

Rounding Harmony in Mfantse: Evidence and Differences

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ABSTRACT

This paper investigated rounding harmony in two subdialects of Mfantse spoken in the Central Region of Ghana. Bɔrbɔr and Edwumako dialects are part of the Akan language and belongs to Kwa on the Niger-Congo branch of languages. Data was from the Mfantseman and Edwumako districts from 45 participants aged 20 years and above. The Autosegmental framework was used for data analysis. We looked first at the sounds and brought out the differences between Bɔrbɔr sounds and that of Edwumako. The study established that Mfantse is not the same in all its phonological presentations in all its subdialects. In terms of sound distribution, the central unadvanced vowel is strictly word final in Bɔrbɔr while it is both word initial and final in Edwumako. Some aspects of rounding harmony occur in both Bɔrbɔr and Edwumako while other aspects occur in Bɔrbɔr and partially in Edwumako. Other aspects are present in Edwumako only.

1. Introduction

There is no dispute that feature harmony exists in some languages. Authors such as Akanlig-Pare and Krobea-Asante (2012), Besides the ATR harmony another harmony that is well established in Mfantse is the labialized or rounding harmony (henceforth RH). Several phonologists such as Dolphyne (1988), Obeng (1999), Abaka (2003, 2012) and Bota (2002) have confirmed vowel harmony in Akan. Several studies have also confirmed different harmony types in other languages. Akanlig-Pare (1994) on Buli, Hansson (2010) on some group of languages, Morton (2012) on Anii, Casali (2003, 2008, 2016), Moller (2016), on Bale and Rose (2016) also on a large-scale study on some African languages, Likewise, labialization or rounding harmony has also been established. Dolphyne (1988, p. 19) explains that vowel harmony affects just the vowels of the affixes, meaning, the vowels in the affixes copy either the tongue root position or the tongue root and lip positions. Additionally, "that ATR-Harmony is the more basic process of the two whilst backness is only secondary and usually superimposed on the former when it occurs" This statement indicates that lip position assimilation occurs after the initial ATR harmony has occurred.

According to Akanlig-Pare (1994, p. 19), the rounded harmony depends on the advanced tongue root harmony. RH only depends on palatal and advanced tongue root harmony or left-right advanced harmony in Buli. Abakah (2003), then clarified that in a lot of cases, the labial harmony occurs with another type of harmony but it must be understood that in Akan the labial harmony co-occurs with dialect-specific restrictions in certain parts of the grammar". In this study, we concurred that the RH does not cut across the Mfantse dialect of Akan as many studies have shown but it is subdialect-specific or even sub-sub-dialect specific.

2. Literature Review

Mfantse, a dialect of Akan has received a great deal of phonological attention. A closer look at Mfantse shows that there are some differences including phonological, in the subdialects of Mfantse. Abakah (1978) undertook a phonological study on Iguae (Fetu) Fante and Nkusukum (Bɔrbɔr) Mfantse. It is established in this research that these two subgroups have the same sounds i.e. vowels and consonants, however, their main differences lie in their tonal patterns, syntax, semantics and phonological processes. In each of these processes, the discussion centered on what exists in each subdialect, bringing out the differences. In another study, Abakah (2003) embraces RH as a major phonological phenomenon in Mfantse and proved

it accordingly. Dolphyne (1988, p. 19), concurred and discussed RH as a phonological process in Mfantse. The study stated that, "All these examples of vowel harmony involve partial assimilation of the affixes, in order words the vowels in the affixes take on one feature – tongue root position – or two features – tongue root and lip positions." furthermore, RH is an additional harmony and therefore cannot occur alone. This is the more reason why other phonological processes are discussed in this paper in order to give a lead to the main focus of RH.

Bota (2002) discussed three aspects of Bono phonology, sounds, phonological processes and tonal patterns. The work mentioned the differences in the major subdialects and also agrees that rounding harmony is evident in Akan. Andoh- Kumi (1971) and Yankah (1973) also looked at some differences between the Akan dialects and Agona which a variety of Mfantse. All the works mentioned above established differences even though all the dialects dealt with are Akan.

