Linguistic Study of Arabic Loan Words in Dinka Language

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Abstract

The Dinka language (Thuɔŋ jieŋ or Thuɔŋ monjieŋ) is a widely spoken language in South Sudan in seven of the ten states (Nashid 2014). It is the language with the largest number of speakers in South Sudan. Arabic, as the official language of the former Sudan, being the language of education and administration, as well as the lingua franca, has a great effect on other Sudanese languages, including Dinka. Over years, many Arabic words have been borrowed and become integrated in the Dinka language. The present study investigates the linguistic adaptation of Arabic loan words in Dinka, thus focusing on the strategies and mechanisms by which Arabic loan words are phonologically adapted. Therefore, 104 Arabic loan words were randomly collected from eleven native Dinka informants in Khartoum, in addition to four other informants, each one representing one of the main four dialects, used as a reference to enhance the accuracy of data. Furthermore, the data has been cross-checked by Dinka young informants. It is found that Arabic loan words are integrated into the Dinka language and have become part of the Dinka lexicon and they are used in everyday communication in which they are adapted phonologically to suit the linguistic system of the Dinka language using certain strategies and mechanisms; vowel alternation is an important feature in nominal plural formation.

المستخلص

يتحدث لغة الدينكا أو ما تُسمى لغة الجينق غالبية عظمى من سكان دولة جنوب السودان. وهي لغة واسعة الانتشار بوصفها اللغة الأولى من حيث عدد المتحدثين. للغة العربية تأثير كبير عليها وعلى اللغات السودانية الأخرى؛ لأنها كانت اللغة الرسمية للدولة، ولغة التعليم والإدارة قبل انفصال الجنوب، وكذلك اللغة المشتركة بين متحدثي اللغات السودانية الأخرى. من الظواهر اللغوية التي نتجت من هذا الاحتكاك والتواصل: اقتراض عدد من الألفاظ التي دخلت إلى أنظمة اللغة، وصارت جزءاً منها. تركز الدراسة الحالية على الآليات التي تُستخدم لإخضاع هذه الألفاظ لأنظمة اللغة الصوتية. وعليه تم التجميع العشوائي لعدد مائة وأربعة كلمة مقترضة من اللغة العربية من أحد عشر متحدثًا للغة الدينكا يمثلون الكتل اللهجوية الأربعة، وكذلك تمت الاستعانة بأربعة متحدثين إضافيين للتأكد من صحة البيانات. وقد تم لاحقًا إعادة التأكد من البيانات مع متحدثين من فئة الشباب. من أهم ما توصلت إليه الدراسة أن الألفاظ العربية يتم إخضاعها للغة الدينكا باستخدام آليات معينة، وذلك بالإبدال والإحلال للأصوات العربية غير موجودة في لغة الدينكا ضمن آليات أخرى تم إدراجها في الدراسة.

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1. Background information on Dinka

Dinka is an Eastern Sudanic language of the Nilo-Saharan phylum (Greenberg 1970: 85). It is spoken by at least 2,740,900 in 1993[1], who call themselves *jieŋ* or *monjieŋ*. However, the most popular and widely used name for this group in the literature is Dinka, which stands for both the people and the language they speak. The term Dinka was firstly used by their Sudanese Arab neighbors. This fact indicates that there was an ancient contact between Arabs and Dinka.

There is no recorded history about the time and place from where Dinka came to their present habitation, however, various traces found by several historians and archaeologists suggest the presence of African elements among the population of Nepta and Meroe (45-67 AD) (Snowden Jr. 1970; Arkell 1948; Shinnie 1967). What is known about Dinka dates back to the nineteenth century, when Mohammed Ali Basha[2] invaded Sudan (1821-1881). That was the period in which Dinka became known to the others and an interest about the Dinka started.

Dinka land stretches over 6˚ latitudes (6˚-12˚ N) from Renk in the north to Bor in the south, with a wide extension to the west. They are occupying much of the Bahr el Ghazal and Upper Nile areas (Akol 1989).

The southern Sudanese contacts with Arabs date back to the Turco-Egyptian period, which opened the south to contact with Arabic by different means as explained by Nyombe (1997). The permanent settlements established by slave traders at various locations in the Southern region "[…] caused radical changes within and between the two social structures and produced the Pidginization and Creolization of Arabic as well as its spread as more and more tribal communities were drawn into the new social interrelationships" (Mahmud 1983: 12). Also, Miller (2003: 161) noted that the spread of Arabic in the southern Sudan occurred in very specific historical circumstances: the establishment of a large-scale slave trade in the nineteenth century and, subsequently, the building of trade and military centers, which led to the emergence of a specific Arabic Pidgin used primarily as a lingua franca. Now, this variety of Arabic is the language of wider communication in the Greater Upper Nile and Greater Bahr el Ghazal areas. The Pidgin Arabic, which is a mixture of Dinka and Arabic, is used in the streets, market places, in worship and in inter-group communication along with South Sudanese languages (Nashid 2014: 78).

The Rejaf Conference of 1928 was the beginning of writing the Dinka language using the Latin alphabet. A number of methods for writing Dinka using the Latin alphabet were developed by missionaries during the 19th and 20th centuries. The current Latin

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[1] Source: Abu-Manga and Abu Bakr (2006), modified from Bell and Hurreiz (1975).
[2] Muhammad Ali Pasha al-Mas'ud ibn Agha, known as Muhammad Ali of Egypt and the Sudan, was the Albanian Ottoman governor and the de facto ruler of Egypt from 1805 to 1848. At the height of his rule, he controlled Lower Egypt, Upper Egypt, Sudan and parts of Arabia and the entire Levant (cf. Robinson 1925).

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orthography is derived from the alphabet developed for the southern Sudanese languages at the Rejaf Language Conference in 1928. It is better to mention that the Transliteration is used in the present study to write Arabic words whereas Dinka is written by the orthography used by its speakers in South Sudan (See Annexes 2 and 3). Many contributions were made by the researchers and linguists after that: Nebel (1948; 1979) presented his findings on the Dinka grammar and also compiled a bilingual Dinka-English and English-Dinka dictionary, Trudinger's (1944) bilingual English-Dinka dictionary focuses on the Padang dialect, Malou (1988) studied the Dinka vowel system, Tucker (1987) presented his viewpoints on Dinka orthography, Ayom (1980) focused on some aspects of the Dinka phonology and morphology (plural formation) and Akol (1989) investigated the Dinka nominal morphology. The following contributions are written in Arabic: Kak (1986; 1987) studied the influence of the Arabic language on the Dinka language in the Renk area, in addition, he presented a comparative study of the syntax of Dinka and Arabic, Emanwel (2005) compiled a Dinka-Arabic bilingual dictionary, Dawuud (1989) studied the relationship between Dinka and Arabic language and the writing of the Dinka language with Arabic scripts, Kur (1989) conducted a comparative study of the pronominal systems of Dinka and Arabic, Abd Allah (1985) compared the phonology of Dinka and Arabic. There are four studies conducted on borrowings in the Dinka language: Chol (1989) studied the influence of the Arabic language on the Dinka language by focusing on loan words, Abu-Manga (1991) studied loan words in both Bari and Dinka in which he focused on the Atout dialect, Nashid (1996) covered the phenomenon of lexical borrowing in the four dialects of Dinka including loan words of different origins, and Idris (2004) studied loan words in relation to the modern development of the Dinka language. The present study focuses on the strategies and mechanisms of the linguistic adaptation of Arabic loan words.

