I ignore the dual and plural inclusive I am left with a more balanced, but incomplete paradigm as shown in Table 13.

Table 13: Subject Pronouns Ignoring Dual and Plural Inclusive

		Singular	Plural
1 st Person		na	oska
2 nd Person		ni	oŋa
3 rd Person	Masc	ma~am	sa
	Fem	ce~ ac	

While Table 13 is a well balanced paradigm, it does not account for the dual form *koka* or the plural form *kona*. The solution to this problem lies in the relationship between them and the pronouns *na* and *oska*. The pronoun *koka* is *na* plus ‘one’ while *kona* is *oska* plus ‘you’, with each pronoun adding a participant. This added participant is reflected in Table 14 with the term “first person plus” and the change label of “singular” to “non-plural”.

Table 14: Subject Pronouns with 1st Person Plus

		Non-Plural	Plural
1 st Person		na	oska
1 st Person Plus		koka	kona
2 nd Person		ni	oŋa
3 rd Person	Masc	ma~am	sa
	Fem	ce~ ac	

The result of adding first person plus to the paradigm is that the gaps are eliminated and the paradigm is well balanced. I will use the same format for the balance of the pronoun tables in this chapter.

The subject pronouns follow Greenberg’s generalizations (1966:109-111): The first person singular pronoun contains *a* while the second person singular contains *i*. Greenberg notes that one of the common features in Eastern Sudanic languages is the composition of their pronouns, especially the subject pronouns. Most often the first person singular pronoun contains *a* while the

second person singular contains *i*. The third person singular most often is formed utilizing *e* as its primary vowel. The feminine, then, follows the pattern noted by Greenberg

The presence of /n/ in the first and second person singular as well as the presence of /k/ in the plural is widespread in all Daju languages (Tucker and Bryan 1966:236). The /n/ and /k/ elements extend to possessive pronouns, demonstratives, interrogatives and determiner particles and are part of what Tucker and Bryan (1966:236) refer to as a “substratum” known as the *n/k* opposition found in a variety of Eastern Sudanic languages.

3.1.2 Possessive pronominal suffixes

Although Dar Daju Daju has possessive suffixes rather than possessive pronouns per se, I discuss them here for completeness. The possessive pronominal suffixes are listed in Table 15.

Table 15: Possessive Pronominal Suffixes

		Non-Plural	Plural
1 st Person		-aŋga	-ska
1 st Person Plus		-oka	-ona
2 nd Person		-iŋga	-oŋa
3 rd Person	Masc	-uma ³⁴	-isa
	Fem	-ice	

The second person plural possessive suffix is identical to the subject pronoun. The third person singular and plural possessive suffixes differ slightly from the corresponding subject pronouns by the prefixing of a vowel, and the first person plural possessive suffixes differ slightly by the absence of their initial phoneme. The first and second person singulars are distinct.

A full paradigm of the noun *jamne* ‘elder’ with the possessive suffixes is shown in Table 16.

³⁴ The /u/ of /-uma/ is likely the phoneme /i/ underlyingly that surfaces as [u] before the phoneme /m/. See section 2.4.3 for further discussion of vowel rounding. Within roots the sequence [im] is possible.

Table 16: Possessive Pronouns with the Noun *jamne* ‘elder’

		Non-Plural	Plural
1 st Person		jamnaŋga	jamniska
1 st Person Plus		jamnoka	jamnona ³⁵
2 nd Person		jamniŋga	jamnoŋa
3 rd Person	Masc	jamnuma ³⁶	jamnisa
	Fem	jamnice	

3.1.3 Object pronouns

The object pronouns, shown in Table 17, differ from subject pronouns only in the first and second person singular forms. These pronouns are used as direct objects and objects of prepositions.

Table 17: Object Pronouns

		Non-Plural	Plural
1 st Person		naŋga	oska
1 st Person Plus		koka	kona
2 nd Person		niŋga	oŋa
3 rd Person	Masc	ma~am	sa
	Fem	ce~ ac	

The forms *naŋga* and *niŋga* both contain what Tucker and Bryan refer to as an *n* element present in pronouns.

The language also has a set of indirect object pronouns that begin with the phoneme /t/ as shown in Table 18. This *t* element may be historically related to the preposition *ti* ‘to’ which is rarely used in the language. The pronouns presented in Table 17 always require a preposition before the pronoun when they are not used as direct objects, while the pronouns presented in Table 18 never require a preposition. These are semantically limited to always mark a recipient.

³⁵ The final vowel of the possessed noun’s classificatory suffix is deleted prior to the affixation of the possessive suffix. This is shown with the word *jamne* ‘elder’. When the first person plural suffix /-ona/ is affixed the /e/ of the Cs1 suffix /-ne/ is deleted and ‘our elder’ surfaces as [jamnona].

³⁶ The /u/ of /-uma/ is likely the phoneme /i/ underlyingly that surfaces as [u] before the phoneme /m/. See section 2.4.3 for further discussion of vowel rounding. Within roots the sequence [im] is possible.

Table 18: Indirect Object Pronouns

		Non-Plural	Plural
1 st Person		taŋga	tiska
1 st Person Plus		toka	tona
2 nd Person		tiŋga	toŋa
3 rd Person	Masc	tuma	tisa
	Fem	tice	

Example (102) shows the use of the indirect object pronoun.

(102) *am legeyi taŋga*
am legey-i taŋga
 3sm speak-NPR 1s.IO

‘He spoke to me.’

3.1.4 Relative pronouns

The morphemes *me* and *meŋ* function respectively as the singular and plural forms of the relative pronouns or complementizers in the Daju language. The singular form *me* is shown in examples (103) and (104).

(103) *na or-i yew-e me ay-i*
 1s see-NPR man-Cs1 who come-PVF

‘I saw the man who came.’

(104) *ni or-i ur-e me na or-i*
 2s see-NPR woman-Cs3 that 1s see-NPR

‘You saw the woman that I saw.’

3.2 Demonstratives

The demonstrative adjectives *an* ‘this’ and *ak* ‘these’ express nearness to the speaker, either physically or to his abstract mental state as shown in Examples 105 and 106.

(105) *iise an* 'this dog'

(106) *gosgode an* 'this morning'

These forms provide another illustration of the *n/k* opposition³⁷ noted by Tucker and Bryan (1966:23).

The Dar Daju Daju demonstrative system registers three degrees of distance;³⁸ the medial and proximal forms are derived from the proximal *an* and *ak* by either lengthening the initial vowel or by adding the vowel *i* to the root. The complete set is shown in Table 19.

Table 19: Dar Daju Daju Demonstrative Adjectives

	Singular	Plural
Proximal	<i>an</i>	<i>ak</i>
Medial	<i>ani</i>	<i>aki</i>
Distal	<i>aan</i>	<i>aak</i>

Proximal and medial refer to objects near to the speaker or the addressee respectively, while distal refers to objects far from both the addressee and the speaker.

Demonstratives pronouns also exist and are distinct from the demonstrative adjectives, but they are morphologically complex and do not have medial forms. They are formed by *da* or *ra*³⁹

³⁷ Greenberg (1966:88) notes a nearly identical situation in the Eastern Sudanic language Shilluk. In Shilluk the *n/k* alternation is also used to show the distinction between singular and plural.

³⁸ Tucker and Bryan (1966:238) present a very similar system in the Daju languages Shatt and Liguri. Both languages have a three-term demonstrative system, with the Shatt system having very similar roots to Dar Daju Daju. Shatt, like Dar Daju Daju divides demonstratives into two categories, demonstratives that function as pronouns and demonstratives that function as adjectives. The Shatt system retains the roots *an* (sing.) and *ak* (plural) in the three-term adjective system, but rather than lengthening the initial vowel in the distal, the Shatt system adds a lengthened /i/ suffix to the root.

after a proximal or distal demonstrative adjective. Table 20 shows the demonstrative pronouns while their use in sentences is shown in examples 107 and 108.

Table 20: Demonstrative Pronouns

<i>anda</i>	'this one'	<i>akra</i>	'these ones'
<i>aanda</i>	'that one'	<i>aakra</i>	'those ones'

(107) *na ngaj-e anda*
 1s buy-PR this one

'I am buying this one here.'

(108) *na ngaj-e anda*
 1s buy-PR these ones

'I am buying these ones here.'

(109) *ni idaj-i akra*
 2s hear-NPR these ones

'Did you hear these ones?'

³⁹ The liquid /r/ becomes [d] following a nasal. This is limited to the affix /-ra/ 'already' and the word *cara* 'only'. This phonological assimilation occurs in *anda* and *aanda* with the *ra* 'already' becoming *da*.

CHAPTER 4

NOMINAL MORPHOLOGY

Nouns in Dar Daju Daju are marked with suffixes for number and possessor. In this chapter I discuss number, since the possessive suffixes were discussed in section 3.1.2. The chapter begins with a section on the singular and plural classificatory suffixes. Number is discussed under the classificatory suffixes section. The chapter concludes with a section on noun formation which includes derivation from adjectives and other nouns as well as a subsection on compound nouns.

As will be shown, there are four singular and four plural classificatory suffixes in the language, but there is no predictable relationship between the two. The choice of what classificatory suffixes attach to each noun is lexically specified independently for the singular and plural suffixes. In Welmer's (1973:239) presentation of African language structures he states that 'for sheer complexity or irregularity in nominal morphology, however, it is hard to beat a number of Nilo-Saharan languages.' This complexity is what is found in both the singular and plural suffixes in the Dar Daju Daju.

4.1 Classificatory Suffixes

Tucker and Bryan (1966:235) note that eastern Daju languages have a variety of singular and plural suffixes and that western Daju languages have several singular suffixes along with *-ke* or *-ge* for the plural form. Dar Daju Daju fits the pattern of the western languages. All common nouns are marked in both the singular and plural with classificatory suffixes.⁴⁰ Nouns in the

⁴⁰ The term classificatory suffix is not ideal, but I have used it because the system is similar in some respects to clear cases of classificatory affixes in other African languages. Childs (2003) states the

singular are marked with one of four classificatory suffixes, *-ne*,⁴¹ *-ce*, *-e* and *-i*, which I refer to as Cs1, Cs2, Cs3 and Cs4, respectively. An example of each singular classificatory suffix is shown in examples (110) through (113).