There are many categorizations of Mfantse depending on many factors but in this paper, we divide Mfantse into two main groups, coastal and inland Mfantse. Speakers of Bɔ̀bɔ̀r Mfantse are found at the South Eastern coast of Ghana designated Mfantseman District. However, some of Bɔ̀bɔ̀r speaking towns are found in the Abora-Asebu-Kwamankese District in the Central Region. Some major towns in Mfantseman are Mankessim, Saltpond, Egyaa. Edwumako is the name of both the people and the Mfantse subdialect spoken the northern half of the Central Region, i.e. Edwumako-Enyan-Esiam District. Some of its major towns are, Edwumako, Enyan Denkyira and Kokoben. The current study focused on Edwumako and Bɔ̀bɔ̀r subdialects of Mfantse. Investigations have confirmed Holmes' (2001, p. 195) statement that, "within a monolingual community the superficial impression may be that everyone speaks the same. (In a small town it often seems that everyone speaks the same language.) But a little thought will soon identify areas of variation..."

By this investigation, we outlined the sounds of Mfantse and show the differences that exist between them. We have also discussed some phonological processes and shown the differences and narrowed down to the rounding harmony types in the two subdialects of Mfantse.

3. Autosegmental Phonology

Autosegmental Phonology introduced by J.A. Goldsmith in 1976 and 1990 as an improvement on Generative Phonology. Goldsmith built on earlier works by Bernard Bloch (1948), J. R. Firth in (1948), Charles Hockett (1955) by modifying and applying the theory to some Bantu languages and Yoruba spoken in Nigeria. Goldsmith used the theory to account for tones and vowel harmony. The central idea of autosegmental phonology is that a segment, which is the abstract representation of sound, can be separated into sounds and then accounted for under phonological operations of deletion or the spreading. Suprasegments such as tone and nasality as well as harmony systems can be accounted for under such operations. In this framework, phonological representations are made up of more than one linear sequence of segments. A linear sequence constitutes a separate parallel tier with each tier representing a segment known as autosegment. The tiers are joined by association lines between the segments. The effect of restructuring results in the addition and deletion of association lines. Autosegmental analysis is useful because it can be used to analyse and account for both segments and suprasegments as in this study. Many studies including van de Weijer (2006), Bota (2002) and Akanlig-pare and Asante (2016) have proved vowel harmony in Lomongo (a Niger-Congo language spoken in the Democratic Republic of Congo), Bono and Nkami respectively.

4. Methodology

Research sites and elicitation

Three towns were selected in each of the Districts, i.e. Edwumako and Mfantseman. These towns were carefully selected such that the towns do not directly follow each other geographically. This was done in order to get the exact difference/s if any. We believe that three continuous towns may have little differences hence the choice of selection. Kokoben, Babinso, and Onwane were chosen in the Edwumako District while Anomabo, Mankessim and Akobima were selected in the Mfantseman district. Conditions for the selection of informants were 20 years and above and these people must have spent not less than ten years continuous in their communities. This was to ensure that this category of people have minimal linguistic boundary influence. Fifteen people were selected in each town. An English wordlist consisting of 400 words was showed to the participants to mention the Mfantse equivalents. This helped those who could not read. Spontaneous recordings were done on conversations at the market, a church forum, a proverb competition session, two story-telling sessions and some casual conversations. Some elders in the various communities were consulted to confirm the data to avoid biases.

5. Discussion and findings: The Mfantse vowels

The Mfantse vowels are not different from that of Akan. Mfantse has seven vowels in the orthography (phonemic) and 10 in phonetic transcription. These are; a, e, ɛ, i, o, ɔ, u and a, æ, ɪ, e, ɛ, i, ʊ, o, ɔ, u respectively.

5.1 Mfantse Vowel Distribution

Both Abaka (1978, p. 13) and Dolphyne (1988, p. 2) have done extensive studies on Mfantse vowels and their position is that /æ/ is in Mfantse but is always found at word final position. This was confirmed when most of the informants from Mankessim and Akobima pronounced their words in such manner. There was a mixture of pronunciations in Anomabo. Some pronounced /a/ in the word final position as /æ/ and others pronounced it /a/ with /æ/ occurring only at word final position. This is true of Bɔ̀rbɔ̀r but not of Edwumako. What pertains in Edwumako is that instead of the central vowel /æ/, the low vowel /a/ is used. And this is similar to what happens in the rest of the Akan dialects such as Akuapem, Agona, Akyem and Asante. During elicitation in the Edwumako area, we found out that most of them used /a/. Those who pronounced it /æ/ were usually people who had lived along the coast or lived among Bɔ̀rbɔ̀r speakers before or had formal education. Their speeches were interspersed with other Bɔ̀rbɔ̀r sounds as well. The following are examples illustrate it.

