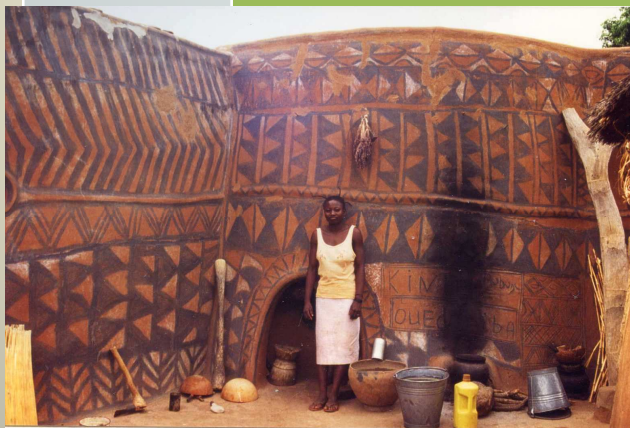# VOWEL HARMONY
IN KASEM AND IN NINKARE
OF BURKINA FASO:
A COMPARISON

This paper was written by Idda Niggli in the «Advanced Phonology» course at ETP in Hosleys Green (GB) in May 2013.

Some languages require the vowels to have the same feature across the whole word, which is known as harmony. As there are different degrees of Vowel Harmony in different languages, I want to compare the Harmony in Kasem where all vowels in a word have to be either [+ATR] or [-ATR] with the case of the Ninkare, where the harmony takes place only in some contexts but not everywhere in the language.

Vowel harmony in Kasem and in Ninkare of Burkina Faso:

a Comparison

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1. Introduction

In this paper I want to look at a feature of vowels (ATR advanced tongue root) which is not associated with any particular segment (one vowel) but spreads across morpheme boundaries. Some languages require particular sounds to have the same feature across the whole word, which is known as harmony.

The ATR vowel harmony is a type of vowel harmony common in many West African languages like Igbo (Burquest and Payne 1993, 154; Bartram 2012, 118) and Degema (de Lacy 2007, 354), both from Nigeria, and others. As there are different degrees of Vowel Harmony in different languages, I want to compare the Harmony in Kasem where all the vowels in a word have to be either [+ATR] or [-ATR] with the case of the Ninkare, where the harmony takes place only in some contexts but not everywhere in the language.

Both these languages are spoken in the south of Burkina Faso, in the same province (Nahouri). They are also spoken in the north of Ghana with some dialectical differences. Kasem belongs to the Southern Gur languages, whereas Ninkare belongs to the Northern Gur. Both languages are tonal, but since tone does not affect the vowel harmony and is not marked in orthography, I do not mark it in this paper either.

I worked about 8 years in each of these languages and collected all the data myself.
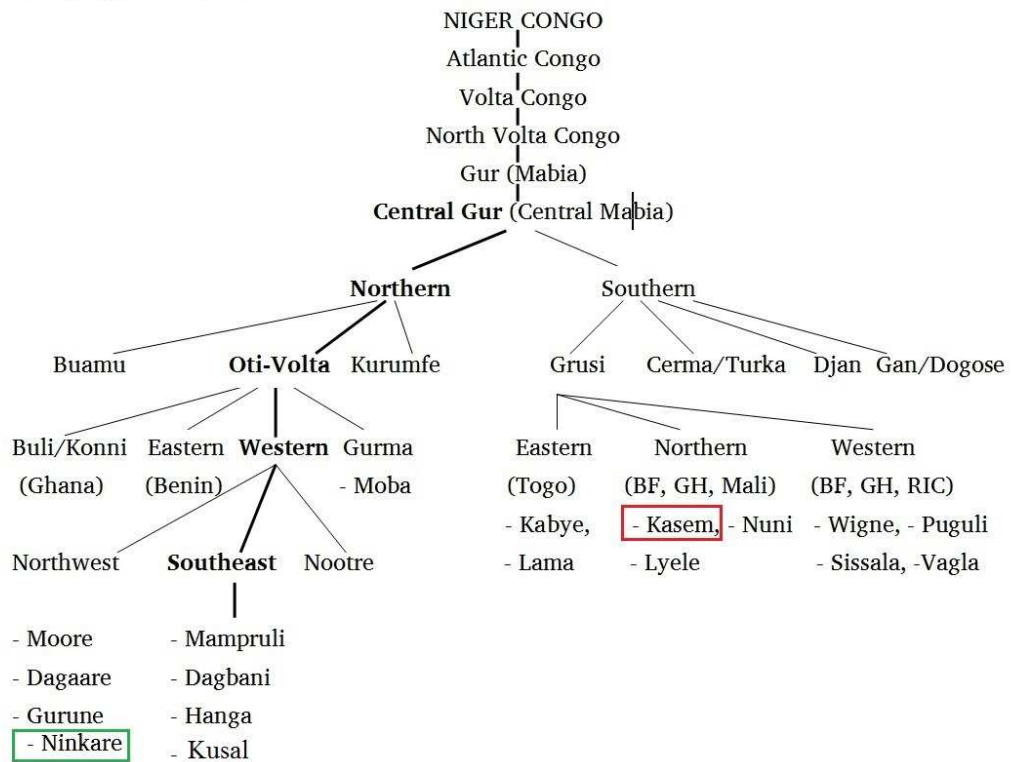
Language family tree:

