

Atr+ Ruound and Low Vowel Harmony in Àbèsàbèsì¹: A Case Study of ÒṢùgù.

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1.0 Introduction

This paper presents an account of ÒṢùgù Low Vowel Harmony using Optimality Theory (the theory will be referred to as OT) proposed by Prince and Smolensky, (1993/2004). This paper shows the capability of OT to account for Vowel Harmony variations as found in Àbèsàbèsì lects. Before the theoretical account of the vowel harmony under investigation, we will present a systematic description of a phonological overview of Àbèsàbèsì. Furthermore, we attempt a descriptive presentation of data on ÒṢùgù Low Vowel Harmony.

1.1. Phonology Overview

The language has 22 consonant, 7 oral vowels, 5 nasalized vowels, and three level tone phonemes. They are:

1.1.i consonants

Plosives	b	p	d	T	g	k	kp	gb
	ba 'come'	ipòmìpòmì 'thigh'	du 'fetch'	to 'hot'	go 'swear'	ko sing	kpag 'support'	gbo 'bark'
Nasals	m	n	ɲ	ŋ				
	mĩ 'do'	onũ 'mouth'	oɲɔ 'wife'	ɲɔ 'wife'				
Fricatives	f	s	ʃ	H				
	afa 'leaf'	sà 'know'	ʃo 'weep'	ehu 'rat'				
Affricates	dʒ	ɟ						
	dʒe 'eat'	ɟfi 'market'						
Roll	r							
	rèsè 'identify'							
Lateral	l							
	lògìnò spoil							
Approximants	j	w						
	jo 'dance'	wol(i) 'kill'						

¹ The name Àbèsàbèsì is from the root morpheme Àbèsì 'we' a term commonly used among speakers of the language known in the literature as Akpes. Àbèsàbèsì is used to refer to speakers of the languages (lects) usually referred to as Akpes (an 'Edoid') a Niger Congo language. The language is spoken in nine communities. In Agoyi 2008 I group the language to four lects Akpes spoken in Àkùnnù and Ìlúdùn Ajowá, Èkiròmì spoken in Èkiròmì (Ìkàràrà and Àsè), Ìluèni spoken in Ìbàràrà, Ìyànì and Gèdègèdè, and ÒṢùgù spoken in È Ṣùkù and Dája also in Àj owá. The grouping is based on the type of vowel harmony observed in the data collected. But for Akunnu that is in Akoko North East all Àbèsàbèsì language communities are in Akoko North West Local Government Area of Ondo State Nigeria.

ii. Vowels:

a. Oral vowels

i	u
e	o
ε	ɔ
a	

The vowels occur in words as

i,	e,	ε,	a,	ɔ,	o,	u
ifo 'house'	èlì 'home'	ègè 'door'	ga 'big'	onĩ 'person'	onũ 'mouth'	ehu 'rat'

b.. Nasalized Vowels

î	ũ
ẽ	õ
ã	

They occur in words thus:

î	ẽ	ã	õ	ũ
ek î 'one'	idẽ 'those'	èkã 'problem'	kõ 'fight'	ɔũ 'hill'

iii. Tone

(H)igh áye 'mother' (L)ow làg(i) lò 'spread in the sun' (M)id jo 'dance'
I will show H and L tones. Unmarked syllables have mid tone.

iv. Syllable structure ² :	The features V CV
V CV	V CV
o –yo	i- lɔi (ilɔyi)
pre dance	pre grind
'dance (N)'	'beans cake'

1.2, Vowel Harmony

Vowel harmony is a common phonological phenomenon in many African and European languages. Languages that attest it impose certain phonological constraints that allow member–vowels of a particular group to co-occur in a well defined environment to the exclusion of member-vowels of other groups (Awóbùlúyì 1967, Bamgbose 1967, Hoffman 1973, Clements, 1980, 1981, 2000; Oyebade 1998; Elugbe, 1989; Alho, Irja 1987; Kenstowicz, 1994 etc).

Agoyi (2008:154-159) discusses the manifestation of low- vowel harmony in Akpes . Data collected reveal that there is interaction between ATR, low-vowel and rounding harmonies in Àbèsàbèsì .

Agoyi (2009) discusses the manifestation of [ATR] harmony in Akpes one of the Àbèsàbèsì lects . This paper discussed the manifestation of Low-vowel harmony observed in Ọ̀sùgù another Àbèsàbèsì lect.

² Data collected from some native speakers of Àbèsàbèsì attest CVC syllable structure (e.g., Àkpès, Èkiròm, Ìbaràm). We believe the last syllable is an onset for a deleted word final vowel in the language. Agoyi, T. O (in preparation) invested this phenomenon in Èkiròmì an Àbèsàbèsì lect.