	Bɔ̀rbɔ̀r	Edwumako	The rest of Akan	English Gloss
1.	a. [bìsǎɛ]	[bìsà]	[bìsà]	ask
	b. [sùǎɛ]	[sua]	[sua]	to be small
	c. [sìkǎɛ]	[sika]	[sika]	money
	d. [pùsǎɛ]	[pusa]	[pusa]	boiled yam with stew for sale
	e. [kùrǎɛ]	[kura]	[kuta]	to hold
	f. [hùtǎɛ]	[huta]	[huta]	to fan/blow air

It is known in Mfantse that /æ/ cannot be at word initial position but that is the case in Edwumako. Whenever Edwumako places the unadvanced central vowel /æ/ at word initial position, Bɔ̀rbɔ̀r uses the advanced mid vowel /e/. This is what exists in the Twi dialects such as Asante Twi, Akyem and Akuapem Twi, indicating the influence these dialects have had on Edwumako which shares a border with them. Examples in two in the two names of towns in the Edwumako area and other words to illustrate the vowels /e/ and /æ/.

2.	Bɔ̀rbɔ̀r	Edwumako	Rest of Akan	Phonemic
	a. [ɛ̀nyǎ́n]	[ǎ̀nyǎ́n]	[ǎ̀nyǎ́n]	Enyan
	b. [ɛ̀dwúǎ́kú]	[ǎ̀dwúǎ́kú]	[ǎ̀dwúǎ́kú]	Ajumako
	c. [ɛ̀síǎ̀m]	[ǎ̀síǎ̀m]	[ǎ̀síǎ̀m]	Essiam
	d. [ɛ̀kúǎ̀pùǎ̀nó]	[ǎ̀kúǎ̀pùǎ̀nó]	[ǎ̀kúǎ̀pùǎ̀nó]	Ekumpono
	e. [ɛ̀dzìbǎ́n]	[ǎ̀dzìbǎ́n]	[ǎ̀dùǎ̀né]	edziban/adiban/aduane
	f. [ɛ̀gúǎ́]	[ǎ̀gúǎ́]	[ǎ̀dwá]	chair/seat

From the above examples in two it is clear that where Bɔ̀rbɔ̀r starts a word with the advanced mid vowel /e/, Edwumako uses the advanced central vowel. It is worth noting here that this does not apply to every word. There are words that are spelt the same way, beginning with the advanced mid vowel in both Edwumako and Bɔ̀rbɔ̀r. Interestingly, they are the same in the rest in the Twi dialects. Consider the following example,

	Bɔ̀rbɔ̀r/Edwumako	English Gloss	Rest of Akan
3.	a. étú(́r)/ètú	gun	ètúó
	b. ìsìw/èsíw	an anthill	èsíé
	c. ìkú́r/èkú́r	sore	èkúró
	d. ìdzíń/èdíń	name	èdíń
	e. ìbúń/èbúń	valley	èbúńú

5.2 Nasalized Vowels

It is well known in Fante and general Akan phonology that nasalized vowels acquire their nasality from adjacent nasal sounds. The two Mfantse oral vowels that can be nasalized are /ɛ, ɔ/ therefore when /ɛ/ and /ɔ/ are followed by /m/ and /n/ they become nasalized. Dolphyne (1988, p. 4) gave the following examples showing in 4.

4.	/ɛ̃/	/ɔ̃/
a.	fɛ́m	tɔ́n
b.	bɔ́n	kɔ́n

Investigations proved that when the rounded, unrounded unadvanced mid vowels /ɛ̃, ɔ̃/ precede /n/ they are nasalized in both Edwumako and Borbor, on the other hand when they precede /m/ they are not nasalized in Edwumako. The following are examples of /ɛ̃, ɔ̃/ followed by /n/.

5.	Borbor	Edwumako	English Gloss
a.	sɛ́n	sɛ́ŋ	to hang
b.	bɛ́n	bɛ́ŋ	to get closer to smb./sth.
c.	hɛ́n	hyɛ́	to enter
e.	sɔ́n	sɔ́ɔ̃	to strain sth.
f.	dɔ́n	dɔ́ɔ̃	to make wet/soak
g.	tɔ́n	tɔ́ɔ̃	to sell

The examples below in six occur in Edwumako alone, likewise, pertain in other Akan dialects such as Akyem, Asante and Akuapem.