The Dinka are geographically divided into four groups. Dialectal differences correspond to the geographical ones and each sub-section has minor dialectal variations. The four major dialects are the northern dialect, known as Padang, the eastern dialect Bor, the central dialect Agar, and the western dialect Rek (see Remijsen and Manyang 2009: 1). Some of the general characteristics of the Dinka language are as follows:

1. Most words are monosyllabic: V, VC, CV, CVC, being the most common syllabic structure (Jok 2004: 20). Most polysyllabic words are compound words and loanwords. Besides, there are comparatively few native monomorphic nouns of two syllables.[3] In other words, syllables tend to be closed, and consonant clusters are limited to the onset, where one or two semivowels may follow an initial consonant. Open monosyllables are highly uncommon among content words. By contrast, many of the function morphemes are open syllables (Remijsen and Manyang 2009: 2).

2. Any consonant can appear in a simple onset. When the onset is complex, by contrast, its composition is severely constrained. The main limitation is that the initial onset consonant can only be followed by one or two semivowels, i.e. consonant clusters are not permitted, but an initial consonant may be followed by one or two semivowels y, w. Also, /ɥ/ does not appear in complex onsets at all, and onset /ɲ̪/

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[3] From: http://www.languagesgulper.com/eng/Dinka.html. Retrieved at 5.6.2017

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nh tends to be followed by /j/. As for the coda, there are two restrictions. First, voicing in plosives is not distinctive in this slot. On the basis of their phonetic realisation in citation form and in phrase-final position, coda plosives are represented as underlyingly voiceless. Underlyingly, because unvoiced codas may surface voiced intervocalically. Second, the semivowel /ɰ/ does not appear in the coda slot, just as it is not found in complex onsets (Remijsen and Manyang 2009: 3).

3. There are many phonotactic constraints on consonants and the three-level vowel length distinction. For polysyllabic words, three categories can be distinguished. First, there are native monomorphemic nouns that consist of two syllables. The composition of such forms is highly constrained: the first syllable is invariably /a/, and the second syllable conforms to any vowel. Native verb stems are strictly monosyllabic. The remaining two categories of polysyllabic words are loan words and native compounds (Remijsen and Manyang 2009: 2). Voiceless plosives may undergo weakening, either to their voiced counterparts or to a homorganic fricative or approximant (ibid).

4. It is a tone language with three tones: high, low and falling. However; Remijsen (2008), in his descriptive analysis of tone in the Luanyjang variety of Dinka, introduced four tonemes, High (H), Low (L), Rising (LH) and Falling (HL). According to Thuɔŋjäŋ (2012), there are three pitches in Dinka: high tone [´], low tone [`] or [ˎ], and mid/flat tone [¯]. Eg.:

dūm 'farms'   *dùm* 'to trample on sth'   *dúm* 'action of trampling on sth'

lë`k 'pestles'   *lë¯k* 'types of fish'   *lë′k* 'to throw at'

màc 'fire'   *māc* 'to tie a cow to a peg'   *mác* 'male name of a person'

According to Job (1988, cited in Jok 204: 20), low tone is the most common among the level tones. He argued that gliding tones are rare and rising tone is found only on long vowels. The function of tone in Dinka language is to distinguish lexical items and syntax as well.

1. There are two voice qualities in vowels: breathy and non-breathy (*cf.* Thuɔŋjäŋ: 2012, Jok 2004: 17-18).

2. Dinka (Hall et. al. 1975, Anderson 1987), which has a complex vowel system with contrastive ATR quality as well as breathy/creaky distinctions, similarly uses voice quality to mark the plural form with the [+breathy] feature; e.g. 'pipe' sg. [dak] pl. [dạk] (cited in Swenson 2015: 118). In contrary, Dinka is one of the languages loose harmony and tongue root contrast as stated by Ozburn (2019: 178) "[…] the harmony systems have developed in a number of distinct ways, with some descendant languages losing harmony and even tongue root contrasts entirely,

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including entire branches of Western Nilotic Dinka-Nuer, which instead contrasts breathiness (Dimmendaal 2002)".

3. Vowel length is arbitrarily determined by phonetic and grammatical rules (Tucker 1978: 27). There are three vowel lengths: short, medium-long and long. According to Andersen (1990: 5), the ternary length contrast in Dinka has resulted from compensatory lengthening.

In language contact situations, words are the first to be borrowed from one language to another (Coetsem 1988: 26; Thomason and Kaufman 1988: 37). However, words are units combining multiple levels of language in themselves. In the process of borrowing, they may carry not only their semantic features to the borrowing language, but some of their formal properties as well (Sankoff 2002: 658). These formal properties include their sound shape: sounds, phonological segments and their sequences, prosodic features, and stress (Heffernan 2005; LaCharité and Paradis 2005). The sound shape of loan words, most of the time, conforms to the phonology of the borrowing language (Bloomfield 1934: 445). However, in the case/ affair of long and dynamic language contact, it may retain some of its non-native sound elements (Benkő 1987:197). The aim of the present paper is to state the phonological patterns of adaptation of loan words in the Dinka language.

2. Linguistic adaptation of the Arabic loan words

To state the patterns of linguistic adaptation of Arabic loan words, 104 Arabic loan words were randomly collected from eleven native Dinka informants in Khartoum, in addition to four other informants; each one representing one of the main four dialects, used as a reference to enhance the accuracy of data. Furthermore, the data has been cross-checked by Dinka young informants.

In the sample investigated, the primary sources of Arabic loan words are Sudanese Colloquial Arabic (SCA) and the Turco-Egyptian variety of Arabic. There are few words of English origin, e.g. *rádì, póliíth* and *tèlèpuùn*. Relating the three linguistic and sociolinguistic factors mentioned by Greenberg (1970: 43)[4] to Arabic loan words in Dinka, one can say that the source of borrowing would be oral, not written, due the close contact, involving speakers of the two languages. There is no case/ affair of "intermediary channel of diffusion"; the first factor, except for two words. One is the SCA word *fanilla* 'undershirt', which becomes *panina*. The replacement of /l/ by /n/ is not expected, since the phonological system of Dinka permits the medial occurrence of /l/. The second word is *baabuur*, 'steamer' in SCA, which becomes *maabuur*, encountered in the Agar dialect. The replacement of /b/ by /m/ is not justified. Thus, they might be borrowed indirectly through one of the neighbouring languages. The third factor, "the internal phonological change", is irrelevant to the present study, because borrowing of Arabic words is relatively recent. Most of the Arabic loan words are nouns, representing 81.8% (84/104), 9.6% (10/104) are adjectives; the remaining 9.6% (11/104) are function words and one verb.