Noun		+	Classificatory suffix		
(110)	<i>jam</i>	+	<i>-ne</i>	'elder'	[jamne]
	elder	+	Cs1 suffix		
(111)	<i>cacaw</i>	+	<i>-ce</i>	'liver'	[cacawce]
	tibia	+	Cs2 suffix		
(112)	<i>uk</i>	+	<i>-e</i>	'mouth'	[uke]
	mouth	+	Cs3 suffix		
(113)	<i>watir</i>	+	<i>-i</i>	'car'	[watiri]
	car	+	Cs4 suffix		

The greatest percentage of nouns are marked with the Cs1 suffix *-ne* in the singular. This suffix occurs almost three times as frequently as the Cs2 suffix *-ce*. The Cs3 suffix *-e* is approximately half as frequent as the Cs2 suffix while the Cs4 suffix *-i* is used with approximately thirty Arabic loan words.⁴²

It is possible that the classificatory suffix *-i* is a recent innovation related to the Arabic first person possessive form *-i* and that the Arabic possessed form is what was borrowed into the language, with the *-i* reanalyzed as a classificatory suffix. The final vowel of the classificatory suffix is deleted before the possessive marker, as shown in section 3.1.2, as seen in /jam-ne-ona/ 'our elder' → [jamnona].

determining factor for a noun class system is the existence of grammatical agreement. Given this definition the classificatory suffixes in Dar Daju Daju do not constitute a noun class system in the traditional sense because there is no grammatical agreement.

⁴¹ As shown in section 2.4.6, /n/ assimilates completely to a preceding coronal sonorant. Therefore, the *-ne/* suffix has various allomorphs: /sel-ne/ 'bird' [selle], /ber-ne/ 'slave' [bere], /qaŋ-ne/ 'shoulder' [qaŋne]

⁴² Arabic loan words may also take the Cs1 *-ne/* suffix.

Nouns are marked in the plural, as in the singular, with one of four classificatory suffixes: *-ge*, *-iŋge*, *-tige* and *-tiŋge* which I refer to as Cp1, Cp2, Cp3 and Cp4, respectively. An example of each of the plural classificatory suffixes is provided in examples 114 through 117.

(114) <i>ber</i>	+	<i>-ge</i>	'slaves' [berge]	/ber-ne/ 'slave'
slave	+	Cp1 suffix		
(115) <i>bor</i>	+	<i>-iŋge</i>	'mares' [boriŋge]	/bor-e/ 'mare'
mare	+	Cp2 suffix		
(116) <i>mor</i>	+	<i>-tige</i>	'wells' [mortige]	/mor-ne/ 'well'
well	+	Cp3 suffix		
(117) <i>ar</i>	+	<i>-tiŋge</i>	'holes' [artiŋge]	/ar-e/ 'hole'
hole	+	Cp4 suffix		

The most common suffixes are *-ge*⁴³ and *-iŋge* with the former slightly outnumbering the latter.

Though there are four classificatory suffixes in the singular and four in the plural, there is no relationship between the two sets. Table 21 shows that nouns take all possible combinations of singular and plural suffixes.

⁴³ It is possible that /-ge/ is the common plural marker everywhere, but that there are additional augments. These augments would be *-t-* and *-N-*, with *-N-* representing an uncertain nasal. These unpredictable augments could function as additional linking morphemes and might also be linked to certain nouns. Either one or both of the augments might be present in a given noun and an epenthetic /-i/ added where necessary.

Table 21: Singular and Plural Classificatory suffixes

Singular/Plural Suffixes	Singular	Plural	
Cs1/Cp1	<i>galanne</i>	<i>galadge</i>	'large spear'
	<i>kurne</i>	<i>kurge</i>	'ostrich'
Cs1/Cp2	<i>kokine</i>	<i>kokinge</i>	'chin'
	<i>dumsine</i>	<i>dumsinge</i>	'garbage'
Cs1/Cp3	<i>morne</i>	<i>mortige</i>	'well'
Cs1/Cp4	—	—	—
Cs2/Cp1	<i>culce</i>	<i>culge</i>	'charcoal'
	<i>ṅgaṅce</i>	<i>ṅgaṅge</i>	'mountain'
Cs2/Cp2	<i>ṅgidice</i>	<i>ṅgidinge</i>	'breast'
	<i>caskice</i>	<i>caskinge</i>	'sorcerer'
Cs2/Cp3	—	—	—
Cs2/Cp4	<i>bukce</i>	<i>buktinge</i>	'jujubiye tree'
Cs3/Cp1	<i>cirme</i>	<i>ciringe</i>	'chest'
	<i>malandice</i>	<i>malandige</i>	'idiot'
Cs3/Cp2	<i>uke</i>	<i>ukinge</i>	'mouth'
	<i>gaguwe</i>	<i>gaguwinge</i>	'bat'
Cs3/Cp3	<i>ede</i>	<i>ettige</i>	'brother'
	<i>sere</i>	<i>sertige</i>	'millet paste'
Cs3/Cp4	<i>soge</i>	<i>sogtinge</i>	'road'
	<i>ibe</i>	<i>ibtinge</i>	'tail'
Cs4/Cp1	<i>kimziri</i>	<i>kimzirge</i>	'pig'
	<i>hamami</i>	<i>hamamge</i>	'pidgeon'
Cs4/Cp2	<i>bisikledi</i>	<i>bisikledingge</i>	'bicycle'
	<i>watiri</i>	<i>watiringge</i>	'car'
Cs4/Cp3	—	—	—
Cs4/Cp4	—	—	—

As stated earlier, Bender (2005) divides the Eastern Sudanic languages into the En and Ek groups. Daju is part of the En group along with Surma, Jebel, Temein and Nilotic. One of the features that is especially strong in the En group is the presence of *n/g* in the singular and plural affixes respectively (Bender 2000). The Dar Daju Daju fits this pattern since *-ne* is the most widely used suffix in the singular while the formative *-ge* is always present in the plural.

4.2 Noun Formation

Nouns in Dar Daju Daju can be divided into three classes: simple nouns, derived nouns and compound nouns.

4.2.1 Simple nouns

The first column in Table 22 shows the phonological structures for the noun roots after the singular classificatory suffixes *-ne*, *-ce* and *-e* are removed from the noun, along with examples with each classificatory suffix.

Table 22: Structure for Noun Roots

	Nouns with Cs1 suffix <i>-ne</i>	Nouns with Cs2 suffix <i>-ce</i>	Nouns with Cs3 suffix <i>-e</i>
CV- / CV:-	asiine 'tray'	soce 'tear'	
CVC-	borne 'hyena' ndamne 'field'	sejce 'cheek' culce 'charcoal'	bane 'house' ise 'head'
CVCC-	murtine 'horse' dumsine 'trash'	caskice 'wizard' uskice 'cinder'	simde 'knee' pukse 'hare'
CVCVC-	pelewne 'pony' tombole 'navel'	wadance 'guest' kakawce 'shell'	bijise 'eel' duruwe 'hair'
CVCVCC-	kamalaine 'camel'	tungurce 'louse'	ogorte 'thief'
CVCCVC-	kurgunne 'maggot' pirtille 'trunk'	awdijce 'bird' ajdijce 'year'	emsire 'moon' goskode 'morning'
CVC.CVC- Reduplicated	keckejne 'armpit' gelgelle 'baboon'	mirmirce 'root' testeffe 'pimple'	luwluwe 'viper'
CVVC-	waadine 'promise' kariimne 'outcast'	piidice 'twin'	teene 'dry iise season' 'dog'

Longer structures do exist, but are fairly rare:

bosbosojce

'bush'

biliskicane

'sand'

4.2.2 Derivation

Suffixation is the primary means of noun derivation. There are six derivational suffixes in Dar Daju Daju with two constituting a singular/plural pair. I will discuss each affix in turn.

The suffix *-tigel-dige*⁴⁴ marks abstract nouns which are derived from other nouns or from adjectives. Examples (118) through (120) show abstract nouns derived from other nouns.

⁴⁴ It is possible that the derivational suffix is only *-ti/-di* with the *-ge* being the plural suffix presented earlier in section 4.1. This would be similar to what occurs in some Chadic languages in which the plural is applied to mass nouns and abstract nouns. Conditioning of the *t/d* alternation is unclear.

- (118) *kondore* 'courage' → *kondordige* 'bravery'
 (119) *ogorte* 'thief' → *ogortige* 'theft'
 (120) *lajjine* 'friend' → *lajjittige* 'friendship'

Examples (121) and (123) show abstract nouns derived from adjectives.

- (121) *pe:pila* 'fast' → *pelpeldige* 'speed'
 (122) *tulaŋi* 'short' → *tulaŋdige* 'shortness'
 (123) *batartar* 'flat' → *batartardige* 'flatness'

The suffixes *-iŋce* and *-iŋge*⁴⁵ mark the origin of individuals in the singular and plural as shown in examples (124) and (125). This involves derivation from borrowed nouns and therefore there are no examples of underived forms.

- (124) *amerikiŋce* 'American' *amerikiŋge* 'Americans'
 (125) *dajiŋce* 'Daju person' *dajiŋge* 'Daju persons'

The suffix *-i* marks the diminutive and is used with personal names as shown in examples

- (126) through (128).
 (126) *Hawa* → *Hawi*
 (127) *Mariam* → *Mariami*
 (128) *Aguja* → *Aguji*

A verb with the infinitive suffix *-ke* can also be used as a full noun as shown in examples (148) and (149).

⁴⁵ These derivational suffixes could also be analyzed as *-N-* followed by the plural */-ge/*, with *-N-* being an underspecified nasal. This would give further evidence that the plural suffixes are all */-ge/* in their basic form with augments of *-t-* or *-N-*. Though the *-N-* analysis is uncertain, it is likely the underlying nasal */n/* assimilates to the point of articulation of a following stop. It is possible that the *-N-* is used to derive an adjective describing a person from a particular place and produces nouns that take *-ce* and *-ge* classificatory suffixes.

- (129) /or-ke/ 'to see' or 'sight' [orke]
 (130) /fed-ke/ 'to harvest' or 'harvest' [fedike ~ fetke]

4.2.3 Compound nouns

Compounds are divided into two categories, those which are endocentric, where one element is the head and is modified by a secondary element, and those which are exocentric, where neither element is the head.