6.	Edwumako	English Gloss
h.	fém	to borrow
i.	òkóm	hunger
j.	dóm	crowd
k.	sóm	to isolate oneself
l.	hyènm̀m̀	shiny/bright

6. Vowel Height in Borbor and Edwumako pronouns

In Mfantse, as well as in all the Akan dialects the vowels /ɔ, ɛ/ are used as pronouns, specifically the third person singular pronoun. They represent the full forms “ɔno” for both animate and inanimate entities. These can be seen in the examples; ɔko, ɔba, odzi, ɔtse, esui, etc. Aside these, Mfantse alone uses a vowel to represent the second person singular pronoun “ɔ/wo”. The difference in the realizations of this vowel in Edwumako and Borbor is rooted in height. Borbor realizes it as the front high vowels /i, ɪ/ and front mid vowels /e, ɛ/ in Edwumako. The examples below in seven show the vowel in the environment of both advanced and unadvanced vowels.

	Borbor	Edwumako	English Gloss
7. a.	[ìbókú]	[èbókú]	You will go
b.	[ìkyìw ná́m]	[ètɛ̀w ná́m]	You fry fish/meat
c.	[ítùkwáń]	[ètùkwáń]	You travel
d.	[ítɛ̀wà]	[ètɛ̀wà]	You cut

A few Bɔ̀rɔ̀r speakers, sometimes interchanged the high front vowel /ɪ/ with the mid front vowel /ɛ/ and the high advanced front vowel /i/ with the mid advanced front vowel /e/ as the case may be. This is not the case in Edwumako, hardly did any one use the vowels /i, ɪ/.

7. Mfantse Consonants

Mfantse has 18 consonants in the orthography and 34 in phonetic transcription. This was confirmed by Dolphyne (1988, p. 29) and Osam (2004, p. 6).

7.1 Differences in word final consonants

Consonants that are found at word final positions in Mfantse as well as in Akan are nasals. The nasals found are bilabial nasal /m/ and the alveolar nasal /n/ and also, the semi vowel /w/ and the trill /r/. Most phonological studies claim that the velar nasal /ŋ/ ends words in Akuapem only. We posit here that Edwumako also ends words with the velar nasal, therefore, where Bɔ̀rɔ̀r ends with the alveolar nasal /n/ Edwumako uses the velar nasal /ŋ/. In the examples in eight below, it is shown that Edwumako uses the velar nasal /ŋ/ to end words just like it occurs in Akuapem while Bɔ̀rɔ̀r uses /n/.

8.	Bɔ̀rɔ̀r	Edwumako	Akuapem	English Gloss
a.	/nàh̃/	/nàh̃ŋ/	/nàh̃ŋ/	to melt
b.	/dàh̃/	/dàh̃ŋ/	/dàh̃ŋ/	to turn
c.	/páh̃/	/páh̃ŋ/	/páh̃ŋ/	to pluck
d.	/òmáh̃/	/òmáh̃ŋ/	/òmáh̃ŋ/	country
e.	/tɛ́h̃/	/tɛ́h̃ŋ/	/tɛ́h̃ŋ/	to be more than/exceed

It is important to note here that the examples in eight are realized in speech or in the spoken language only. A further testing on all the ten vowels proved that this happens with only front vowels that are followed by the alveolar nasal in Edwumako. Tables one and two at the end of the write-up indicate that in Bɔ̀rɔ̀r, it happens even in the environment of both front and back vowels.

9.	Bɔ̀rɔ̀r	Edwumako	Asante/Akyem	English Gloss
a.	/púh̃/	/púh̃ŋ/	/púh̃ŋ/	to inhale
b.	/sɔ́h̃/	/sɔ́h̃ŋ/	/sɔ́h̃ŋ/	to strain
c.	/tɔ́h̃/	/tɔ́h̃ŋ/	/tɔ́h̃ŋ/	to sell
d.	/ɔ́púh̃/	/ɔ́púh̃ŋ/	/ɛ́púh̃ŋ/	table
e.	/bɔ́h̃/	/bɔ́h̃ŋ/	/bɔ́h̃ŋ/	to smell

Further testing led to a different result with back rounded vowels. As exemplified in example nine above, when the final alveolar nasal is preceded by a back vowel in a word, the nasal is replaced by a nasalized /u/ or /ɔ/ which are both high back and rounded vowels. It is either the advanced high back vowel /u/ in the environment of advanced back vowels or the unadvanced back vowel /ɔ/ occurring with unadvanced back vowels. This also pertains in Akyem and Asante as seen. Akuapem however, uses the same velar nasal with rounded vowels.