Table 1: Language family tree

2. Vowel system for Kasem and Ninkare

Kasem has 10 different vowels as shown in the following table. All these vowels can be short or long (Callow 1965a, 25; Equipe de la SIL 2005a, 13–17).

Aperture	front oral	central oral	back oral
high: [+ATR]	i i:		u u:
[-ATR]	ɪ ɪ:		ʋ ʋ:
mid: [+ATR]	e e:		o o:
[-ATR]	ɛ ɛ:		ɔ ɔ:
low: [+ATR]		ə ə:	
[-ATR]		a a:	

Table 2: Kasem vowel system

Ninkare has 9 different vowels, each one can be short or long, when they are nasalised the feature [±ATR] is neutralised (Niggli and Niggli 2007, 34–52; Equipe de la SIL 2005b, 16–29).

Aperture	front oral	front nasal	central oral	central nasal	back oral	back nasal
high: [+ATR]	i i:	ĩ ĩ:			u u:	ũ ũ:
[-ATR]	ɪ ɪ:				ʋ ʋ:	
mid: [+ATR]	e e:				o o:	
[-ATR]	ɛ ɛ:	ɛ̃ ɛ̃:			ɔ ɔ:	ɔ̃ ɔ̃:
low: [-ATR]			a a: ã ã:			

Table 3: Ninkare vowel system

In both these languages the feature [±ATR] is an important feature of the segment itself, which divides the vowels in separate phonemes.

Minimal pairs such as [lərə] 'answer'', [lara] 'conversation' in Kasem and [dia] 'food', [dɪa] 'funeral dance'' in Ninkare demonstrate contrast between them. This makes them *separate phonemes*, /ə/ and /a/ in kasem, /i/ and /ɪ/ in Ninkare.

3. Vowel harmony

The forward movement of the root of the tongue, as a binary feature [±ATR] or the unary feature [radical] is a segmental feature of the vowels as it is the contrastive feature of two separate phonemes in these two languages. But there is a second aspect, these phonemes cannot occur in all contexts or rather the existence of one of them in a context requires a certain one in the neighbouring context. For the analysis of this phenomenon, the vowel harmony, ATR needs to be treated as an autosegmental feature which is associated with the word rather than any one particular segment. In the most symmetric case of [radical] harmony, all vowels of any phonological word have the same feature, either [+ATR] or [-ATR]. This pattern is called canonical harmony by Archangeli and Pulleybank (de Lacy 2007, 354).
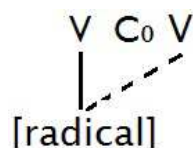
3.1 Vowel harmony in Kasem

In Kasem there are two distinct sets of vowels:

Five of the kasem vowels have the feature [+ATR], the other five are [-ATR].

i e ə o u		ɪ ɛ a ʊ ɔ

In any phonological word, there are vowels exclusively from one or the other of these two sets. This means that the place of the tongue root spreads over the whole phonological word.