There are several types of endocentric compounds. An agentive compound consists of a relative pronoun (*me/men*) followed by the infinitive form of the verb or certain nouns as shown in examples (131) through (133).

- (131) /mirs-ke/ 'to become intoxicated' [mirsike]
 /me- mirs -ke/ 'drunkard' [memirsike]
 /men- mirs-ke/ 'drunkards' [menmirsike]
- (132) /aj-ke/ 'to fish' [ajge]⁴⁶
 /me-aj-ke/ 'fisherman' [meajge]
 /men-aj-ke/ 'fishermen' [menajge]
- (133) /galad-ne/ 'lie' [galanne]⁴⁷
 /me-gald-ne/ 'liar' [megalanne]
 /men-galad-ne/ 'liars' [mengalanne]
- (134) /ew-ge/ 'trees' [ewge]
 /me-ew-ge/ 'woodsman' [meewge]
 /men-ew-ge/ 'woodsmen' [menewge]

In a second type of endocentric compounds, the word *pire* 'infant' is used as a modifier to the head noun to generally indicate the young of a species as shown in examples (135) through (137).

⁴⁶ The infinitive suffix /-ke/ becomes voiced following a semivowel. Another example is the infinitive form of the verb /aw-ke/ 'to enclose' which becomes [awge].

⁴⁷ Voiced stops become nasals when preceding a nasal. See section 2.4.4.

(135)	/pir-e/ /bis-i/ /pir-e bis-i/	'infant' 'cat' 'kitten'	[pire] [bisi] [pirbisi] ⁴⁸
(136)	/pir-e/ /kugurg-e/ /pir-e kugurg-e/	'infant' 'hen' 'chick'	[pire] [kugurge] [pirkugurge]
(137)	/pir-e/ /kimzir-i/ /pir-e kimzir-i/	'infant' 'pig' 'piglet'	[pire] [kimziri] [pirkimziri]

The the word *pire* 'infant' is also used with compounds in which the meaning is not transparent as shown in examples

(138)	/pir-e/ /ok-ne/ /pir-e okne/	'infant' 'eye' 'pupil'	[pire] [okne] [pirogne]
(139)	/pir-e/ /ew-g-/ /pir-e ewge/	'infant' 'eyes' 'fruit'	[pire] [ewge] [pirewge]

Examples of exocentric compounds are shown in examples (140) through (143).

(140)	/ar-e/ /mon-e/ /ar-e mon-e/	'hole' 'nose' 'nostril'	[are] [mone] [armone]
(141)	/uk-e/ /sog-e/ /uk-e sog-e/	'mouth' 'road' 'door'	[uke] [soge] [uksoge]
(142)	/emsir-e/ /irs-i/ /emsir-e irs-i/	'moon' 'died' 'end of the month'	[emsire] [irsi] [emsirirsi]
(143)	/ok-ne/ /ett-e/ /ok-ne ett-e/	'eye' 'tree' 'knot in a tree'	[okne] [ette] [oknette]

⁴⁸ As shown in section 2.4.5, word final suffixal vowels are deleted in non-phrase final position.

CHAPTER 5

VERB MORPHOLOGY

The syllable structure of verbs is quite similar to that of nouns except that CV is much more prevalent. The syllable structures for verbs are shown in Table 23 through Table 26. All verbs are given with the infinitive suffix *-(ja)ke*.

Table 23: Monosyllabic Verb Stems with final vowel

<i>pa-ke</i>	‘to kill’	<i>da-jake</i>	‘to wash’
<i>wi-jake</i>	‘to run’	<i>si-jake</i>	‘to eat’
<i>su-wake</i>	‘to urinate’	<i>bu-wake</i>	‘to jump’

Table 24: Monosyllabic Verb Stems with final consonant:

<i>or-ke</i>	‘to see’	<i>wed-ke</i>	‘to walk’	<i>aal-ke</i>	‘to sharpen’
<i>ab-ke</i>	‘to bury’	<i>bod-ke</i>	‘to reclaim’	<i>baŋ-ke</i>	‘to call’
<i>deg-ke</i>	‘to stink’	<i>gag-ke</i>	‘to put’	<i>ir-ke</i>	‘to shave’

Table 25: Disyllabic Verb Stems

<i>mirtas-ke</i>	‘to marry’	<i>lajtas-ke</i>	‘to tremble’	<i>beddej-ke</i>	‘to begin’
<i>turtas-ke</i>	‘to be suited’	<i>coroj-ke</i>	‘to exit’	<i>iris-ke</i>	‘to die’
<i>isas-ke</i>	‘to give’	<i>malaj-ke</i>	‘to roll up’	<i>minang-ke</i>	‘to dream’

Table 26: Trisyllabic Verb Stem

<i>wanjaszin-ke</i>	‘to destroy’	<i>masalaj-ke</i>	‘to pretend’
<i>lalajdin-ke</i>	‘to move oneself’	<i>malajdin-ke</i>	‘to roll oneself up’

The majority of verb stems are monosyllabic, as in other Daju language varieties (Tucker and Bryan 1966: 402). Disyllabic stems make up approximately 20% of all verbs and are mostly loan words or derived from monosyllabic stems. Loan words comprise up to 18% of verbs. Trisyllabic stems are extremely rare.

This chapter is divided into seven sections presenting a variety of verbal forms. I begin with a discussion of the infinitive form followed by discussions of the productive and non-productive affixes. The productive affixes include two tenses and three aspects. The tense/aspect combinations in the form used with singular and third person plural subjects are shown in example (144) with the verb *arke* ‘to sew’.

(144) <i>are</i>	Present
<i>ari</i>	Non-present
<i>arti</i>	Iterative + Non-present
<i>artadi</i>	Durative + Non-present
<i>arca</i>	Progressive

In addition to the productive affix forms, the language also has five non-productive verb forms. The non-productive forms with the iterative and punctual extensions in the form used with singular and third person plural subjects are shown in example (145) with the verb root *al* ‘throw away’.

(145) <i>aldase</i>	Iterative extension + Present
<i>alase</i>	Punctual extension + Present
<i>alasi</i>	Punctual extension + Non-Present

The final two forms are presented in the form used with singular and third person plural subjects are shown in example (146) with the verb root *nol* ‘hide’.

(146) <i>nolwa</i>	Reflexive Present
<i>noldini</i>	Reflexive Non-present

After the presentation of the productive and non-productive suffixes I will discuss the irrealis and imperative moods, reduplication and verb classes.

5.1 Infinitive

The basic infinitive suffix is *-ke* as shown in example (147).

(147) <i>sa</i>	<i>wije</i>	<i>ososke</i>	<i>ki</i>	<i>sugne</i>
<i>sa</i>	<i>wij-e</i>	<i>osos-ke</i>	<i>ki</i>	<i>sug-ne</i>
3p	want-NPR	go-INF	to	market-Cs1

‘They want to go to the market.’

As discussed earlier in section 4.2.2, a verb with the infinitive suffix *-ke* can also be used as a full noun as shown in examples (148) and (149).

(148) /or-ke/ ‘to see’ or ‘sight’ [orke]

(149) /fed-ke/ ‘to harvest’ or ‘harvest’ [fedike ~ fetke]

In vowel-final monosyllabic verbs the structure of the verb is sometimes augmented by adding a semivowel after the root. The semivowel [w] occurs following rounded vowels; [j] occurs otherwise. This semivowel is followed by [a]. Thus, /da-ke/ ‘wash’, becomes [dajake] and /bu-ke/ ‘to jump’ becomes [buwake]. The resulting /-ja/ or /-wa/ surfaces only in the infinitive form of the verb. This type of augmentation is preferred, but optional. Thus, [suwake] ‘to urinate’ is preferred, but [suke] is allowed.

Simple nasals have no effect on the infinitive suffix *-ke* as shown in Table 27, but prenasalized stops, presented in section 2.1.1, in root final position cause voicing of the following infinitive suffix *-ke*⁴⁹ and then the stop portion deletes, as shown in Table 28. The full prenasalized stops surface in the imperative form of the verb.

Table 27: Simple Nasals with the Infinitive Suffix /-ke/ and the Imperative /-a/

/m/	/dim/	[dimke]	‘to circumcise’	[dima]	‘Circumcise!’
/n/	/ban/	[banke]	‘to suck’	[bana]	‘Suck!’
/ɲ/	/daɲ/	[daɲke]	‘to build’	[daɲa]	‘Build!’
/ŋ/	/baŋ/	[baŋke]	‘to call’	[baŋa]	‘Call!’

Table 28: Prenasalized Stops with the Infinitive Suffix /-ke/ and the Imperative /-a/

/mb̃/		–	–	–	–
/nd̃/	/kaband̃/	[kabange]	‘to become angry’	[kabanda]	‘Get angry!’
/ɲj̃/	/samaj̃j/	[samange]	‘to plaster’	[samajja]	‘Plaster!’
/ŋg̃/	/minaj̃g/	[minange]	‘to dream’	[minajga]	‘Dream!’

That is, the prenasalized stops surface phonetically as simple nasal stops in the infinitive while causing voicing on the following /k/.

⁴⁹ As stated in section 4.2.3, the infinitive suffix /-ke/ also becomes voiced following a semivowel. One example is the infinitive form of the verb /aw-ke/ ‘to enclose’ which is realized as [awge].

5.2 Tense

The Dar Daju Daju language has two tense forms: present and non-present.

5.2.1 Present Tense

The bare verb root with the /-e/ suffix⁵⁰ is its semantically unmarked form. This /-e/ becomes [-o] following a back rounded vowel [o] or [u] in the root. Unlike other productive verbal suffixes, the /-e/ drops out in non-phrase final position. This semantically neutral form of the verb is able to be used in more than one type of pragmatic or semantic context. Though always referring to the present moment, the context is what provides the appropriate interpretation. The default interpretation of the unmarked form of the verb seems to be present, and so that is how I will gloss it. Neither the /-e/ nor the non-present /-i/ suffix occur with any overt person/number marking.⁵¹

The unmarked form of the verb never co-occurs with productive aspect suffixes. When an unmarked verb is in a purpose clause, the meaning is that of an immediate purpose, as shown in examples (150) and (151).

(150) *na wɪn ki⁵² os ki sugne*
na wɪn-e ki os-e ki sug-ne
1s want-PR PURP go-PR to market-Cs1

‘I want to go to the market (immediately).’