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[4] The three factors are: the source of borrowing, intermediary channel of diffusion and the internal phonological change.

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2.1. **Phonological adaptation of the Arabic loan word**

The phonological adaptation of Arabic loan words into Dinka follows certain patterns, i.e. the alien sounds in these words are usually replaced by the nearest ones in terms of articulation (homo-organic). Besides, some others have been modified to suit the phonological patterns of the Dinka language. The following paragraphs present the mechanism through which Arabic loan words are subjected to the phonological patterns of the Dinka language.

i.Consonants[5]

To start with, three of the classical Arabic consonants do not exist in the Sudanese Colloquial Arabic (g, θ, ð). Many Arabic consonants do not exist in Dinka: the emphatic: /ṣ, ṭ, ḍ, ẓ/, the glottal: /ʔ, ḥ/, the alveolar fricative /s, z/, the libio-dental fricative /f/, palato-alveolar fricative /ʃ/, and the pharyngeal /ʕ, χ, ɣ/. The Dinka plosives /th, dh/, and the nasal /nh, ny/ are also written /t̪, d̪/, and /n̪, ɲ/. Therefore, /t̪, d̪, n̪, ɲ/ will used in this study. The semivowel /ɰ/ is reported in the Luanyjang dialect which studied by Remijsen and Manyang (2009). The Dinka consonants are presented in the following Table:

Dinka consonants[6]

		Labial	dental	alveolar	Palatal	velar
plosive	**vl**	b	th/t̪	t	C	k
	vd	p	dh/d̪	d	j/ɉ	g
Nasal		m	nh/n̪	n	ny/ɲ	ŋ
lateral				l		
Trill				r		
semi-vowel		w			Y	(ɣ)

In the following lines, I will describe in detail in what way those Arabic phonemes which do not exist in Dinka are adapted to the sound system of the latter.

a) None of the Arabic emphatic consonants exist in Dinka: /ḍ/, /ṣ/, /ṭ/ and /ẓ/ lose the emphatic feature: /ḍ/ > /d̪/, /ṣ/ > /t̪/ /c/, /ṭ/ > /t̪/ and, /ẓ/ > /t̪/ and /d̪/. Examples:

gaádhì < Ar. '*gaaḍi* 'judge/magistrate', thuùduùk/ cuùnduùk (Rek dialect) < Ar. *ṣan'duug* 'box'

dhápìth < Ar. '*ḍaabiṭ* 'inspector', múwápìth < *mu'ḥaafiẓ* 'governor'.

b) The glottal consonants /ʔ/ and /ḥ/ do not exist in Dinka. /ʔ/ and /ḥ/ > Ø in all phonological contexts. As shown in the Table below, ákiìm < Ar. *ḥa'kiim* 'doctor', ákuúmà < Ar. *ḥa'kuuma*

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[5] See Appendix 2 for the Arabic transliteration characters used in this paper.
[6] Source: Jok (2004: 16).

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'government', íthaábaàt < Ar. *ḥisa'baat* 'accounting', thápíyà < Ar. *'ṣafiiḥa* 'tin', íraáthà < Ar. *ḥi'raasa* 'prison'.

Arabic	Dinka	Gloss.
ḥa'kiim	ákiìm	doctor
ḥa'kuuma	ákuúmà	government
ḥisaa'baat	íthaábaàt	accounting
ʔalif	àliíp	thousand
maʔ'muur	maámuùr	paramount chief
ṣafiiḥa	thápíyà	tin
ṣaḥan	thäää´n	plate/dish/saucer
maḥkama	maákámá	court/tribunal
mi'liḥ	mìliì	salt
mu'ḥaami	maámì	lawyer/advocate
ṭa'ḥuuna	táuuúnà	grinding mill
mu'ḥaafiẓ	múwápìth	governor

There are exceptions in the case/ affair of /ʔ/, where a following short vowel is lengthened and a preceding short vowel is lengthened (compensatory lengthening). Example:

àliíp < Ar. 'ʔalif 'thousand', maámuùr < Ar. *maʔ'muur* 'paramount chief'

The following examples show the omitting of /ḥ/ and compensating by vowel lengthening:

thäää´n < Ar. 'ṣaḥan 'plate/dish/saucer', maákámá < Ar. 'maḥkama 'court/tribunal', mìliì < Ar. *mi'liḥ* 'salt', maámì < Ar. *mu'ḥaami* 'lawyer/advocate', táuuúnà < Ar. *ṭaa'ḥuuna* 'grinding mill', múwápìth < *mu'ḥaafiẓ* 'governor'.

c) The pharyngeal fricative /ʕ/ > /a/ or Ø (in just one word):

it becomes /a/ when it is followed by short vowel /a, u/ as in these examples: álaáthkrì < ʕas'kari 'military/ martial/solier', álaám < Ar. 'ʕalam 'flag', maálìm < Ar. *mu'ʕallim* 'teacher', árábìyà < ʕara'biya 'car', thaaà < Ar. *sa'ʕa* 'watch'.

It becomes Ø in áwaáthá < Ar. *ʕa'waayid* 'taxes'.

d) The glottal fricative /h/ > Ø. Examples:

káraábá < Ar. *'kahraba* 'electricity', daaàb < Ar. *da'hab* 'gold'

e) The labio-dental fricative /f/ does not exist in all dialects of Dinka (Rek, Agar, Padang and Bor); it is replaced by the bilabial stop [p]. Examples:

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paác/paáth < Ar. *'faas* 'axe', pànínà < Ar. *fa'nilla* 'undershirt', àliíp < Ar. *?a'lif* 'thousand', thaápìyá < Ar. *'ṣafiiḥa* 'tin', maápádìc < Ar. *mu'fattish* 'inspector'.

f) The substitution of the voiceless plosive /t/, by /d, in the word *maápádìc/ maápádhìc*, instead of /t/ for example, may be due to its tendency to be weakening. According to Remijsen and Manyang (2009: 2), voiceless plosives may undergo weakening, either to their voiced counterparts or to a homorganic fricative or approximant.