$$V \quad C_0 \quad V$$

[radical]

Examples for | **i e ə o u** | Examples for | **ɪ ɛ a ʊ ɔ** |

digə	'room'	tɪga	'earth'
zooni	'rabbit'	fʊʊnɪ	'fear'
joro	'soul'	jɔŋɔ	'dance'
mumunə	'rice'	mɪmɪla	'ant'

In nouns as well as in verbs, the feature [±ATR] of the root spreads over to the ending. The root *loor-* takes *-i* or *-ə* as aspect suffix, *zwar-* adds *-ɪ* or *-a*.

O loor**i** cwəŋə.	'He asked permission to leave.'
O wʊra a loor**ə**.	'He is asking permission to leave.'
O zwar**ɪ** weeru.	'He swept the floor.'
O wʊra a zwar**a**.	'He is sweeping the floor.'

Kasem has a strict harmony where vowels from both sets cannot occur in the same word except in compound nouns and loanwords. As Phelps states it: 'In Kassem, vowel harmony in roots and affixes is identical' (1978).

3.2 Vowel harmony in Ninkare

As already presented, the Ninkare vowel system has five primary vowels. Four of these, the high and mid vowels, have alternatives *i/ɪ, u/ʊ, e/ɛ, o/ɔ*, where the two vowels differ from each other by [±ATR]. The low vowel *a* does not have the [+ATR] variant, and in the nasal vowels this feature is neutralised, the nasalised high vowels are pronounced [+ATR] and function accordingly, the other nasals are [-ATR].
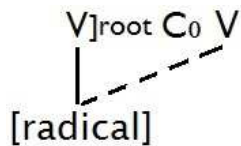
This gives us the two sets:

[+ATR]	[-ATR]
i ĩ u ũ e o	ɪ ʊ ɛ ɛ̃ ɔ ɔ̃ a ã

In Ninkare there is no 'canonical harmony', where in general only vowels of one of the two sets can be in the same phonological word. The phenomenon of vowel assimilation however, can be seen in different contexts.

a) Contexts where all vowels are concerned

In all the different noun classes the feature [±ATR] of the vowel of the root spreads to the vowel of the suffix. This concerns all vowels except the low vowel *a* which has no [+ATR] variant.

Examples:

[-ATR] vowel roots			[+ATR] vowel roots		
Singular	Plural		Singular	Plural	
tɪa	tɪsɪ	'tree'	pesgo	piisi	'sheep'
dʊko	dʊgrɔ	'pot'	puugo	puuro	'flower'
yẽgrɛ	yẽga	'root'	dĩire	dĩa	'front'
pʊfɔ	pʊna	'genet'	nifo	nini	'eye'

The same principle applies also to the basic forms of the verbs: the vowel of the suffix has the same [±ATR] feature as the root.

[-ATR] vowel in the verb root		[+ATR] vowel in the verb root	
basɛ	'leave'	lorge	'untie'
bɪsɛ	'look'	bilge	'roll over'
bʊglɛ	'comfort'	bule	'germinate'
kɛkɛ	'calculate'	ele	'marry'
dɔ̃brɛ	'to squat'	yũre	'be crooked'

In vowel sequences the second vowel is always from the same set as the first with the exception of -a which may follow a vowel from either set.

Examples:

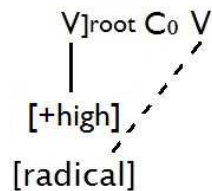| first vowel [+ATR]		first vowel [-ATR]	
fuo	'garment'	vɩɔ	'hut'
bia	'child'	tɩa	'tree'

b) Contexts where only the high vowels are concerned

The imperfective suffix of the verb takes the [+ATR] feature of the verb root only after the high vowels i, ĩ, u, ũ.

Examples:

A obrɩ sẽnkaam.   A diti sagbɔ.

'He crunches peanuts.'   'He eats millet porridge.'

Another context where we can see this feature of harmony is the locative suffix –Um where the [+ATR] feature of a high vowel in the noun root spreads to the suffix.