⁵⁰ One other possible analysis is that the /-e/ is epenthetic since it differs from the aspectual suffixes by being deleted in non-phrase final position. If this is the case the verb is actually unmarked morphologically and a rule stating when the /-e/ is epenthesized would need to be written.

⁵¹ It has not been determined whether these suffixes are applied only to the singular and third person plural forms of the verb or if they are applied to all forms and deleted before the person/number markers in the first and second person plural forms.

⁵² The morpheme *ki* is polysemous. It can be the irrealis morpheme, the purposive conjunction ‘in order to’, and the preposition ‘to’. This difference in meaning will be reflected in the glosses.

(151)	<i>kona</i>	<i>wijncina</i>	<i>ki</i>	<i>wajnik</i>
	<i>kona</i>	<i>wijn-c-na</i>	<i>ki</i>	<i>wajn-ik</i>
	1pi	want-1pi	PURP	dance-1d

‘All of us want us two to dance (immediately).’

The /-e/ of the unmarked form of the verb is only present in the first, second and third person singular and in the third person plural as shown in the full conjugation in Table 21.

Table 29: Conjugation of the Unmarked Form of Verb *arke* ‘to sew

Person	Unmarked Verb
1,2,3s	<i>are</i>
1pi	<i>arcina</i>
1pe	<i>arciga</i>
1d	<i>arcik</i>
2p	<i>arcini</i>
3p	<i>are</i>

The formative /-ci/, which immediately follows the stem in the first and second plural forms, may be some type of a generalized plural marker, but it does not occur with the third person plural. It only occurs in what is considered a current activity. The /-ci/ formative does not appear in the non-present form of the verb as shown in Table 30.

Table 30: Conjugation of the Non-Present Tense Form of Verb *arke* ‘to sew

Person	Non-Present
1,2,3s	<i>ari</i>
1pi	<i>arna</i>
1pe	<i>ariga</i>
1d	<i>arik</i>
2p	<i>arni</i>
3p	<i>ari</i>

Verbs in first or second person plural overtly agree in person and number with the subject. The first, second and third person singular and the third person plural take a zero agreement marker on the verb. As shown in examples (152) through (155), the first person plural suffixes are the inclusive /-na/, exclusive /-igc/ and dual /-ik/ while the second person plural is /-ni/. Number co-occurs with durative or imperative aspect suffixes. Because the /-ci/ suffix is not fully

understood, I do not break off the /ci/ suffix in the examples and the gloss it as part of the plural suffix as a single gloss.

(152) *kona ul-cina iis-ge*
 1pi detach-1pi dog-pl

‘We (all) detach the dogs.’

(153) *koka ul-cik iis-ge*
 1d detach-1d dog-pl

‘We (two) detach the dogs.’

(154) *oska ul-ciga iis-ge*
 1pe detach-1pe dog-pl

‘We (a part of the group) detach the dogs.’

(155) *oŋa ul-cini iis-ge*
 2p detach-2p dog-pl

‘You (pl) detached the dogs.’

5.2.2 *Non-present tense*

The non-present tense suffix /-i/ in Dar Daju Daju by itself expresses a past completed action as its default interpretation. When the non-present tense is preceded by the irrealis morpheme *ki* the sense of the verb becomes future. See section 5.4.1 for further discussion. The default past interpretation is shown in example (156).

(156) *na idani awdiŋce*
na idan-i awdin-ce
 1s hear-NPR bird-Cs2

‘I heard the bird.’

The non-present tense first and second person plural forms, as shown in Table 31, do not include the non-present tense suffix /-i/.

Table 31: Conjugation of the Non-Present Tense Form of the Verb *urke* ‘to drink’

Person	Non-present
1,2,3s	<i>uri</i>
1pi	<i>urna</i>
1pe	<i>uriga</i>
1d	<i>urik</i>
2p	<i>urni</i>
3p	<i>uri</i>

5.3 Aspect

There are three aspects in Dar Daju Daju. These are iterative, durative and progressive. The iterative and the durative always occur with the non-present tense suffix *-i*, but the non-present tense suffix does not co-occur with the progressive. The suffixes are listed below:

Iterative	ITER	<i>-t</i>
Durative	DUR	<i>-tad</i>
Progressive	PROG	<i>-ca</i>

5.3.1 Iterative

The iterative aspect *-t* always co-occurs with the non-present suffix *-i* and indicates an action that is repeated over a short period of time. The action is always considered to be past when it occurs without the irrealis morpheme as shown in example (157).

(157) *ce urti*
ce ur-t-i
 3sf drink-ITER-NPR

‘She drank repeatedly.’

The iterative *-t* can undergo a variety of morphophonemic alternations depending on what consonant precedes it. Thus, *-t* can change to [p], [c], [k],[b], [d], [j] or [g] in the proper environments, as presented earlier in section 2.4.6.⁵³

⁵³The bulk of the alternations occur as a result of the coronal assimilation rule presented in section 2.4.6. The balance of the alternations is explained by a nasal assimilation rule in which alveolar stops

The productive iterative aspect *-t* never occurs with the present tense suffix *-e*. A paradigm of verbs with the iterative aspect is shown in Table 32.

Table 32: Conjugation with the Iterative Aspect

Person	Iterative + Non-Present
1,2,3s	<i>urti</i>
1pi	<i>urtina</i>
1pe	<i>urtiga</i>
1d	<i>urtik</i>
2p	<i>urtini</i>
3p	<i>urti</i>

5.3.2 *Durative*

The durative *-tad*⁵⁴ always co-occurs with the non-present suffix *-i* and indicates an action that is sustained over a period of time. Its default interpretation with the non-present suffix is a past action as shown in example (158).

- (158) *ce urtadi*
ce ur-tad-i
 3sf drink-DUR-NPR

‘She drank for a long period of time.’

A full conjugation with the durative aspect is shown in Table 33.

assimilate to the point of articulation and voicing of a preceding nasal. At present this Nasal Assimilation to the P.O.A. rule may be limited to the iterative affix *-t*, the durative affix *-tad* and the reflexive extension *-din*. The voiceless stops are accounted for by an assimilation rule in which a coronal stop, whether oral or nasal, assimilates completely to a preceding consonant of identical sonority. See section 2.4.6 for more information.

⁵⁴ Another possible analysis is that the */-tad/* suffix is actually composed of the iterative suffix *i-t* along with a more strictly durative suffix */-ad/*.

Table 33: Conjugation with the Durative Aspect

Person	Durative + Non-Present
1,2,3s	<i>urtadi</i>
1pi	<i>urtadina</i>
1pe	<i>urtadiga</i>
1d	<i>urtadik</i>
2p	<i>urtadini</i>
3p	<i>urtadi</i>

There exists a small group of verbs that require the presence of the durative suffix to indicate a non-present action. These verbs cannot occur with just the non-present suffix and are very limited in number. They are primarily verbs of motion and cognition as shown in Table 34.

Table 34: Class two verbs which take the suffix *-tadi*

<i>bildike</i>	'to learn'	<i>m̄baadike</i>	'to pull'	<i>wijake</i>	'to run'
<i>buwake</i>	'to jump/fly'	<i>fetke</i>	'to harvest'	<i>wetke</i>	'to walk'
<i>jilgike</i>	'to move'	<i>sipke</i>	'to plant'	<i>ursike</i>	'to think'
<i>kuukke</i>	'to laugh'	<i>balgike</i>	'to stir'		

The initial *-t* of the durative, like the *-t* iterative, can undergo a variety of morphophonemic alternations depending on what consonant precedes it. Thus, *-tad* can be realized as [bad], [dad], [jad], [gad] or [pad] in certain environments (see footnote 53).

5.3.3 Progressive

The progressive aspect *-ca* expresses a present or past action in progress at a specific time. The progressive aspect is most often used to indicate a present action while context helps to distinguish as to whether the action is past as shown in examples (159) and (160). It never co-occurs with other aspect or tense suffixes.

(159)	<i>kaccini</i>	<i>Musa</i>	<i>wetca</i>	<i>ki</i>	<i>soge</i>
	<i>kaccini</i>	<i>Musa</i>	<i>wed-ca</i>	<i>ki</i>	<i>sog-e</i>
	yesterday	Moussa	walk-PROG	to	road-Cs3

'Yesterday, Moussa was walking on the road.'

- (160) *Moussa wetca ki sogē*
Moussa wed-ca ki sog-e
 Moussa walk-PROG to road-Cs3

‘Moussa is walking on the road.’

A full conjugation with the progressive aspect is shown in Table 35.

Table 35: Conjugation with the Progressive Aspect

Person	Progressive
i,2,3s	<i>urca</i>
1pi	<i>urcina</i>
1pe	<i>urciga</i>
1d	<i>urcik</i>
2p	<i>urcini</i>
3p	<i>urca</i>

In all the singular persons and in the third person plural the language makes a distinction as to whether the action is progressive or not by the presence or absence of the progressive suffix *-ca* as shown in Table 35 and examples (161) and (162).

- (161) *am or-o bor-ne*
 3sm see-PR hyena-Cs1

He sees a hyena.

- (162) *am or-ca bor-ne*
 3sm see-PROG hyena-Cs1

He is looking at a hyena.

This is not the case in the first and second person plural. In these forms, the progressive form of the verb is identical with the present tense form presented earlier in section 5.2.1, as shown in example (163).

- (163) *kona or-cina bor-ne*
 1pi see-1pi hyena-Cs1

‘We see a hyena.’ or ‘We are looking at a hyena.’

The suffix */-cina/* in this example can indicate an action that may or may not be in progress at a specific point in time. One possible analysis is that the underlying form for the progressive

interpretation may actually be /-ca/ with the /a/ becoming [i] so that the two forms become homophonous. Another possible analysis is that the underlying form for the progressive interpretation is /-ca-cina/, which reduces for some reason to /-cina/. Neither of these proposals is particularly natural, and I have no explanation for the ambiguity of examples like (163).

5.4 Mood

Dar Daju Daju has three moods: indicative, irrealis and imperative. All affixes discussed in sections 5.2 and 5.3 are indicative mood.

5.4.1 Irrealis

When a verb with the present tense is preceded by the irrealis morpheme *ki* it expresses a wish or desire as shown in example (164).