g) The alveolar fricative /s/ does not exist in the Dinka language. It is replaced by /t̪/ in Padang, Agar and Bor dialects and by /t̪/ or /c/ in Rek (Malual). This is may be due to the fact that, in the articulation of /s/, there is a very little opening between the teeth and Dinka (Rek and Padang) used to take out their lower front teeth; this opening causes the tongue to be pushed forward to the front so the result is a sound half-alveolar and half dental[7]. Examples:

thùkàr/thòkằr < Ar. *'sukkar* 'sugar', cúuk/ thúuk < Ar. *'suug* 'market', maácuùr/ maáthuùr < Ar. *ma'suura* 'water pipe', mádráthá < Ar. *'madrasa* 'school', maábuùth < Ar. *maḥ'buus* 'prisoner'.

h) The voiced-alveolar fricative /z/ and its pharyngealized variant /ẓ/ do not exist in Dinka. They are replaced by dh /d̪/ in initial and medial position and to c /c/ in a word final position. Examples:

dhùlùm < Ar. *'ẓulum* 'injustice', màdhlúm < Ar. *'maẓlum* 'tyrannized', koòc < Ar. *'kooz* 'water mug', tàrbèc < Ar. *'ṭarabeza* 'table'.

i) The palato-alveolar fricative j /ɟ/ fluctuates between /d/ and /ɟ/. Examples:

cìrcìr < Ar. *jir'jiir* 'a kind of lettuce', thìcìn < Ar. *si'jin* 'prison'.

j) The palato-alveolar fricative /ʃ/ does not exist in Dinka language, so it is replaced by the palatal plosive c /c/. Examples:

déec < Ar. *'jeesh*[8] 'army', bálaác < Ar. *ba'laash* 'enough/ leave it', maápádìc < Ar. *mu'fattish* 'inspector', gìrcɛὲn < Ar. *'girsheen* 'two piasters.

k) The consonants /χ/ kh and /ɣ/ gh do not exist in the Dinka language. They are replaced by /k/. Examples:

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[7] This is based on my intuition as Dinka.
[8] It is pronounced as *deesh* by some of the Sudanese people, so this may be the word borrowed by Dinka.

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kálaáth < Ar. *kha'laaṣ* 'enough, that's all', lákbátá < Ar. *'lakhabṭa* 'mess', kárcìyà < Ar. *'kharijia* 'abroad', kárámá < Ar. *gha'raama* 'fine', bálaák < *ba'laagh* 'official complaint/report of a fault or a problem'. For further illustration, a schematization of the above described phonological renditions is given in the table below.

Table 1: Phonological changes in Arabic loan words in Dinka (consonants)

Arabic	ḍ	s/ṣ	ṭ	ẓ	z	ɣ/χ	ʔ	ḥ	ʕ	j	ʃ	ḷ	t	f
Dinka	d̪	t̪/c	ṭ	t̪	d̪/j	k	Ø	Ø	a/Ø	j	c	l	j	p

Vowels

According to Jok (2004: 16), the vowel sounds are composed of five basic positions with features of short, long, breathiness, and lowering. They are described as:

Front: (i, e)

Back: (o, ɔ)

Back: (ɑ)

Or

Closed: (i, o)

Half-closed: (e, ɔ)

Each vowel position may have a non-breathy (NB) or breathy (B) form. The Dinka breathy vowels are: (ï, u, ë, ö, ä). Vowel length may be non-breathy or breathy: Non-breath long vowels are: (ii,oo, ee, ɔɔ, ɑɑ) and the long breathy vowels are: (ïï, öö, ëë, ɔ̈ɔ̈, ää). These vowel phonemes /i e ɛ a ɔ o u/ combine fairly freely with the various supra-segmental distinctions – voice quality, vowel length, and tone. There are two restrictions. First, the high back vowel is invariably breathy. Second, the vowel /ɛ/ does not occur in the shortest level of vowel length (Remijsen and Manyang 2009: 2). There are several number of diphthongs in Dinka that start by /i/ or/ u/; such as /iɛ, iɛɛ, ië, iëë, ia, iaa, iä, iää, uɔ, uɔɔ, uö, uɔ̈ɔ̈ (Jok 2004: 48). As mentioned before, three categories can be distinguished for polysyllabic words. First, there are native monomorphemic nouns that consist of two syllables. The composition of such forms is highly constrained: the first syllable is invariably /a/, and the second syllable conforms to any vowel. Native verb stems are strictly monosyllabic. The remaining two categories of polysyllabic words are loan words and native compounds (Remijsen and Manyang 2009: 2).

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Although all Arabic vowels /a, i, u, o, e/ exist in the Dinka language, our data display several irregular realizations of Arabic vowels; change in vowel length and vowel quality that can be shown as follows:

- Some vowels remain as they are:

kíbriít Ar. *kibriit* 'matches', kuùrà Ar. *kuura* 'ball', koòm < Ar. '*koom* 'heep'.

Change of vowel length

While there are two vowel length in Arabic: short and long, there are three vowel lengths in Dinka: short, medium-long and long, which is arbitrarily determined by phonetic and grammatical rules (Tucker 1978: 27). Vowels of the Arabic loan words are either lengthened or shortened as shown below:

- Long vowels /aa, ii, ee/ are shortened:

lákìn < Ar. '*laakiin* 'but', cìrcìr < Ar. *jir'jiir* 'a kind of lecttuce', káláth < Ar. *kha'laas* 'enough, very, extremely, that's all, so much for that, (n) salvation, deliverance', jènè < Ar. *je'neeh* 'one pound', kèp < Ar. '*keef* 'how', tháuuúnà < Ar. '*ṭaaḥuuna* 'grinding mill'; the overlong i.e. the lengthening of the long vowel /uu/ in the second syllable /uuu/ probably arose from the loss of the intervocalic pharyngeal consonants /ḥ/in the original Arabic words.

- /a/ is centralized when it occurs between /c/ and /r, t/, i.e. a > [+ centralized]/ [c_r/t]. In other words, first, /h/ is deleted so that two vowels of different quality /a, i/ meet each other, perhaps, this provokes the centralization, then /ä/ is lengthened to compensate for the lost consonant /h/:

cäää´t < Ar. '*shaahid* 'witnesser', cäää´r < '*shaariʔ* 'street', cằrìt < Ar. *sha'riṭ* 'cassette'. The overlong vowels of cäää´t and cäää´r probably arose from the loss of the intervocalic laryngeal consonants in the original Arabic words (Kenstowicz 2014: 3). This may also be due to the tendency of vowel harmony in the case/ affairs of compensatory vowel lengthening when consonants are deleted as assumed by Idris (2004: 26)

- Short vowels are lengthened to compensate for the lost consonants, except in a word initial position where it remains as it is:

daaàb < Ar. '*dahab* 'gold', mìliì < Ar. '*miliḥ* 'salt', káaraábá < '*kahraba* 'electricity', àliíp < Ar. ʕa'lif 'thousand', álaáthkrì < ʔas'kari 'military/ martial/solier', álaám < Ar. ʕa'lam 'flag', íthaábaàt < Ar. ḥisa'baat 'accounting'.