Examples:

Noun	Noun+locatif		Noun	Noun+locatif	
nifo	nifum	'in the eye'	nu'usi	nu'usum	'in the hands'

but:

| pʊʊrɛ | pʊʊrʊm | 'in the stomach' | poore | poorʊm | 'on the back' |

Also the irrealis particle –nɪ that follows the verb takes the [+ATR] feature of any high vowel in the verb.

Examples:

Saa sãn ni **ni** zaam, mam wʊn bʊrɛ si.

'If the rain would have rained yesterday, I would have sown millet.'

Mam sãn sẽŋɛ **nɪ** da'am, mam wʊn da si.

'If I had gone to the market, I would have bought millet.'

A sãn obe **nɪ** sẽnkaam,

'If he would have eaten the peanuts…'

c) Contexts where only the mid vowels are concerned

It is not always the root that determines the [±ATR] feature of the suffix, but sometimes if the suffix is the vowel -a that has only the [-ATR] variant, it changes the [±ATR] feature of the root into [-ATR] to comply with the vowel harmony. This happens however only with the mid vowels -e- and -o-.
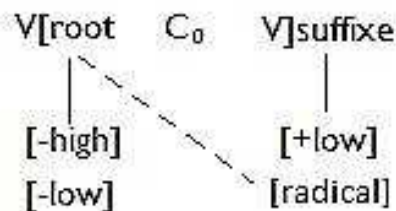
Examples:

[+ATR] vowel of the root		change into [-ATR] vowel	
Singular		Plural	
zelle	'egg'	zɛla	'eggs'
tore	'mortar'	tɔa	'mortars'

The same spreading from right to left happens with the progressive suffix *-ra* of the verb; however, the other variant of this suffix *-rɪ* does not have the same effect. Examples:

[+ATR] vowel of the verb root   change into [-ATR] vowel

Basic verb form   Progressive forms

yese	'get out'	yesrɪ	yɛsra
peege	'wash'	peerɪ	pɛɛra
soke	'ask'	sokrɪ	sɔkra
koose	'sell'	koosrɪ	kɔɔsra

All these examples show that there are harmonic processes of vowel assimilation going on in Ninkare; even if it is not a harmony where we can only have vowels of one of the two different sets in the same phonological word in every context.

4. Conclusion

I first presented the case of Kasem, where it is widely known that it has a strict vowel harmony (Bonvini 1974; Callow 1965a, 75; Callow 1965b, 29; Equipe de la SIL 2005a, 17–20; Hewer 1990, 5; Phelps 1978, 98–105). Then I showed the evidences of vowel harmony in Ninkare (also called Nankan, Gurenne or Frafra), where different linguists did not mention the vowel harmony (Canu 1971; Prost 1979; Rapp 1966; Schaefer 1975). Canu mentions in his work about the related language Moore (1976) that in nouns the feature of vowels with minimal aperture of the root can spread over to the vowels with middle aperture of the suffix, but as we have shown, in Ninkare there is a wider spread of the vowel harmony. In fact in the Ninkare dictionary (Niggli and Niggli 2009) there is no entry of a basic form of a word in which vowels of both of the two sets of vowels occur, except in combination with the low vowel *a*. There are however loan words and composed words

which consist of two phonological words and words like *obrɪ* IPFV 'crunching', *poorʋm* 'on the back' in which the rule to have only vowels of one of the two sets does not apply.

The reason why the harmony in Ninkare does not work everywhere cannot be found in the metrical structure as we see in the above examples, where in exactly the same phonological context we can see the spreading on some vowels but not on the others.

These examples show that it depends on the vowels themselves. The high vowels *i, u* always comply with the harmony rule, the mid vowels *e* and *o* normally comply, but there are exceptions, the low vowel, as it does not have the [+ATR] variant, cannot comply but mostly combines with [-ATR] vowels. However it can also combine with [+ATR] vowels or even change the feature of the vowel of the root into [-ATR].

It would be interesting to do further research in this area and examine if related languages like the Kusal, from which Spratt simply write: 'There is no vowel harmony" (Spratt and Spratt 1968), or the Moore do not have more signs of vowel harmony than described until now. This would however go beyond the purpose of this paper.

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