(164)	<i>na</i>	<i>ki</i>	<i>oso</i>	<i>ki</i>	<i>sugne</i>	<i>sa</i>	<i>lanjikanga</i>
	<i>na</i>	<i>ki</i>	<i>os-o</i>	<i>ki</i>	<i>sug-ne</i>	<i>sa</i>	<i>lanji-k-anga</i>
	1s	IRR	go-PR	to	market-Cs1	with	friends-PL ⁵⁵ -1s.POSS
	<i>lakin</i>	<i>na</i>	<i>sogo</i>	<i>labine</i>	<i>waja</i>		
	<i>lakin</i>	<i>na</i>	<i>sog-o</i>	<i>labin-e</i>	<i>waja</i>		
	but	1s	have-PR	work-Cs3	a.lot		

'I would like to go to the market with my friends, but I have a lot of work to do.'

When a verb with the non-present tense is preceded by the irrealis morpheme *ki* the sense of the verb becomes future as shown in example (165).

(165)	<i>na</i>	<i>ki</i>	<i>idan-iawdij-<i>ce</i></i>
	<i>na</i>	<i>ki</i>	<i>idan-iawdin-<i>ce</i></i>
	1s	IRR	hear-NPR bird-Cs2

'I will hear the bird.'

⁵⁵ The reason that the plural marker is /k/ rather than /g/ is unknown.

When a verb with the non-present tense is in a purpose complement clause, the meaning is that of what is purposed in the non-immediate future. The purpose clause is introduced by the purposive conjunction *ki* ‘in order to’⁵⁶ as shown in example (166).

(166) *na wɪne ki osi ki sugne*
na wɪn-e ki os-i ki sug-ne
 Is want-PR PURP go-NPR to market-Cs!

‘I want to go to the market (sometime in the future).’

5.4.2 Imperative

The imperative mood is formed with the suffix *-a*⁵⁷. As shown in examples (167) and (168) this suffix is normally added directly to the stem.

(167) *or-a*
 look-IMP

Look!

(168) *orina*
*or-n-a*⁵⁸
 look-2p-IMP

(You (pl)) look!

With verbs that require the durative suffix *-tad*, as discussed in section 5.3.2, the imperative suffix is added to the stem including *-tad* as shown in examples (169) and (170).

⁵⁶ As stated in footnote 52 the morpheme *ki* is polysemous and the differences in meaning are reflected in the glosses.

⁵⁷ Tucker and Bryan, in their analysis of Daju languages, note a variety of different constructions for imperatives. Most have an *-i* imperative suffix in the singular and plural while the plural most often has an additional element affixed to the stem (Tucker and Bryan 1966). Certain constructions utilize the *-a* imperative suffix noted in Dar Daju Daju. Tucker and Bryan do not specify what languages have the various imperative constructions.

⁵⁸ The second person plural affix is */-ni/*, leading me to believe that the imperative affix *a* is suffixed after the person marker and that the */n/* is not part of the suffix.

(169) *wettada*
wed-tad-a
walk-DUR-IMP

Walk!

(170) *wettadina*
wed-tad-n-a
look-DUR-2p-IMP

Walk (plural)!

5.5 Verbal Extensions

To date very little has been written in relation to verbal extensions (derivational verbal affixes) in the Nilo-Saharan languages of Chad. The purpose of this section is to describe verbal extensions in Dar Daju Daju. I begin with a definition of verbal extensions followed by a discussion of verbal extensions in Dar Daju Daju, and conclude with a section on the loss of original source verbs and the fossilization of verbal affixes.

5.5.1 *Definition of verbal extensions*

Schuh (2005) defines verbal extensions as "... derivational affixes that create verb stems that have added meaning over and above the core meanings of the basic verb roots." In Nilo-Saharan studies, the term "verbal extension" is used to describe verbal affixes that are not productive or have very limited productivity. Certain semantic relationships associated with the verb may restrict extensions to specific verbs in a given language. Blench (2004), when speaking of his proposed Niger-Saharan language family states that "a feature of certain branches of Nilo-Saharan that has frequently been noted is the existence of verbal extensions, particularly in East Sudanic."

According to Hyman (2007:149-151), verbal extensions have a variety of functions such as increasing or decreasing the valence of the verb, (re-)orienting action or marking aspect. They are also subject to changes such as erosion or fusion over time and can "change or overlap in their functions."

Just how verbal extensions come into being is not greatly understood. Hyman (2007:155-158) speaks of possible “pathways for developing verbal extensions” and states that there may be a tendency for older suffixes to appear closer to the root.

Two additional important characteristics of verbal extensions which I will discuss later are: Firstly, though a verb stem may contain a verbal extension, the source verb may no longer exist as a viable root within the language. That is, the form of the verb without the verbal extension may no longer be used within the language while the form with the verbal extension is still viable. Secondly, the meaning of a derived verb stem may become lexicalized so that the original meaning is lost and a new word is formed.

5.5.2 *Verbal extensions in Dar Daju Daju*

In Dar Daju Daju the verbal extensions are composed using one of three distinctive morphemes. In order to best understand their functions I will begin by giving a short description of the basic verbal processes that occur in Dar Daju Daju. As stated earlier, Dar Daju Daju verbs are mostly monosyllabic in their root form. Derivational affixes may be added to the verb root to create a new stem, and then tense, aspect, mood and the infinitive marker are added to the stem. While aspectual markers are always affixed, mood is indicated both by affixation and by a separate irrealis morpheme preceding the verb (see section 5.4.1).

The following is a list of the extensions before any morphophonemic changes:

Iterative	ITER	- <i>tas</i>
Punctual	PNCT	- <i>as</i>
Reflexive/reciprocal	REFL	- <i>din</i>

When a verbal extension is added to a verb root, a new verb stem is formed. The iterative and punctual extensions are nonproductive and the reflexive/reciprocal extension is minimally productive by virtue of its being used in the derivation of some new words.

Verbal extensions are very limited in Dar Daju Daju, occurring in only about eight percent of the verbs. When they co-occur in a single stem, the order of the verbal extensions is fixed with the iterative and punctual being closest to the verb root followed by the reflexive/reciprocal.

(171) *ulas*
ul-as
 root-PNCT
 ‘untie’ (one time)

(172) *uldas*
ul-tas
 root-ITER
 ‘untie’ (repeatedly)

(173) *wanjasziŋge*
wan-tas-din
 root-ITER-REFL
 ‘turn oneself away’

The iterative verbal extension *-tas*⁵⁹ may or may not be distributive. I use the term distributive to refer to the subject of the verb acting iteratively on several objects. The *-tas* extension occurs on an extremely limited number of verbs and can only co-occur with the present tense suffix *-e*, the infinitive suffix *-ke* or the reflexive suffix *-din*. This differs from the iterative aspect suffix */-t/* which is used with most verbs and only co-occurs with the non-present suffix */-i/*. Example (174) shows the iterative with the present tense suffix. The iterative may also be referred to as verbal plurality.

(174) *ce uldase aske*
ce ul-tas-e aske
 3sf untie-ITER-PR goats
 ‘She is untying the goats’

⁵⁹ The *-t* from the *-tas* extension may be historically related to the iterative *-t* presented earlier in section 5.3.1.

If the iterative *-tas* occurs with the non-present tense the sentence is ungrammatical as shown in example (175).

- (175) **ce uldasi aske*
ce ul-tas-i aske
 3sf untie-ITER-NPR goats

‘She untied the goats.’

Since coronal stops assimilate completely to a preceding consonant of identical sonority, as discussed in section 2.4.6, and alveolar stops assimilate to the point of articulation and voicing of a preceding nasal,⁶⁰ the iterative extension *-t* and the initial *t* of the durative aspect *-tad* may be pronounced as [p], [t], [c], [k], [b],[d], [j] or [g] as shown in Table 36.

Table 36: Alveolar Stop P.O.A.

Verb-INF /-ke/	/ur-ke/	/dim-ke/	/ben-ke/	/lan-ke/	/dan-ke/	/kij-ke/
Gloss	‘to drink’	‘to throw’	‘to wait’	‘to sing’	‘to build’	‘to open’
Sing. NPR /-i/	[uri]	[dimi]	[beni]	[lanji]	[danji]	[kiji]
Sing. ITER NPR /-t/	[urti]	[dimbi]	[bendi]	[langgi]	[danji]	[kijji]
Sing. DUR NPR /-tadi/	[urtadi]	[dimbadi]	[bendadi]	[langgadi]		

The punctual extension *-as* can occur with either the present tense *-e* or the non-present tense *-i* without the iterative as shown in examples (176) and (177).

- (176) *na kinas uksoge*
na kij-as-e uke.soge
 1s open-PNCT-PR door

‘I open the door (once).’

⁶⁰At present this Nasal Assimilation to the P.O.A. rule may be limited to the iterative affix *-t*, the durative affix *-tad* and the reflexive extension *-din*. Regressive assimilation is crucially ordered and must occur before the coronal assimilation in which coronal stops assimilate completely to a preceding consonant with the same and sonority.

(177) *na kijasi uksoge*
na kij-as-i uke.soge
 1s open-PNCT-NPR door

'I opened the door (once).'

Thus, when the punctual extension *-as* is attached to the verb root *kij* 'open', a new verb stem *kijas* is created meaning 'open once'. When no extension is present, the verb is understood as habitual in meaning.

The vowel of the punctual extension *-as* and the iterative extension *-tas* harmonizes with the preceding non-high vowel of the simple verb (root). Thus the */-as/* of the punctual or iterative extensions may be realized as [-os] or [-es] depending on the vowel preceding it in the root.⁶¹

Table 37 below illustrates the derivation of *denes* and *coldos*.

Table 37: Derivation of */-as/* Punctual Extension

Gloss	'close'	'pour'
UR stem	/den-as/	/col-tas/
<i>/-t/</i> change	denas	coldas
Vowel harmony	denes	coldos
SR	[denes]	[coldos]

The reflexive/reciprocal extension *-din*⁶² indicates that both the patient and agent point to the same referent. The *-din* suffix is replaced with the allomorph *-wa* in certain conjugations. The *-wa* is present in the singular and third person plural present tense forms in most class five verbs, in certain non-present forms in a very limited number of class five verbs and in all class six verbs (see sections 5.7.5 and 5.7.6). It is either reflexive or reciprocal depending upon the verb.