árábìyà < ʕara'biya 'car', áwaáthá < Ar. ʕa'waayid 'taxes', `ákiìm < Ar. ḥa'kiim 'doctor', ákuúmà < Ar. ḥa'kuuma 'government'.

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Changing syllabic structure of Arabic loan word

According to Remijsen and Manyang (2009: 2), syllables in Dinka language tend to be closed, and consonant clusters are limited to the onset, where one or two semivowels may follow an initial consonant.

- The preferred syllabic structure in Dinka as mentioned before are cv, cvc, cvv, and cvvc, so vowel insertion, epenthesis occurs to dissolve consonant cluster. One of the medial consonants (cc) is removed because it is not preferred in Dinka language as shown in the following examples:

suk'kar < *thùkàr/ cùkàr* 'sugar', fa'nilla < *pànínà* 'undershirt', 'muaʔllim < maálìm 'teacher', 'dukkaan < *dùkaàn* 'shop', 'yalla < *yélá* 'let's go/bye', 'hassa/hassi < *háthá* 'right now', 'lissa < *lìthà* 'not yet', abd'dan < *ábádán* 'never', jal'laabi < *jèlaàp* 'Arab, rich man'.

- The deletion of the consonants /ʕ, ʔ, ḥ/ causes change in the syllabic structure in these examples: maʔ'muur < *maámuùr* 'paramount chief', 'taʕrifa < *taárìp* 'half-piaster', maḥ'buus < *maábuùth* 'Prisoner', ma'baaḥith < *mápaáth* 'detective', 'maʕlaga < *maálágá* 'spoon', 'maḥkama < *maákámá* 'court/tribunal'.

- Some of the bisyllabic words become monosyllabic when the consonants /ḥ, ʕ, ʔ/ are deleted and vowel is lengthened as in:
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Arabic word	words in Dinka	glossary
raʔiis/rayyis	rêeeth	boss/chief/leader
fa'ḥam	páaàm	charcoal
sa'ʕa	thaaa´	watch
da'hab	daaáb	gold
'shaahid	cäää´t	witness
'ṣaḥan	thäää´n	plate/dish/saucer

- As mentioned before, most words in Dinka are monosyllabic (cv, cvc, cvvc, cvv) and most polysyllabic words are compound words and loanwords. Deletion of the final vowels /a, i/ in a number of trisyllabic words reduced the number syllables to two syllables, thus, causing change in their syllabic structure. This deletion may be due to the Dinka tendency of syllable simplification by reducing the number of syllables as in:

ju'waani (inside) < *júwán* 'underwear', gi'zaza < *gècaàc* 'bottle', si'yaasi< *thíyàth* 'politician'.

The assimilation of vowel of the Arabic loan words

Some Arabic loan words are adapted by the assimilation of /u/ to the vowel in the second syllable /a/ after the loss of the glottal or pharyngeal consonant /ʔ, ḥ/ as:

maámì < Ar. *mu'ḥaami* 'lawyer/advocate', maálìm < Ar. *'muʔllim* 'teacher', maákámá < Ar. *mu'ḥakama* 'trial'.

Vowel harmony

Idris (2004: 26) talked about the Dinka tendency for vowel harmony, especially in the case/ affairs of compensatory lengthening when consonant is deleted; however, Dinka is one of the languages loose harmony and tongue root contrast as stated by Ozburn (2019: 178). According to Idris justification, the change in the following words could be attributed to vowel harmony:

ṣan'duug <   *thùnduùg*   'box', mufattish < *maaˈpaˊdicˋ* 'inspector'

'shaahid < *cäääˊt* 'witness', 'shaariʔ < *cäääˊr* 'street',

Generally speaking, Arabic loan words display a number of realizations whereby /a/is centralized and lengthened to compensate for the lost consonants or for vowel harmony, long vowels are shortened, /u/ is assimilated to /a/, short vowels are lengthened, and, finally, vowels are altered. Syllabic structure of some loan words is changed and the number of syllables sometimes is reduced. Few loan words remain phonologically as they are.

ii. Tone

Arabic is stress language and as mentioned before, Dinka is a tone language with three tones: high, low and falling. However; Remijsen (2008), in his descriptive analysis of tone in the Luanyjang variety of Dinka, introduced four tonemes, High (H), Low (L), Rising (LH) and Falling (HL). Monosyllabic Arabic loan words carry H, L and falling (HL) tone. Bisyllabic Arabic loan words carry H-L, L-L and H-H tones. Trisyllabic loan words carry H-H-L, H-H-H tones besides there are some words carry H-L-L and L-H-L tones and multisyllabic loan words carry (H-H-L-L) tone. Stress syllable of the Arabic words carry the high tone in most of the loan words as shown below:

The Arabic loan words display certain tonal patterns:

As listed below, most monosyllabic Arabic loan words carry low tone as: deèc, kɔɔ̀c, thuùg/cuùg, gaàc, kèp. A few of them carry high tone, such as: thäääˊn, cäääˊt, thaaaˊ, caí, páth, daaáb. Two words carry falling tone; rêeeth and páaàm.

Arabic word	words in Dinka	glossary
raʔ'iis/rayyis	rêeeth	boss/chief/leader
fa'ḥam	páaàm	charcoal
'jeesh	deèc	army
'keef	kèp	how
'suug	thùk/cuùk	market
'kooz	kɔɔ̀c	water mug

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'shaayi	caí	tea
'faas	páth	axe
sa'ʕa	thaaá	watch
da'hab	daaáb	gold
'baṣ	páth	bus
'shaahid	cäää´t	witness
'ṣaḥan	thäää´n	plate/dish/saucer
'gaash	gaa´c	belt

The tonal patterns for the disyllabic Arabic loan words are: H-L, L-L and H-H. The loan words which display H-L tone are:

maámuùr, thaábuùn, ákiìm, thíjìn, gaádhì, dhápìth, maámì, maábuùth, thíyàth, májrìm, álaàm, jérdàl, gátàr, maáthuùr/maácuùr, taájìr, taárìp, gālám/gálàm, naájir, maálìm, bádèn, lákìn.

Arabic word	words in Dinka[9]	Glossary
maʔ'muur	maámuùr	paramount chief
'taʕrifa	taárìp	half-piaster
ma'suura	maáthuùr/maácuùr	water pipe
ḥa'kiim	ákiìm	physician
si'jin	thíjìn	prison
'gaaḍi	gaádhì	judge/magistrate
'ḍaabiṭ	dhápìth	officer
ga'ṭar	gátàr	train
'raadi	raádì	radio
maḥ'buus	maábuùth	prisoner
ṣaa'buun	thaábuùn	soap
si'yaasi	thíyàth	politician
'mujrim	májrìm	criminal
'ʕalam	álaàm	flag
'jardal	jérdàl	bucket
baabuur	maábuùr	steamer
'taajir	taájìr	trader
na'ẓir	naájìr	headmaster
us'taaz	ùthaác	teacher
' baʕdeen	bádèn	later/afterward, next, then/too/also
'laakin	lákìn	but

The group that displays L-L tone is represented by:

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thànduùg, doòlaàp, bèrmìl, tèrbeèc, mìliì, thùkàr/thòkằr, cìcìr, weèkà, cằrìt, dùkkaàn, jèlaàp, gìrìc, gìrceèn, gènè, àliìp, rèdì, gòmìth, màrkuùb/màrkuùk, mìthlìm, màthiì, màthjuùn, dhùlùm, lìthà.