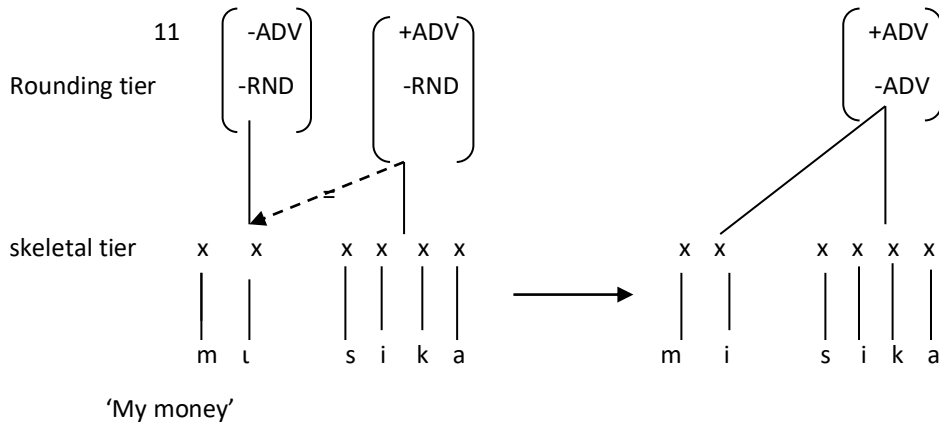
8. Rounding Harmony (Labialised harmony)

The phonemic environment can result in labialized harmony. The vowels are the ones that usually undergo the harmonization process. In this section, we look at pronoun and tense prefixes, since some of the Mfantse pronouns are attached to verbs as one unit. The vowels in the first and third person pronouns depend on the advanced and the unadvanced harmony and then the labialized harmony. This is demonstrated on table three at the end of the paper.

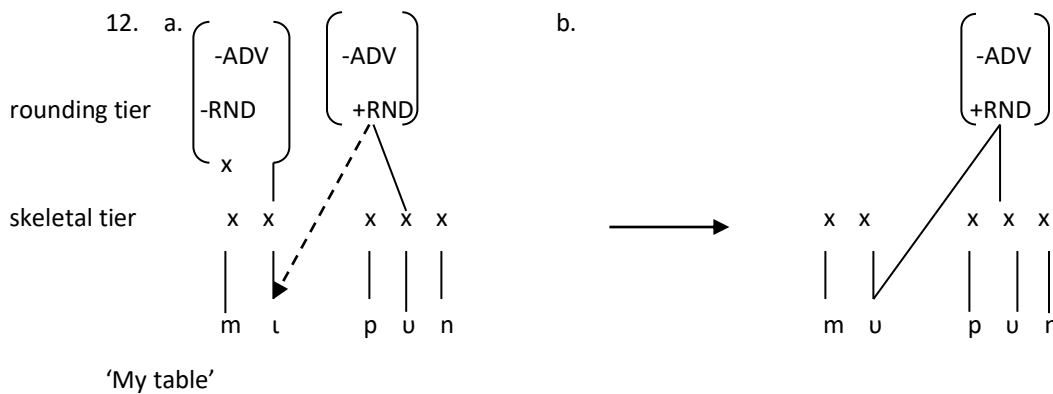
The table on pronoun prefixes is divided into two major parts. The first division on the left contains the types of pronouns that are used as prefixes for verbs. The second part on the right also demonstrates how these two prefixes depend on advanced and unadvanced vowels for modification. As the vowel in any of the verbs occur with the pronouns, they are harmonized with the pronouns. See the examples on possessive sentences below.

10.	Possessive Pronoun.	1 st person		Possessive Pronoun 3 rd person
	a.	mi kyɛw	'my hat'	ni tɛɛw
	b.	mi sika	'my money'	ni sika
	d.	mu pun	'my table'	nu pun
	e.	mu buw	'my hen-coop'	nu buw