⁶¹ Vowel harmony is seen to spread rightward from the root onto most, but not all affixes. In the relatively few instances in which it surfaces differently, there appears to be no phonological conditioning.

⁶² When the infinitive suffix *-ke* is separated from the root it is subject to progressive voicing assimilation. This is the case with the reflexive verbal extension in which the base root of the word is separated from the infinitive affix *-ke* by the suffix *-din*. One example is the word /bad-din-ke/ 'to fight among one another' which becomes [baddiŋge]. The same does not hold true for /ban-ke/ 'to suck' which remains [banke] in its surface form. This is limited to the infinitive suffix.

- (178) *kona dajdincina*
kona da-din-cina
 Ipi wash-REFL-1pi

‘We are washing ourselves.’

- (179) *kona dardincina*
kona dar-din-cina
 Ipi separate-REFL-1pi

‘We are separating from each other.’

- (180) *ce nolwa*
ce nol-wa
 3sf hide-REFL

‘She hides herself.’

5.5.3 Historical development of verbal extensions

One of the common features of verbal extensions is the fact that often the derived verb fossilizes and loses its original meaning. This can be clearly seen in with the verbs *mirtaske* ‘to marry’ and *turtaske* ‘to be suitable’. In these verbs the nonderived verb stem exists, thus allowing us to determine the original meaning of the root. The nonderived forms of these verbs are *mirke* ‘to catch’ and *turke* ‘to love’. When the *-tas* extension is added to *mirke* ‘catch’ one would expect the meaning of the verb to change from ‘to catch’ to ‘to catch repeatedly’. This, however, is not the case. When *-tas* is added to *mirke* the meaning of the verb becomes ‘to marry’. Thus the original meaning of the verb has fossilized into a new meaning, which though semantically related, is nonetheless different.

The same can be seen for the verb *turke* ‘to love’. When the verbal extension *-tas* is added one would expect that *turtaske* would have the meaning of loving repeatedly, but that is again not the case. The meaning of the *turtaske* is ‘to be suitable’ or ‘to be convenient’.

Another common feature of verbal extensions is that the source verb root may no longer be used in the language without extensions. This is the case with a number of derived verb stems in

Dar Daju Daju. Table 4 provides some examples of verb stems to which the corresponding verb root does not occur as a stem without derivational affixes.

Table 38: Verb Stem with Verbal Extensions, but no Source Verb

Verb stem	Gloss
<i>didaske</i>	'to forget'
<i>sidaske</i>	'to pass gas'
<i>beldeske</i>	'to accustom oneself to something'

Further study must be undertaken to gain a fuller understanding of the functions of verbal extensions in the language, in particular as to whether the iterative extension is always frequentive in nature or possibly distributive as well.

5.6 Reduplication

Reduplication, like verbal extensions, is non-productive in nature. The reduplicants may be remnants of a historical process that is now dead. Reduplication⁶³ in verbs follows the pattern 'stem + final syllable of stem'. Reduplicated forms are illustrated in Table 39.

Table 39: Reduplicated Verbs

[damdamge]	'to touch'	[korkorge]	'to gnaw'
[jobjobge]	'to re-dig'	[dekelkelge]	'to tickle'
[keckejege]	'to hatch'	[gudardarge]	'to coagulate'
[batartarge]	'to flatten'		

Reduplicated verbs may convey an action that is repeated. The unreduplicated stem no longer exists apart from its reduplicated form. The root structure of reduplicated verbs always ends in CVC.

⁶³ The root final consonant can be either voiced or voiceless, but the reduplicant always ends with a voiced consonant which makes the following infinitive suffix /-ke/ subject to progressive voicing assimilation. One example is the word /jobjob-ke/ 'redig' which becomes [jobjobge].

5.7 Verb Classes

According to Tucker and Bryan (1966:10-11), “verbs in many languages fall into morphological classes.” The classes may vary according to the shape of the verb stem or its behavior in conjugation, including “tense or aspect affix series” (1966:10). In Dar Daju Daju verbs are divided into six distinct classes based upon how they conjugate in the present and non-present tense forms of the verb which is determined by which affixes each class takes. This agrees with Tucker and Bryan’s statement that in Daju languages “verb conjugation is highly variable and it is possible that there may be morphological classes.”

5.7.1 Class one

Class one verbs take the present tense suffix *-e* and the non-present tense suffix *-i* in the singular and third person plural. The main class one verbs accept all aspect suffixes. The class one subclasses, with verbal extensions or loan verbs, accept only the non-present tense suffix *-i* and the present tense suffix *-e*.⁶⁴ This class includes the vast majority of all verbs. The first and second person plural are formed by the suffixation of person markers onto the stem. Examples of class one verbs are shown in Table 40.

Table 40: Class one Verb Conjugations

Person	/ur-ke/ ‘to drink’ [urke]				
	Present	Non-Present	Progressive	Durative + Non-Present	Iterative + Non-Present
1pi	<i>urcina</i>	<i>urna</i>	<i>urcina</i>	<i>urtadina</i>	<i>urtina</i>
1pe	<i>urciga</i>	<i>uriga</i>	<i>urciga</i>	<i>urtadiga</i>	<i>urtiga</i>
1d	<i>urcik</i>	<i>urik</i>	<i>urcik</i>	<i>urtadik</i>	<i>urtik</i>
2p	<i>urcini</i>	<i>urni</i>	<i>urcini</i>	<i>urtadini</i>	<i>urtini</i>
1,2,3s ⁶⁵ and 3p	<i>uro</i>	<i>uri</i>	<i>urca</i>	<i>urtadi</i>	<i>urti</i>

⁶⁴ The present tense suffix *-e*, becomes [o] following the back rounded vowels /o/ or /u/.

⁶⁵ 3SG includes both masculine *ma* and feminine *ce*.

Verbs with the verbal extensions of /-tas/ and /-as/ (see sections 5.5.1), form a subclass of class one. These verbs also take the non-present suffix *-i* in the singular and third person plural forms. Verbs from this subclass are shown in Table 41 and Table 42.

Table 41: Verbs with Verbal Extension /-tas/

/ultas-ke/ ‘to throw away repeatedly’ [aldas-ke]

Person	Present	Non-Present
1pi	<i>aldaffina</i>	<i>aldina</i>
1pe	<i>aldaffiga</i>	<i>aldiga</i>
1d	<i>aldaffik</i>	<i>aldik</i>
2p	<i>aldaffini</i>	<i>aldini</i>
1,2,3s and 3p	<i>aldase</i>	<i>aldi</i>

Table 42: Verbs with Verbal Extension /-as/

/alas-ke/ ‘to throw away once’ [alask]

Person	Present	Non-Present
1,2,3s	<i>alase</i>	<i>alasi</i>
1pi	<i>alaffina</i>	<i>alasma</i>
1pe	<i>alaffiga</i>	<i>alasma</i>
1d	<i>alaffik</i>	<i>alasi</i>
2p	<i>alaffini</i>	<i>alasma</i>
3p	<i>alase</i>	<i>alasi</i>

Loan verbs make up an additional subclass of class one verbs. This subclass is almost exclusively made up of verbs borrowed from Arabic along with a few verbs of unknown origin. The present tense /-e/ and non-present /-i/ are maintained in the first, second and third person singular and third person plural as in other class one verbs. These verbs have a stem ending in *-aj* which may change phonologically into [-ej] or [-oj].⁶⁶ Examples are shown in Table 43. The stem

⁶⁶ Vowel harmony is seen to spread rightward from the root onto most, but not all affixes, as seen in *lomojke* ‘to accuse’, and *beddejke* ‘to begin’. In the relatively few instances in which it surfaces differently, there appears to be no phonological conditioning.

of these verbs changes shape in all forms except in the singular non-present and third plural non-present.⁶⁷ In all other forms the *-aj* ending in the stem is absent.

Table 43: Loan Verb Conjugations

/jerbej-ke/ ‘to try’ [jerbejge]

Person	Present	Non-Present
1pi	<i>jerbicina</i>	<i>jerbina</i>
1pe	<i>jerbiciga</i>	<i>jerbiga</i>
1d	<i>jerbicik</i>	<i>jerbik</i>
2p	<i>jerbicini</i>	<i>jerbini</i>
1,2,3s and 3p	<i>jer'ije</i>	<i>jerbeji</i>

5.7.2 *Class two*

Class two verbs take the present tense suffix *-e* and require the durative suffix *-tad* followed by the non-present suffix *-i* to express a non-present action. Other classes also take the durative suffix, but its use with other classes is optional. Class two verbs do not take the iterative *-t* suffix. Examples are shown in Table 44, while a list of verbs in this class are shown in Table 45. They are very limited in number and are primarily verbs of motion and cognition.

Table 44: Class two Verb Conjugations

/wed-ke/ ‘to walk’ [wetke]

Person	Present	Durative + Non-Present	Progressive
1pi	<i>wetcina</i>	<i>wettadina</i>	<i>wetcina</i>
1pe	<i>wetciga</i>	<i>wettadiga</i>	<i>wetciga</i>
1d	<i>wetcik</i>	<i>wettadik</i>	<i>wetcik</i>
2p	<i>wetcini</i>	<i>wettadini</i>	<i>wetcini</i>
1,2,3s and 3p	<i>wede</i>	<i>wettadi</i>	<i>wetca</i>

⁶⁷ It is unclear as to why the singular forms conjugate as /-ij/ before the present tense and /ej/ before the non-present tense.

Table 45: Class two verbs which take the suffix *-tadi*

<i>bildike</i>	'to learn'	<i>m̄baadike</i>	'to pull'	<i>wijake</i>	'to run'
<i>buwake</i>	'to jump/fly'	<i>ʃetke</i>	'to harvest'	<i>wetke</i>	'to walk'
<i>jilgike</i>	'to move'	<i>sipke</i>	'to plant'	<i>ursike</i>	'to think'
<i>kuukke</i>	'to laugh'	<i>balgike</i>	'to stir'		

5.7.3 Class three

Class three verbs require the iterative suffix *-t* in the non-present tense forms. They do not take the durative *-tad* suffix and are very limited in number. Table 46 provides an example.