Arabic word	words in Dinka[10]	Glossary
'weka	weèkà	dried Accra
mi'liḥ	mìliì	salt
suk'kar	thùkàr/thòkằr	sugar
jir'jiir	cìcìr	a kind of lettuce
ṣan'duug	thùnduùg	box
doo'laab	doòlaàp	cupboard
bar'miil	bèrmìl	barrel
sha'riiṭ	cằrìt	cassette
'girish	gìrìc	piaster
'girsheen	gìrceèn	two piasters
je'neeh	gènè	one pound
ʔa'lif	àliìp	thousand
'duḳkaan	dùkaàn	shop
jal'laabi	jèlaàp	arab
ʕabid	àbìth	slave
'rida	rèdì	short
ga'miiṣ	gòmìth	shirt
mar'kuub	màrkuùb/màrkuùk	Sudanese local shoes
'muslim	mìthlìm	Muslim
ma'siiḥi	màthiì	Christian
mas'juun	màthjuùn	prisoner
'ẓulum	dhùlùm	injustice
'lissa	lìthà	not yet

The loan words that display H-H tone are:

mádiír, mápaáth, mápaáth, póliíth, gédiá, kíbriít, tíyaár, gìrìc, ríyál, júwán, wárgák, máraám, máléth, háthá, káláth, palác, yélá. There are only three loan words that display the tonal pattern L-H: gècaác, ùthaác, màdhluúm.

Arabic word	words in Dinka[11]	Glossary
mu'diir	mádiír	director/manager/boss
ma'baaḥith	mápaáth	detective
bo'liis	póliíth	police
ṭay'yaara	mabuteer/tíyaár	airplane
gadiyya	gédiá	case/ affair

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[10] The Dinka words in this paper are written in the Dinka orthography (*see* Appendix 1).
[11] The Dinka words in this paper are written in the Dinka orthography (*see* Appendix 1).

kib'riit	kíbriít	matches
ba'laagh	bálaák	official complaint/report of a fault or a problem
ri'yaal	ríyál	ten piasters
'ruḥḥal	máraám	nomad
ju'waani	ju´wa´n	inside
'waraga	wárgák	paper
maʕleesh	máléth	sorry/never mind/do not worry
'hassa/hassii	háthá	right now
kha'laaṣ	káláth	enough, that's all
ba'laash	pálác	enough/ leave it
'yalla	yélá	let's go/bye

The majority of the trisyllabic Arabic loan words display H-H-L, H-H-H tones besides, there are some words carry H-L-L and L-H-L tones as appears in the following examples:

maápádìc, múwápìth, ákuúmà, íraáthà, kaárjìyà, ɲáɲàliìth, álaáthkrì, thápìyà, árábìyà, mùthájìl, táwuúnà, mábúteèr, íthaábaàt, ámaárà, pànínà.

Trisyllabic Arabic loan words display H-H-H tone. They are:

maákámá, áwáthá, mákáná, kárábá, málaáyá, mádráthá, lákbátá, ábádán.

Arabic word	words in Dinka[12]	Glossary
'maʕlaga	maálágá	spoon
mu'fattish	maápádìc	inspector
kub'baaya	kúbaaýi`	cup
ṣa'fiiḥa	thápìyà	tin
ta'merji	témérjì	nurse
ma'kana	mákáná	engine
tala'fuun	télépuùn	telephone
mus'ajjil	mùthájìl	recorder
mu'ḥaafiẓ	múwápìth	governor
ʕa'maara	ámaárà	pavilion
ṭa'ḥuuna	táwuúnà	grinding mill
kah'raba	kárábá	electricity
ḥa'kuuma	ákuúmà	government
'maḥkama	maákámá	court/tribunal
ḥi'raasa	íraáthà	prison
ḥisa'baat	íthaábaàt	accounting

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[12] The Dinka words in this paper are written in the Dinka orthography (see Appendix 1).

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mi'laaya	málaáyá	bed sheet
ʕa'waayid	áwaáthá	taxes
khari'jia	kaárjìyà	abroad
'lakhabṭa	lákbátá	disorganization
abd'dan	ábádán	never/ not at all
ingi'liiz	ɲáŋálii`th	English people
ʕas'kari	álaáthkrì	military/ martial/soldier
gha'raama	kárámá	fine

The two examples of a multisyllabic loan word *jàlaábìyà* and *árábìyà* display H-H-L-L tone.

Arabic word	words in Dinka	glossary
ja'laabiyya	jálaábìyà	men's local dress
ʕara'biya	árábìyà	car

2.2. Summary

This section presents the summary of the findings. Arabic loan words are integrated into the Dinka language and have become part of the Dinka lexicon and they are used in everyday communication.

- Dinka borrowed Arabic words belonging to different semantic fields. The most common semantic fields of borrowing are administration, technology, trade and household. Most of the Arabic loan words remain semantically as they are, but a few of them have been semantically changed; extending their meanings.
- A schematization of the described phonological renditions of the Arabic loan words is given in the diagram below summarizing the adaptation of the Arabic loan words in terms of consonants:

Arabic	ḍ	s/ṣ	ṭ	ẓ	z	ɣ/χ	ʔ	ḥ	ʕ	j	ʃ	ḷ	t	f
Dinka	d̪	t̪/c	t̪	t̪	d̪/j	k	Ø	Ø	a/ ó	j	ɟ/c	l	ɟ	p

- Arabic loan words display a number of realizations whereby [a] is centralized and lengthened to compensate for the lost consonants, long vowels are shortened, /u/ is assimilated to /a/, short vowels are lengthened and, finally, vowels are altered. Syllabic structure of some loan words is changed and the number of syllables sometimes is reduced. Few loan words remain phonologically as they are.
- Monosyllabic Arabic loan words carry H, L and falling tone. Bisyllabic Arabic loan words carry H-L, L-L, and H-H tones. Trisyllabic loan words carry H-H-L, H-H-H tones besides there are some words carry H-L-L and L-H-L tones and multisyllabic loan words carry H-H-L-L tone.

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3. Conclusion

Arabic loan words are adapted into Dinka language by following the phonological patterns of the Dinka so that they could be integrated and used. It is recommended to have further studies on the other levels of language structure and use.