Below is the autosegmental analysis of example 10b) above

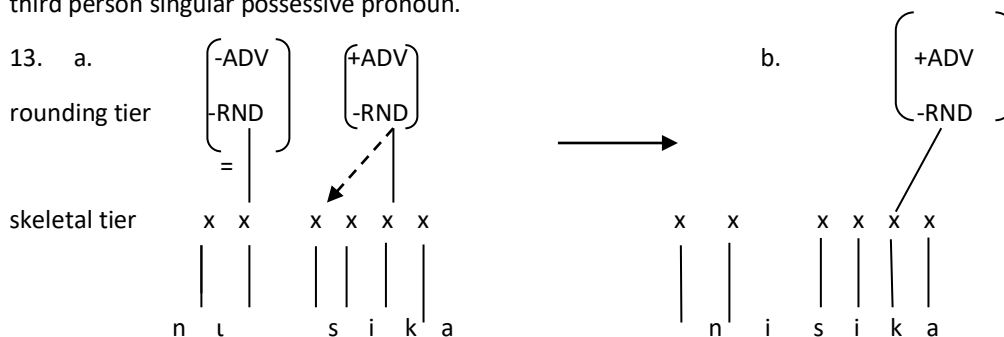


Since the vowel /i/ in sika is an advance vowel, it extends itself into 'me' causing the vowel in it to change into advance vowel /i/.

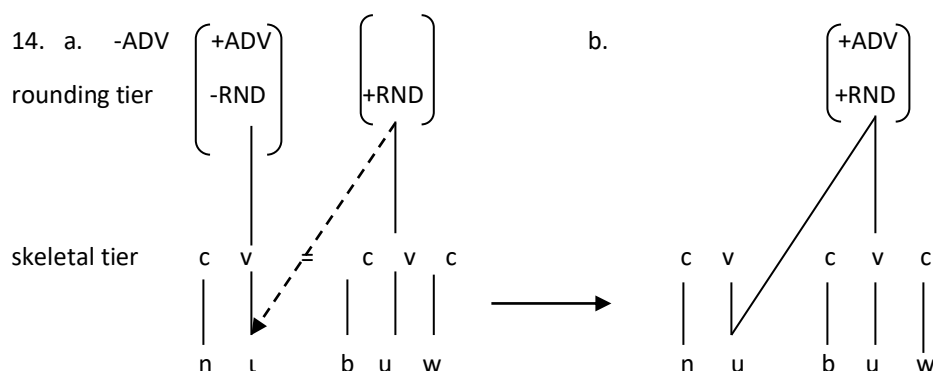


In example 12 above, the vowels in both words of the sentence are advanced. Therefore, the major harmony that occurs is labialization which involves /u/ and labial palatalization with /i/. The result is that /i/ copies /u/ in pun to become /mu/. It is evident that this also occurs in Bɔ̃rɔ̃r Mfantse. Clearly, no changes occur in /mi/ and /ni/ which is the first one, because, this is how these pronouns are presented in the language. They always occur with the advanced and the unadvanced vowel in a word as demonstrated in the table 4.

Table four has two main divisions. The tenses are on the left, and their four different prefixes on the right. The prefixes are categorized into four per the advanced and the unadvanced rule of Bɔ̃rɔ̃r. Example 13 occurs with the tense used for the third person singular possessive pronoun.



The vowel /i/ in sika is an advanced vowel, it assimilates the /e/ in 'ne' causing the into /i/ which is an advanced vowel.



Two different harmony types occur in example 14. The first is the advanced tongue root which changes /ɹ/ to /i/. Then, the labialized /u/ in 'buw' extends itself into /i/ which changes the /u/ as it has been illustrated in the example 14.

9. Labialization harmony in Edwumako

As mentioned earlier, the particular prefix which is placed at the initial of a word in both Bɔ̀bɔ̀r and Edwumako depends on the vowel in the word. This is illustrated on table five.

One major thing that occurs on table five is that, labialized harmony does not occur in 1st person possessive pronoun (me) and 3rd person possessive pronoun (ne) in Edwumako Mfantse. A similar instance occurs in Edwumako in possessive pronouns and also occurs in all the Akan dialects, nonetheless, labialization does not exist in the other Akan dialects. Example 15 shows some of the examples obtained from the Edwumako data.

	Mfantse	English
15. a.	'Mɛsaw mi nsu no a ...'	'When I draw my water ...'
b.	'Mɛ kɔɔpoo no ...'	'My cup ...'
d.	'Ni kun fi edwuma a ...'	'When her husband returns from work ...'
e.	'Nɛ sɔfue ...'	'His/her pastor ...'