2.i Ìluẹ̀nì

ATR HARMONY

[+ATR]		[-ATR]	
i	u	ε	ɔ
e	o	i, e, o, u →	e a ε, ɔ, a → a
	Olu ke ku	Olú ke	ʃí Olú ka hɔ
	Olu Asp fall	Olú ASP have	Olú ASP cultivate
	Olú ke ko	Olú ke ye	
	Olú ASP sing	Olú ASP see	

ii. Akpes

[+ROUND]	[+ATR]	[-ATR]
o	u → o	i, e → e ε, ɔ, a → a
	Olu ko ku	Olú ke
	Olu Asp fall	ʃí Olú ka hɔ
	Olú ko ko	Olú ASP have
	Olú ASP sing	Olú ASP cultivate
		Olú ke ye
		Olú ASP see

iii. Èkiròmì

u → o	i, e, o → e	ε, ɔ, a → a
Olu ko ku	Olú ke	ʃí Olú ka hɔ
Olu Asp fall	Olú ASP have	Olú ASP cultivate
Olú ko ko	Olú ke ye	
Olú ASP sing	Olú ASP see	

iv. Ọ̀ṣùgù

[+LOW]	[-LOW]
Full	
i, e, ε, ɔ, o, u → ɔ	a → a
[+ATR] driven	[-ATR] driven
i, e, o, u → ɔ	ε, ɔ, a → a

(Agoyi T. O. 2008)

2.0. Low Vowel Harmony

Pulleyblank (1986:1) says that “low vowel is particularly malleable. That is, it is particularly subject to environmental influences” To him “only vowels that are phonologically low manifest variation with respect to their specification for [low].” Pulleyblank claims that “malleability is straight forwardly accounted for if the feature in question is not specified at the point in the derivation where the processes creating contextual variants apply”. The above assertion implies that “variation in underlying low vowel suggests that the value [+low] is not present at the stage in the phonological derivation where rules such as ATR harmony take place”. If a vowel is [+high] it is underlyingly specified as [-low]. Thus, [+high] → [-Low]. Kaye et al (1985) in his Government Phonology proposes that at the phonetic level no phonetically low-vowel cannot be [+ATR], that is [+ATR] ≠ [+Low]. This implies that it is possible for a +low-vowel at the underlying level to be realized as [+ATR] at phonetic level the variable in this context is the environment in which it occurs. Pulleyblank (1986:1)’s Underspecification theory and Kaye et al (1985)’s Government Phonological view can be subsumed in Optimality theory thus:

3. *[ATR]/low
 [+ART] vowels are not allowed to have [+low] specification

Furthermore, [+round] vowels cannot be [+low]; that is [+round] *[-Low]. The constraint is presumed to

be

4. [+round]/[low]:

[+round] vowels cannot be specified for the value [+low]

Pulleyblank (1986) argues for the above type of low harmony in Okpe as in 8.

5. /a/ á !swá 'we (inclusive) are singing'
 /e/ é !swé 'we (inclusive) are doing' /a/
 à dárí 'we inclusive) drank'
 /e/ è tírí 'we (inclusive) pulled'
 (Pulleyblank 1986:120).

Though the type of Low Vowel harmony Oşùgù attests differs considerably from the one found in Okpe, the underspecification principle proposed by Pulleyblank can be subsumed within the optimality theory of constraint ranking.

2.1. Low Vowel Harmony in Oşùgù

Oşùgù the fourth lect of Àbèsàbèsì language manifests a type of vowel harmony that shows a distinction between non-low vowels and the low vowel. The manifestation of low – vowel harmony in Àbèsàbèsì discussed in Agoyi (2008) shows that ‘ɔ’ that has [-ATR, -low, +round, +back] specifications, co-occurs with i, e, o, u, ε ɔ that have [-low] feature in common. The behaviour of ‘ɔ’, and ‘a’ in grammatical domain convinces us that Oşùgù manifests [ATR + round] harmony in addition to low vowel harmony.

The Oşùgù low vowel harmony is attested in morphological domain : inter-morphemic and syntactic domain: phrasal domains as well as tense and aspect. The environment in which the phenomenon occurs in the inter-morphemic phrasal domains slightly varies from the one attested in the infill elements in the language. Data 1 below shows a picture of the manifestation of this phenomenon at the inter-morphemic and phrase structure.

6.

a). Inter morphemic: Morphological domain.

[-low]	Verb	Gloss	Eşùkù	Daja
	ye	see	i-ye - ɔní → iyɔɔní	i-ye - ɔní → iyɔɔní
	wo	carry	i-wo - ɔní → iwɔɔní	i-wo - ɔní → iwɔɔní
	ʃí	have	i-ʃí - ɔní → iʃɔɔní	i-ʃí - ɔní → iʃɔɔní
	ku	fall	i-ku - ɔní → ikɔɔní	i-ku - ɔní → ikɔɔní
	bɛlɛ	beg	i- bɛlɛ - ɔní → i bɛlɔɔní	i-bɛlɛ-ɔní → ibɛlɔɔní
	ɲɔ	drink	i-ɲɔ-ɔní → iɲɔɔní	i-ɲɔ - ɔní → iɲɔɔní
[-low]	sà	know	i- sà - aní → isàaní	i- sà - aní → isɔɔní

In 6a ɔní ~aaní.