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References in English

- Abu-Manga, Alamin (1991): "Arabic loan words in the Nilotic languages", in M. Lionel Bender Helmot Buske (ed.), *Proceedings of the Fourth Nilo-Saharan Conference, Bayreuth, August 30 - September 2 1989*. Hamburg: Helmut Buske, pp. 133-145.

- Akol, Deng (1989): Dinka Nominal Morphology, MA thesis (unpubl.). IAAS, University of Khartoum.

- Andersen, Torben (1990): "Vowel length in western Nilotic languages". In: *Acta Linguistica Hafniensia: International Journal of Linguistics*, volume 22, 1990 - Issue 1, pp. 5-26. Retrieved at 15th January 2018 from:

- Andersen, Torben. (1987): "The phonemic system of Agar Dinka", in: *Journal of African Languages and Linguistics* 9: 1–27.

- Arkell, J.A (1984). *Early Khartoum*. London: Oxford University Press.

- Ayom, E. B. G (1980): Some Aspects of the Dinka Phonology and Plural Formation, MA thesis (unpubl.). IAAS, University of Khartoum.

- Benkő, Loránd (1987): *A történeti nyelvtudomány alapjai*, Budapest: Tankönyvkiadó.

- Bloomfield, Leonard (1934): *Language*, London: Allen & Unwin.

- Brisco, Mike (2006): English to Dinka Glossary, Derived from SIL International's 2005 Draft *Dinka-English dictionary*, For use alongside that dictionary, Draft- for comment - 9 May 2006

- Coetsem, Frans van (1988): *Loan Phonology and the Two Transfer Types in Language Contact*, Publications in language sciences, Dordrecht, Holland: Foris Publications.

- Dimmendaal, Gerrit J. (2002): "Constraining plate/dish/saucerarmony in Nilotic: What does an optimal system look like?", in: *Journal of African Languages and Linguistics*, 23(2), 153-182.

- Greenberg, Joseph. H. (1970): *The Languages of Africa*, C.F. Voegedin: USA.

- Hall, R.M.R, B.L. Hall, S.A Antell, A. Myers, & L.P. Sheerin (1975): "Toward a reconstruction of Proto-Nilotic vocalism", in: *Proceedings of the Sixth Conference on African Linguistics*: 1–15.

- Heffernan, Kevin (2005): "Phonetic similarity and phonemic contrast in loanword adaptation", in: *Toronto Working Papers in Linguistics* 24. Pp. 117-123.Idris, Helene Fatima (2004). *Modern Developments in the Dinka Language*, Göteborg Africana Informal Series no. 3, Department of Oriental and African Languages, Göteborg University.

- Idris, Helene Fatima (2004): *Modern Developments in Dinka Language*, Goteborg African Informal Series no. 3, Department of Oriental African Languages, Göteborg University. Retrieved on 4.3.2009 from

- Jok, Lino Kiir Kuony (2004): Dinka Noun Systems and Their Impact on Learning English by Dinka. MA thesis, University of Juba, College of Education, Department of English Language and Literature. *SIL Language and Culture Archives*.

.

- Kenstowicz, J. Michael (2014): Ablaut in Dinka nouns: A preliminary study,
- LaCharité, Darlene, and Carole Paradis (2005): "Category Preservation and Proximity versus Phonetic Approximation in Loanword Adaptation", in: *Linguistic Inquiry* 36, pp. 223-258.
- Mahmud, Ushari Ahmed (1983): *Arabic in Southern Sudan: History and Spread of a Pidgin-Creole*. Khartoum: FAL Khartoum advertising and printing Co. Ltd.
- Malou, Job (1988): *Dinka Vowel System* (SIL, Publication in linguistics, 82) Dallas: Summer Institute of Linguistics and the University of Texas at Arlington.
- Miller, Catherine (2003). "Linguistic policies and the issues of ethno-linguistic minorities in the Middle East". In: *Islam in the Middle Eastern Studies: Muslims and Minorities*, ed. by A. Usuki and H. Kato. Osaka: The Japan Center for Area Studies (JCAS), National Museum of Ethnology, pp. 149-174.
- Munsor, I. M (1983): *The Sudan Population Census.* Central Government Report, published by the Central Ministry of Finance, Department of Statistics and Population, Khartoum.
- Nashid, Sawsan Abdel Aziz Mohammed (1996): An Investigation of Lexical Borrowing in Dinka Language. MA thesis (unpubl.) Department of Linguistics, Faculty of Arts, University of Khartoum.
- Nashid, Sawsan Abdel Aziz Mohammed (2014): The Sociolinguistic Situation of Northern Bahr el Ghazal State (South Sudan): A Case Study of Aweil Town. PhD thesis (unpubl.). Department of Linguistics, Faculty of Arts, University of Khartoum.
- Nashid, Sawsan Abdel Aziz Mohammed (2015): Studies on Southern Sudanese Languages: Analytical Survey, unpublished paper.
- Nebel, F. A (1948*): Dinka Grammar (Rek Malual dialect) with texts and vocabulary*. Verona: Instituto Missioni Africane.
- Nebel, F. A (1979): *Dinka-English, English-Dinka Dictionary*. 2nd. ed. Bologna: Editrice Missionaria Italiana.
- Nyombe, Bureng G. V. (1997): "Survival or extinction: The fate of the local languages in the Southern Sudan", in: *International Journal of the Sociology of Language*, no. 125, pp. 99-130. Retrieved on 21.11.2012 from: http://books.google.com/ books?id=Ih6b9iupT6oC&pg=PA40&lpg=P
- Ozburn, Avery (2019): "Target-Oriented Approach to Neutrality in Vowel Harmony, PhD thesis, the Faculty of Graduate and Postdoctoral Studies (Linguistics), University of British Columbia.
- Remijsen, Bert (2008): "The tone system of the Luanyjang dialect of Dinka". In: *Journal of African Languages and Linguistics*, Ed. by Ameka, Felix K. and Amha, Azeb, volume 29, Issue 2 (Jan 2008). Retrieved at 25th February 2018 from:
- Remijsen, Bert and Manyang, Caguor Adong (2009): "Luanyjang Dinka", in: *Journal of the International Phonetic Association*, International Phonetic Association logo, vol. 39, issue 1, pp. 113-124. Retrieved st 9/6/2020 from:

.