(Edwumako 6:17 pm)

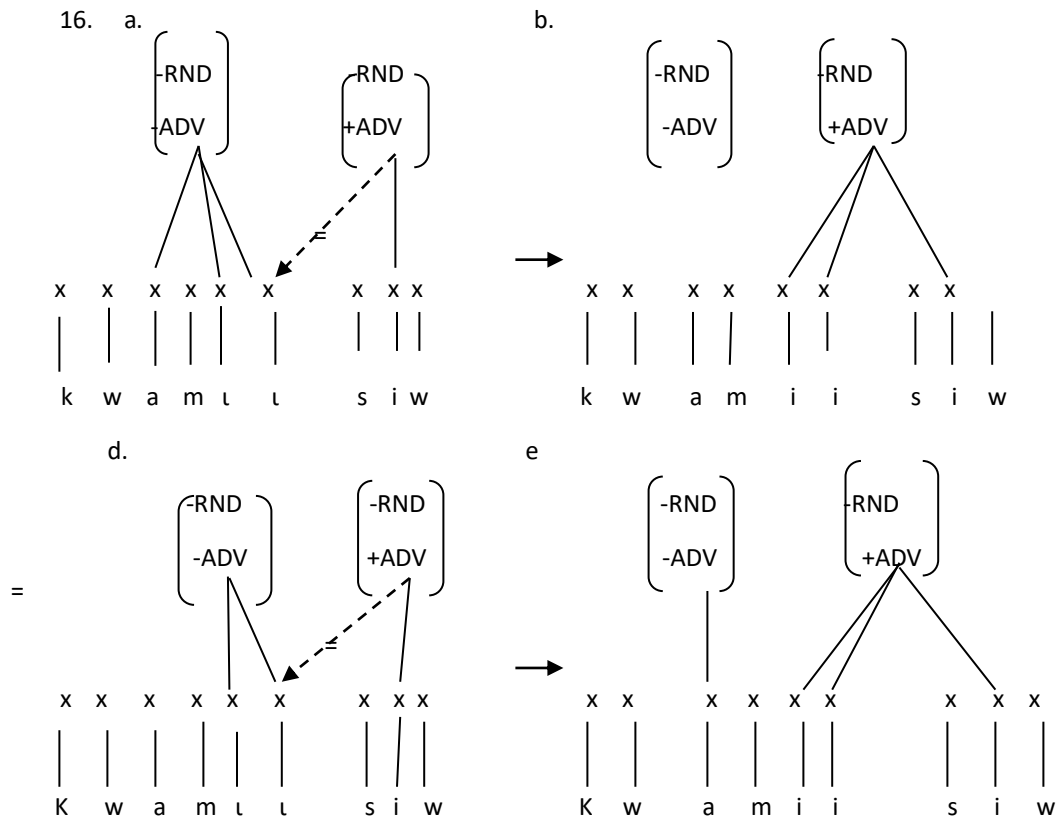
There is a harmony that occurs with the progressive marker *re*. It is evident that the progressive marker 'rɛ' used in all Akan dialects is not used in speech in the Edwumako subdialect. In Edwumako it is derived by lengthening the final vowel in the word which comes before the verb. Below are some of the examples from the data, the examples were part of the spontaneous conversations. They are the same in spoken Asante and Akyem.

15.	Spoken language	Written language	English Gloss
a.	Kwame <u>ee</u> dɔw mfikyir hɔ	Kwame rudɔw	Kwame is weeding
b.	<u>O</u> opue gua do	orupue gua do	He is going out
d.	Y <u>ee</u> dɔw	Yerudɔw	We are weeding
e.	Mi <u>i</u> ididi	Miridzidzi	I am eating
ε.	ɔɔtontɔn jemma	ɔrutontɔn ndzɛmba	He/she is selling things

(Edwumako 6:16 pm)

Table six shows the future egressive prefix 'ko/kɛ occur with vowels based on their rounded or unrounded nature. /ko/ occurs with rounded vowels while /kɛ/ occurs with unrounded vowels. Though the progressive marker 'rɛ' is not used in Edwumako, the lengthened vowel which is added to it agrees with the vowel in the pronoun. As illustrated in example 16 below, when

the word that precedes the verb is even a noun, it copies the advanced vowel. The example below is the Autosegmental representation.



Since the vowel in the verb is advanced, it spreads leftwards or regressively to assimilate the vowel in the noun which changes to an advanced vowel. In autosegmental analysis, association lines do not cross, so this has caused the advanced nature to assimilate the final /i/ before it affects the second /i/. Below are other examples from Edwumako.

17. Speech	Writing	English
a. Adɔwɔ kɔdu	Adɔw rokɔ do	Farming is ongoing
b. Adɔpamɔ brɛ asɔ	Adɔɔpam rɪbrɛ adɔ	Sewing is becoming unpopular
c. Kurowii gu	Kurow rugu	The town is being deserted
		(Edwumako 7:16 pm)

From the examples in 17a to c above, the lengthened vowel that is attached to the pronoun depends on the progressive tense marker 're' to achieve its + or -round status. The roundness or unroundness has nothing to do with the vowels in the verb or pronouns.