Table 46: Class three Verb Conjugation

Person	Present	/ŋgaj-ke/ 'to search' [ŋgajge]	
		Iterative + Non-Present	Progressive
1pi	<i>ŋgajcina</i>	<i>ŋgajdina</i>	<i>ŋgajcina</i>
1pe	<i>ŋgajciga</i>	<i>ŋgajdiga</i>	<i>ŋgajciga</i>
1d	<i>ŋgajcik</i>	<i>ŋgajdik</i>	<i>ŋgajcik</i>
2p	<i>ŋgajcini</i>	<i>ŋgajdini</i>	<i>ŋgajcini</i>
1,2,3s and 3p	<i>ŋgaje</i>	<i>ŋgajdi</i>	<i>ngajca</i>

5.7.4 Class four

Class four is made up of most vowel final verb stems and is defined by *-e* in the present tense and no suffix in the non-present tense. Class Four verbs do not take the iterative suffix *-t*. While the *j* of the class three verb *ngaj* 'search' is part of the stem, the *j* which appears in the conjugations of all class four verbs may have some unknown morphological value.⁶⁸ An example is shown in Table 47.

⁶⁸ Verbs that have a root-final semivowel voice the infinitive suffix */-ke/*. Thus *ngaj* 'search' becomes *ngajge* 'to search'. There is no voicing assimilation of the infinitive suffix for verbs such as *pa* 'kill'.

Table 47: Class four Verb Conjugations

Person	/pa-ke/ 'to kill' [pake]			
	Present	Non-Present	Prog	Dur
1pi	<i>pajcina</i>	<i>pajna</i>	<i>pajcina</i>	<i>padadina</i>
1pe	<i>pajciga</i>	<i>pajga</i>	<i>pajciga</i>	<i>padadiga</i>
1d	<i>pajcik</i>	<i>pajik</i>	<i>pajcik</i>	<i>padadik</i>
2p	<i>pajcini</i>	<i>pajni</i>	<i>pajcini</i>	<i>padadini</i>
1,2,3s and 3p	<i>paje</i>	<i>pa</i>	<i>pajca</i>	<i>padadi</i>

5.7.5 Class five

Class five verbs have the reflexive *-din/wa* in the present tense and *-din* in the non-present tense and accept the non-present suffix *-i-* in only the 1, 2, 3s and 3PL regular verbs. No other aspect is allowed with the exception of the progressive in the 1 and 2PL. The reflexive suffix is added to the stem of an existing non-reflexive verb. The *-din* extension, as shown in Table 48, changes form in the singular and third plural and becomes *-wa*.

Table 48: Class five Verb Conjugations

Person	/noldin-ke/ 'to hide oneself' [noldinge]	
	Present Reflexive	Non-Present Reflexive
1pi	<i>noldincina</i>	<i>noldinina</i>
1pe	<i>noldinciga</i>	<i>noldiniga</i>
1d	<i>noldincik</i>	<i>noldinik</i>
2p	<i>noldincini</i>	<i>noldiniini</i>
1,2,3s and3p	<i>nolwa</i>	<i>noldini</i>

With some more commonly used verbs such as *ndugdin* 'sit' and *werdin* 'return' it is common to use the singular present tense form for the non-present tense form, i.e. *ndugwa* instead of *ndugini*. These irregular forms are shown in Table 49.

Table 49: Irregular Class five Verbs**/ndugdin-ke/ ‘to sit oneself’ [ndugdiŋge]**

Person	Present (reflexive)	Non-Present (reflexive)
1,2,3s	<i>ndugwa</i>	<i>ndugwa</i>
1pi	<i>ndugdincina</i>	<i>nduginina</i>
1pe	<i>ndugdinciga</i>	<i>nduginiga</i>
1d	<i>ndugdincik</i>	<i>nduginik</i>
2p	<i>ndugdincini</i>	<i>nduginiini</i>
3p	<i>ndugwa</i>	<i>ndugwa</i>

5.7.6 Class six

Verbs in class six are all reflexive and are marked by *jwa* or *jdin* in the present tense and *wɔ* or *ni* in the non-present tense. The semivowel [j] or [w] is present in most of the conjugated forms and likely has some unknown morphological value. Class six verbs accept no aspect suffixes with the exception of the progressive in the 1 and 2PL. The suffix *-wa* is present in the singular and third person plural present and non-present tense forms. Examples are shown in Table 50.

Table 50: Class six verb conjugations**/pajdin-ke/ ‘to kill oneself’ [pajdiŋge]**

Person	Present (reflexive)	Non-Present (reflexive)
1,2,3s	<i>pajwa</i>	<i>pawa</i>
1pi	<i>pajdincina</i>	<i>pajnina</i>
1pe	<i>pajdinciga</i>	<i>pajniga</i>
1d	<i>pajdincik</i>	<i>pajnik</i>
2p	<i>pajdincini</i>	<i>pajnini</i>
3p	<i>pajwa</i>	<i>pawa</i>

CHAPTER 6

SUMMARY/CONCLUSIONS

The main purpose of this thesis was to provide information on the Dar Daju Daju language of Chad that will assist in future language development work among the Dar Daju Daju people as well as to provide additional information for possible future work in related languages.

I have sought to provide a good corpus of information that will prove useful to future language development work. I have presented an introduction to Dar Daju Daju along with the phonology, the morphology of demonstratives and pronouns, the noun morphology and verb morphology of the language.

Dar Daju Daju is just one of seven languages in the Daju language group. The phonology of the language has morphophonemic processes which often change the forms of many Dar Daju Daju morphemes. Within the noun morphology I discussed singular and plural classificatory suffixes, number, gender and noun formation which includes nouns derived from other nouns or from adjectives. Also discussed were compound nouns and nominalization. The verb morphology chapter was divided into seven sections presenting a variety of verbal forms. I began with a discussion of the infinitive form followed by discussions of the productive and non-productive affixes. The productive affixes include two tenses and three aspects. In addition to the productive affix forms, the language also has five non-productive verb forms. The non-productive forms include the iterative and punctual extensions along with the reflexive extension.

Further work must be done to determine how tone functions in the language as well as a more in-depth study of the grammar, particularly at the sentence level with simple and complex

clauses. Though verbal extensions clearly exist, more study must be undertaken to gain a fuller understanding of their functions, in particular as to whether the iterative extension is always frequentive in nature or possibly distributive as well. While further work will need to be done on a variety of areas in Dar Daju Daju, it is hoped this thesis will provide a good basis for future work within the language and possibly in other languages within the Daju language group.

APPENDICES

Appendix 1 Consonant Distribution Chart

	Initial Position		Intervocalic Position		Final Position	
p	<i>page</i>	'pot'	<i>kapagi</i>	'little'	---	---
t	<i>taŋ</i>	'taste	<i>batal</i>	'fatigue'	---	---
tʃ	<i>cirne</i>	'chest'	<i>wacinne</i>	'afternoon'	<i>uc</i>	'stay'
k	<i>kip</i>	'open'	<i>akine</i>	'tool handle'	<i>muduk</i>	'five'
b	<i>bane</i>	'house'	<i>abacce</i>	'leaf'	<i>ndamne</i>	'field'
d	<i>dul</i>	'pass'	<i>gudardar</i>	'coagulate'	<i>ded</i>	'share'
dʒ	<i>jejne</i>	'ladle'	<i>ŋgojiwe</i>	'blind person'	<i>laj</i>	'tremble'
g	<i>gim</i>	'mark out'	<i>agire</i>	'sterile'	<i>sag</i>	'crack'
m̄b	<i>m̄bas</i>	'slap'	<i>dumburne</i>	'trunk'	---	---
n̄d	<i>n̄dob</i>	'choose'	<i>pende</i>	'wound'	<i>wadand</i>	'travel'
ŋ̄j	<i>ŋ̄jelle</i>	'torch'	<i>maŋfine</i>	'in-law'	<i>korofj</i>	'scratch'
ŋ̄g	<i>ŋ̄gake</i>	'speech'	<i>tuŋgurce</i>	'louse'	<i>dijŋ</i>	'lick'
ʋ	<i>bade</i>	'hard'	<i>kubuttice</i>	'wing'	---	---
dʰ	<i>ɖaŋ</i>	'build'	---	---	<i>wadʰ</i>	'spit'
f	<i>fuge</i>	'something'	---	---	---	---
s	<i>sidice</i>	'cloud'	<i>asiŋi</i>	'ten'	<i>bis</i>	'fill'
(h)	<i>helne</i>	'village'	<i>lahada</i>	'until'	---	---
(z)	<i>zimne</i>	'trap'	<i>izuzwane</i>	'dragonfly'	---	---
m	<i>merse</i>	'cripple'	<i>tomore</i>	'date'	<i>dim</i>	'circumcise'
n	<i>nog</i>	'yawn'	<i>gone</i>	'eagle'	<i>ban</i>	'suck'
ɲ	<i>niŋbe</i>	'tongue'	<i>biŋo</i>	'skin of horse tail'	<i>biŋ</i>	'swell'
ŋ	---	---	<i>aŋasi</i>	'how'	<i>laŋ</i>	'sing'
l	<i>les</i>	'threaten'	<i>luluwe</i>	'viper'	<i>dul</i>	'pierce'
r	<i>roŋe</i>	'sun'	<i>rara</i>	'enough'	<i>or</i>	'see'
w	<i>walce</i>	'egg'	<i>cawari</i>	'clear'	<i>law</i>	'hunt'
j	<i>jewe</i>	'man'	<i>bibijam̄te</i>	'mud wasp'	<i>laj</i>	'become'

Appendix 2

Chart of Consonants Root Final on Nouns along with Classificatory Suffixes

	Root	Cs1 -ne	Cs2 -ce	Cs3 -e	Cp1 -ge	Cp2 -iŋge	Cp3/4 -tice/-tiŋge
/p/ ⁶⁹							
/t/ ⁷⁰	/ret/ 'fish trap'	[retine]			[retige]		
	/kurt/ 'stomach'	[kurtine]			[kurtige]	[kurtiŋge]	
	/pert/ 'catfish'		[pertice]		[pertige]		
	/joŋgot/ 'toad'			[joŋgote]	[joŋgidge]		
/c/	/mic/ 'liver'		[micce]			[miciŋge]	[miccige]
	/kuruc/ 'millet'			[kuruce]	[kuruŋge]		
	/awkiç/ 'rib'			[awkice]		[awkiçiŋge]	
	/kajbulç/ 'intestine'			[kajbulce]	[kajbulke]	[kajbulçiŋge]	
/k/	/døk/ 'skin'	[døkine]				[døkiŋge]	
	/musk/ 'green bean'		[muskice]		[muske]		
	/uk/ 'mouth'			[uke]		[ukiŋge]	
/b/	/ndab/ 'field'	[ndabne]				[ndabaŋge]	
	/ŋirb/ 'tongue'			[ŋirbe]		[ŋirbiŋge]	
/d/	/gudgud/ 'stump'	[gudgudne]			[gudgudge]		
	/ŋgid/ 'breast'		[ŋgidice]			[ŋgidiŋge]	
	/piid/ 'twin'		[piitce]		[piidge]		
	/pugd/ 'knife'			[pugde]			[pugittiŋge]

⁶⁹ There are no instances of a simple /p/ root final.