- Robinson, Arthur E. (1925): "The conquest of the Sudan by the Wali of Egypt, Muhammad Ali Pasha, 1820-1824", in: *Journal of the Royal African Society*, vol. 25, No. 97 (Oct., 1925), pp. 47-58, Published by: Oxford University Press on behalf of The Royal African Society.
- Sankoff, Gillian (20020: "The Linguistic Outcomes of Language Contact", *The Handbook of Language Variation and Change*, ed. by J. K Chambers, Peter Trudgill, and Natalie Schilling-Estes, 639-668, Blackwell Handbooks in Linguistics, Malden, MA: Blackwell.
- Shinnie, P. L. (1967): *Meroe Civilization of the Sudan*. New York: F. A. Praeger.
- Snowden Jr., Frank M. (1970): *Blacks in Antiquities: Ethiopians in the Greco-Roman Experience*. Cambridge, Mass.: Belknapp Press of Harvard University Press.
- Swenson, Janel (2015): "ATR quality in the Luo vowel system", in: *Psychology*, vol.1, pp. 101-145.
- Thomason, Sarah Grey, and Terrence Kaufman (1988): *Language Contact, Creolization, and Genetic Linguistics*, Berkeley: University of California Press.
- Thuɔŋjäŋ, Piööcku (2012): "The Evolution of the Dinka Sounds System". In: Archive for the tag "Dinka Alphabet". Retrieved at 25th February 2018 from:
- Trudinger, Fr. (1944): *English Dinka Dictionary, Padang Dialect* (photocopy of the original document, IAAS library 3).
- Tucker, A. N. (1978): *Dinka Orthography*. Linguistic Monograph Series (no. 9), Khartoum: University of Khartoum Press.
- Tucker, A. N. and Bryan, M. (1966): *Linguistic Analyses: The Non-Bantu Languages of North-East Africa*. London: Oxford University Press for the International African Institute.
- Tucker, A. N. and Bryan, M. (1966): *Linguistic Analysis of the Non-Bantu Languages of North Africa.* Oxford University Press. London.
- Westermann, D. and Ward, Ida C. (1933): *Practical Phonetics for Students of African Languages*. London: Oxford University Press for the International Institute of African Languages and Culture.

Websites:

- http://www.sprak.gu.se/digitalAssets/1309/1309450_modern-
- http://www.tandfonline.com/doi/abs/10.1080/03740463.1990.10411520
- https://pioockuthuongjangda.wordpress.com/tag/dinka-alphabet/.
- https://www.cambridge.org/core/journals/journal-of-the-international-phonetic-
- https://www.canil.ca/canilewp/volume1/Swenson-101_145.pdf
- https://www.degruyter.com/dg/viewarticle/j$002fjall.2008.29.issue-

.

References in Arabic

- إمانويل أفيو لوك بنوك (2005): معجم ثنائي اللغة دينكاوي - عربي (أ، ب، ت، ف، م، ن)، ماجستير، معهد الخرطوم الدولي للغة العربية للناطقين بغيرها.

- داؤود ريك نيال (1989): لغة الدينكا: علاقتها بالعربية وكتابتها بالحرف العربي، ماجستير، معهد الخرطوم الدولي للغة العربية للناطقين بغيرها.

- شول دينق يونق (1989): أثر اللغة العربية على لغة الدينكا: دراسة على مستوى المفردات المقترضة، ماجستير، معهد الخرطوم الدولي للغة العربية للناطقين بغيرها.

- عبد الله دينق نيال (1985): بين اللغة العربية ولغة الدينكا: دراسة تقابليه على المستوى الصوتي، ماجستير، معهد الخرطوم الدولي للغة العربية للناطقين بغيرها.

- كاك لانكي كاك (1986): أثر لغة الدينكا على اللغة العربية في منطقة الرنك، دبلوم، معهد الخرطوم الدولي للغة العربية للناطقين بغيرها.

- كاك لانكي كاك (1987): الفعل: دراسة تقابلية بين اللغة العربية ولغة الدينكا على مستوى التراكيب، ماجستير، معهد الخرطوم الدولي للغة العربية للناطقين بغيرها.

- كور داو صنوير (1987): دراسة تقابلية بين اللغة العربية ولغة الدينكا على مستوي الضمائر، دبلوم، معهد الخرطوم الدولي للغة العربية للناطقين بغيرها.

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Appendix 1: Dinka Orthography

The current Latin orthography is derived from the alphabet developed for the southern Sudanese languages at the Rejaf language conference in 1928. *Information and corrections are made by Michael Peter Füstumum* (http://www.omniglot.com/writing/dinka.php at 5/6/2017)

A a Ä ä B b C c D d Dh dh E e Ë ë Ɛ ɛ Ɛ̈ ɛ̈ G g Ɣ ɣ I i Ï ï J j K k L l M m
[a] [a̤] [b] [c] [d]   [d̪]   [e] [e̤] [ɛ] [ɛ̤] [g] [ɣ] [i] [i̤] [ɟ] [k] [l] [m]

N n Nh nh Ny ny Ŋ ŋ O o Ö ö Ɔ ɔ Ɔ̈ ɔ̈ P p R r T t Th th U u W w Y y
[n]   [n̪]   [ɲ]   [ŋ] [o] [o̤] [ɔ] [ɔ̤] [p] [r] [t]   [t̪]   [u] [w] [j]

Dinka pronunciation

Vowels - clear or creaky

a	e	ɛ	i	o	ɔ
[a/á]	[e/è]	[ɛ/ɛ́]	[i/í]	[o/ó]	[ɔ/ɔ́]

Breathy vowels

ä	ë	ɛ̈	ï	ö	ɔ̈	u
[a̤]	[e̤]	[ɛ̤]	[i̤]	[o̤]	[ɔ̤]	[ṳ]

Consonants

b	c	d	dh	g	ɣ	j	k	l	m
[b]	[c]	[d]	[d̪]	[g]	[ɣ]	[ɟ]	[k]	[l]	[m]

n	nh	ny	ŋ	p	r	t	th	w	y
[n]	[n̪]	[ɲ]	[ŋ]	[p]	[r]	[t]	[t̪]	[w]	[j]

Notes

- Vowels without accents can be either clear or creaky
- Long vowels are indicated by doubling the vowel letters, e.g. aa, ee, etc

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Appendix 2: A list of Arabic Transliteration Characters

Transliteration characters/phoneme	Arabic letters	Transliteration characters/phoneme	Arabic letters	Transliteration characters/ phoneme	Arabic letters	Transliteration characters/phoneme	Arabic letters
a /a/	أ	d /d/	د	ḍ /ḍ/	ض	k /k/	ك
b /b/	ب	ṣ /ṣ/	ص	ṭ /ṭ/	ط	l /l/	ل
t /t/	ت	r /r/	ر	ẓ /ẓ/	ظ	m /m/	م
kh /χ/	خ	z /z/	ز	/ʕ/	ع	n /n/	ن
j / j /	ج	s /s/	س	gh /ɣ/	غ	h /h/	ه
ḥ, ḥ /ḥ/	ح	sh /ʃ/	ش	f /f/	ف	w /w/	و
				q /g/	ق	y /j/	ي
'/ʔ/	الهمزة	i, ī/ii	كسرة	u, ū/uu	ضمة	a, ā/aa	فتحة