10. Summary of Findings

The study has proved that even though Mfantse is one dialect of Akan with the same consonant and vowel inventory there are differences in their places of occurrences. The study has shown that the central unadvanced vowel /æ/ occurs at only word final in Bɔɔbɔɔ but it could be both word initial and word final in Edwumako. Also, the alveolar nasal /n/ is replaced by the velar nasal /ŋ/ in Edwumako. The central unadvanced vowel (ɛ) that is nasalised when it occurs before nasals is not nasalised in Edwumako Edwumako, meanwhile the final alveolar nasal at word final is replaced by a nasalised vowel. There is also variation in vowel such that where Bɔɔbɔɔ uses the advanced mid vowel /i/ at word initial but Edwumako uses the advanced central vowel /e/ instead. In terms of rounding harmony which usually affect. Vowel harmony is not the same in these two dialects. In Bɔɔbɔɔ, the rounding feature spreads from the possessum to the vowel in the first and third possessive pronouns. The autosegmental analysis done proved the direction of the spread and the final restructuring.

11. Conclusion

There has been a longstanding knowledge by Akan scholars that vowel harmony exists in the various dialects of Akan including Mfantse. There has been no evidence to discredit such view because most of the examples used are from written language. Speakers of Mfantse though have always distinguished themselves based on their auditory perceptions. In view of this, there was the need to delve into the spoken Mfantse dialects to see what Mfantse speakers base their differences on. The spontaneous speeches data used for this study have helped to uncover differences in the Mfantse harmony. There were instances where both Edwumako and Bɔ̀ɔ̀bɔ̀r, the standard variety displayed the same harmony types. There were also instances where only Bɔ̀ɔ̀bɔ̀r displayed such tendencies while some instances showed only Edwumako having a certain harmony type. One thing that stands out is that, Edwumako rather shares some harmony types with the Twi dialects, Asante and Akuapem. The harmony that occurred in both are usually accompanied by phonological processes such as labialization and palatalization. This study has proved that vowel harmony does not cut across in Mfantse but peculiar, based on the dialect and its spatial relationship with the Twi dialects. We recommend that subsequent studies look at other Mfantse other subdialects to establish the harmony differences realised by speech and not the written language which is the standard for all.

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Tables

Table one. The final consonant /n/ in Bɔ̀ɔ̀bɔ̀

Mfantse vowels	a	e	ɛ	ɛ	i	o	ɔ	u
final consonants	páń	péń	síń	péń	píń	póń	póń	púń
English gloss	pluck	sound of breaking	pass by	pen	push over	redeem	close	inhale

Table two. Final consonant /n/ in Edwumako

Mfantse vowels	a	e	ɛ	ɛ	i	o	ɔ	u
final consonants	paŋ	peŋ	suŋ	tipeŋ	piŋ	-	-	-
English gloss	pluck	sound of breaking	pass by	agemate	push over			

Table three: Pronoun prefixes

Pronoun	Prefix			
	[-ADV]	[+ADV]	[-ADV]	[+ADV]
	[-RND]	[-RND]	[+RND]	[+RND]
a) 1 st Person Possessive Pronoun	mɛ	mi	mu	mu
b) 3 rd Person Possessive pronoun	nɛ	ni	nu	nu

four. RH in tense prefixes in Bɔ̀ɔ̀bɔ̀

	Prefix			
tenses	-RND -RND	+ ADV - RND	-ADV +RND	+ADV +RND
1. progressive	rɛ	ri	ru	ru
2. egressive	kɛ	ke	kɔ	ko
3. ingressive	bɛ	be	bɔ	bo
	bɛ	be	bɔ	bo

Table five. Harmony in Edwumako Pronouns

Pronouns	Prefix			
	-ADV -RND	+ADV -RND	-ADV +RND	+ADV +ADV
1 st person possessive pronoun	mɛ	mi	-	-
3 rd Person Possessive Pronoun	nɛ	ni	-	-

Table six. RH in tense prefixes in Edwumako

	<u>Prefixes</u>			
	-ADV -RND	+ADV -RND	-ADV +RND	+ADV +ADV
1. Progressive	-	-	-	-
2. future	bε	be	bɔ	bo
3. egressive future	-	-	kɔ	ko
4. ingressive future	bε	be	bɔ	bo