⁷⁰ The instances of /t/ root final are extremely limited.

	/goskod/ 'morning'			[goskode]		[goskodinge]	
	/od/ 'place'			[ode]			[ottige]
/j/	/soj/ 'okra'	[sojine]			[sojige]		
	/maj/ 'co-wife'			[maje]			[maccige]
/g/	/jugjug/ 'shrew'	[jugjugne]			[jugjugge]		
	/kamalg/ 'camel'	[kamalgine]				[kamalginge]	
	/bug/ 'jujubiye tree'		[bukce]				[buktinge]
	/bug/ 'chief'			[buge]		[buginge]	
	/sog/ 'road'			[soge]			[soktinge]
/mb̃/	/dumb/ 'cave'	[dumbine]			[dumbige]		
/nd̃/	/murund/ 'scar'		[murundice]		[murundige]		
	/tand/ 'cloth for skirt'	[tandine]			[tandige]		
	/maland/ 'idiot'			[malande]	[malandige]		
/nj̃/	/majj/ 'in-law'	[majjine]			[majjike]		
/ŋg̃/	/ruŋg/ 'cripple'	[ruŋgine]			[ruŋgige]		
	/caŋg/ 'scorpion'	[caŋgine]				[caŋginge]	
	/dɔŋg/ 'sugarcane'		[dɔŋgice]		[dɔŋge]		
/b̃ ⁷¹ /							
/d̃/							
/ʃ̃/							
/s/	/pays/ 'spear'	[paysine]			[paysige]		
	/mus/ 'doe'	[musine]				[musinge]	

⁷¹ There are no instances of implosives root final in nouns.

	/bidis/ 'saddle strap'		[bidiffɛ]		[bidizge]		
	/iis/ 'dog'			[iise]	[iizge]		
	/is/ 'head'			[ise]		[isinge]	
/h/							
/z/							
/m/	/colkom/ 'chin'	[colkomne]			[colkomge]		
	/kosom/ 'iron'		[kosomce]		[kosomge]		
	/sim/ 'pregnancy'			[sime]			[simdige]
/n/	/bon/ 'boubou' (outfit)	[bonne]				[boninge]	
	/kiwin/ 'thorn'		[kiwinɛ]		[kiwinɛge]		
/ɲ/	/gaɲ/ 'shoulder'	[gaɲɛ]			[gaɲɛge]		
	/kirij/ 'bell'		[kirinɛ]		[kirinɛge]		
	/ɖabij/ 'mat'			[ɖabinɛ]		[ɖabinɛge]	
/ŋ/	/roŋ/ 'sun'			[roŋɛ]		[roŋinɛge]	
/l/	/bel/ 'razor'	[belle]			[belɛge]		
	/capcul/ 'sesame stalk'		[capculɛ]		[capculɛge]		
	/dindil/ 'stick'			[dindile]		[dindilinɛge]	
/r/	/bisgir/ 'mane'	[bizgire]			[bizgirɛge]		
	/kokor/ 'finger'		[kokorce]		[kokorge]		
	/er/ 'leg'			[ere]		[ereɲɛge]	
	/bor/ 'mare'			[bore]		[borinɛge]	
	/ar/ 'hole'			[are]			[artinɛge]

/w/	/juw/ 'bile'	[juwine]			[juwige]		
	/cacaw/ 'tibia'		[cacawce]		[cacawge]		
	/ŋgojiw/ 'blind person'			[ŋgojiwe]		[ŋgojiwinge]	
/j/	/kubuj/ 'wild cat'	[kubujne]			[kubujge]		
	/ndalsij/ 'knuckle'			[ndalsije]		[ndalsijinge]	
	/ŋgiriŋ/ 'cotton'			[ŋgiriŋe]		[ŋgiriŋinge]	[ŋgiriŋdige]
/pp/	/kupp/ 'hoof'	[kuppine]				[kuppinge]	
/tt/	/kubutt/ 'wing'		[kubuttice]		[kubukke]	[kubuttinge]	
	/satt/ calabash			[satte]	[sattige]		
/cc/	/kacc/ 'donkey'	[kaccine]			[kaccige]		
	/abacc/ 'leaf'			[abacce]	[abakke]	[abaccinge]	
/kk/	/tokk/ 'bracelet'		[tokce]		[tokke]	[tokkinge]	
/ss/	/kabuss/ 'lung'		[kabuffe]		[kabuske]	[kabussinge]	
	/dissice/ 'shard'		[dissice]		'dissige]		
/ll/							
/rr/	/jurrr/ 'crest'	[jurine]			[jurige]		

Appendix 3

Chart of Consonants Root Final on Verb along with Suffixes⁷²

	Root	NPR	PR	PROG	ITER	DUR	IMP	INF
/p/								
/t/								
/c/	/uc/ 'exist'		[uco]				[uca]	[ucke]
/k/	/mesk/ 'protect'	[meski]	[meske]	[meskica]		[meskadi]	[meska]	[meskike]
/b/	/dob/ 'tie'	[dobi]	[dobo]	[dopca]	[doppi]	[doppadi]	[doba]	[dopke]
/d/	/sed/ 'head butt'	[sedi]	[sede]	[setca]	[setti]	[settadi]	[seda]	[setke]
/j/	/saj/ 'peel'	[saji]	[saje]	[sacca]	[sacci]	[saccadi]	[saja]	[sacke]
/g/	/deg/ 'kick'	[degi]	[dege]	[dekca]	[dekki]	[dekkadi]	[dega]	[dekke]
/mb/								
/nd/	/kaband/ 'become angry'	[kabandi]	[kabine]		[kabandi]		[kabanda]	[kabange]
/nj/	/amanj/ 'knead'	[amanji]	[amijne]		[amanji]	[amanjadi]	[amanja]	[amajnge]
/ng/	/sunjg/ 'sleep'	[sunji]	[sunjo]	[sunjgica]	[sunjgi]	[sunjadi]	[sunjga]	[sunjgike]
/f/								
/d/	/wad/ 'swallow'	[wadi]	[wade]	[watca]	[waddi]	[waddadi]	[wada]	[watke]
/ʃ/								
/s/	/kas/ 'bite'	[kasi]	[kase]	[kaʃja]	[kassi]	[kassadi]	[kasa]	[kaske]
/h/								
/z/								
/m/	/yum/ 'gather'	[yumi]	[yumo]	[yumca]	[yumdi]	[yumdadi]	[yuma]	[yumke]
/n/	/ban/ 'suck'	[bani]	[bane]	[banca]	[bandi]	[bandadi]	[bana]	[banke]
/ɲ/	/dup/ 'sting'	[dupi]	[dupo]	[dupca]	[dupji]	[dupjadi]	[dupa]	[dupke]
/ŋ/	/baŋ/ 'sting'	[baŋi]	[baŋe]	[baŋca]	[baŋgi]	[baŋjadi]	[baŋa]	[baŋke]

⁷² All forms are in 1,2 and 3 singular and 3PL.

	'call'							
/l/	/bal/ 'turn'	[bali]	[bale]	[balca]	[balgi]	[balgadi]	[bala]	[balke]
/r/	/par/ 'pass'	[pari]	[pare]	[parca]	[parti]	[partadi]	[para]	[parke]
/w/	/diw/ 'snip'	[diwi]	[diwe]	[diwca]	[diwdi]	[diwdadi]	[diwa]	[diwge]
/j/	/lay/ 'become'	[layi]	[laye]	[layca]	[laydi]	[laydadi]	[laya]	[layge]
/pp/								
/tt/	/sutt/ 'rub'	[sutti]	[sutto]	[suttica]		[suttadi]	[sutta]	[suttike]
/cc/								
/kk/	/yakk/ 'find'	[yagi]	[yakke]	[yakkica]		[yakkadi]	[yakka] [yaga]	
/ss/	/dass/ 'resemble'	[dassi]	[dasse]					[dassike]
/ll/								
/rr/	/parr/ 'take a day of rest'	[pari]	[pare]				[para]	[parike]

Appendix 4

Orthography

The orthography of the Dar Daju Daju is similar to what was presented in Table 3. and Table 4. The non-European symbols *b* and *d* are included in the Chadian national standard for orthography, and are used in the Dar Daju Daju orthography. The palatal implosive /ɟ/ is represented as *y*. These standards also dictate that the ligatures associated with the prenasalized stops are not written, the palatal semivowel is /j/ is represented as *y*, the palatal stops /c/ and /j/ are represented by *c* and *j* respectively, and the palatal nasal /ɲ/ is represented by the symbol *ɲ*. The palatal prenasalized stop /ɲj/ is represented by *ɲj* in the orthography. The consonants of the Dar Daju Daju orthography are presented in Table 51.

Table 51: Consonants of the Dar Daju Daju Orthography

	Bilabial	Alveolar	Palatal	Velar
Stops, voiceless	p	t	c	k
Stops, voiced	b	d	j	g
Stops, prenasalized	mb	nd	ɲj	ŋg
Implosives	ɓ	ɗ	ɟ	
Fricatives, voiceless		s		h
Fricatives, voiced		z		
Nasals	m	n	ɲ	ŋ
Lateral approximant		l		
Tap		r		
Semivowels	w		y	

The vowels in the Dar Daju Daju orthography are represented with the same symbols presented earlier in as shown in Table 52.

Table 52: Vowels of the Dar Daju Daju Orthography

	Front	Central	Back
High	i		u
Mid	e		o
Low		a	

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