6b. Phrasal Domain

(i) Noun Phrase

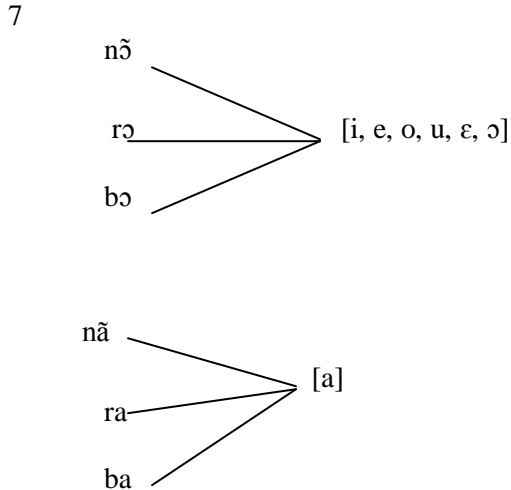
[-low]	Èṣùkù	Dája	Gloss
	imí nɔ	imí nǎ	my pregnancy
	imí rɔ	imí rɔ	your pregnancy
	imí bɔ	imí bɔ	their pregnancy
	elé nɔ	elé nǎ	my home (+distance)
	elé rɔ	elé rɔ	your home (+distance)
	elé bɔ	elé bɔ	their home (+distance)
	oyó nɔ	oyó nǎ	my dance
	oyó rɔ	oyó rɔ	your dance
	oyó bɔ	oyó bɔ	their dance
	ebó nɔ	ebó nǎ	my dog
	ebó rɔ	ebó rɔ	your dog
	ebó bɔ	ebó bɔ	their dog
	òdùgù nɔ	òdùgù nǎ	my leg
	òdùgù rɔ	òdùgù rɔ	your leg
	òdùgù bɔ	òdùgù ɔ	their leg
	ɔhɔ nɔ	ɔhɔ nǎ	my neck
	ɔhɔ rɔ	ɔhɔ rɔ	your neck
ɔhɔ bɔ	ɔhɔ bɔ	their neck	
ɛ̀fɛ̀ nɔ	ɛ̀fɛ̀ nǎ	my suffering	
ɛ̀fɛ̀ rɔ	ɛ̀fɛ̀ rɔ	your suffering	
ɛ̀fɛ̀ bɔ	ɛ̀fɛ̀ bɔ	their suffering	
[+low]	ená nǎ	ená nǎ	my cow
	ená ra	ená ra	your cow
	ená ba	ená ba	their cow

(ii). Verb Phrase

[-low]	mí nǎ	mí nɔ	do me / inflict on me
	mí rɔ	mí rɔ	do you /inflict on you
	mí bɔ	mí bɔ	do them /inflict on them
	yé nǎ	yé nɔ	see me
	yé rɔ	yé rɔ	see you
	yé bɔ	yé bɔ	see them
	wó nǎ	wó nɔ	resemble me
	wó rɔ	wó rɔ	resemble you
	wó bɔ	wó bɔ	resemble them
	yù nǎ	yù nɔ	bury me
	yù rɔ	yù rɔ	bury you
	yù bɔ	yù bɔ	bury them
	sɛ̀mɛ̀ nǎ	sɛ̀mɛ̀ nɔ	greet me
	sɛ̀mɛ̀ rɔ	sɛ̀mɛ̀ rɔ	greet you
	sɛ̀mɛ̀ bɔ	sɛ̀mɛ̀ bɔ	greet them
	lɔ nɔ	lɔ nɔ	throw me
	lɔ rɔ	lɔ rɔ	throw you
	lɔ bɔ	lɔ bɔ	throw them
[+low]	sà nǎ	sà nǎ	know me
	sà ra	sà ra	know you
	sà ba	sà ba	know them

Again in 6b, nĩ ~ nã, rɔ ~ra, bɔ~ba

From the examples in (9 a(i), b(i) c(i) we observe that ‘i,e,o,u,ε’ have [-low] specification in common. The vowel of the suffix morpheme and the pronoun qualifier/object is ‘ɔ’ that is also a [-low] vowel. ‘a’ chooses ‘a’ with [+low] specification chooses ‘a’ that is also al low vowel. The domain of Ọ̀şùgù vowel occurrence at morphological and phrasal levels is encapsulated as:



The questions we face here are why the variation? Which of the two variants is the underlying form? One may argue that the above phenomenon is by feature assimilation. Let us assume that the [+low, +back] vowel is the basic form. The vowel assimilates the [-low] feature from the vowels of the verb. The above explanation is questionable. Why did the possessive maker that has [-low] choose a [-low +back +round] vowel ‘ɔ’. As an Edoid language (Agoyi 2001, 2008 Elugbe 1999), we expect the vowel of the variant to have [-low, -back, -round] features similar to Okpe low vowel harmony (cf. Pulleyblank (1986). But our data is at variant with the above supposition. This implies that there are some other features that are responsible for the phenomenon under investigation. I suspect that the three types of vowel Harmony Àbèsàbèsì attests will account for the above Ọ̀şùgù data. The picture becomes clearer with data from other syntactic environment especially with the grammatical items. Ọ̀şùgù grammatical elements parti cularly tense and aspect is the focus of the next section.

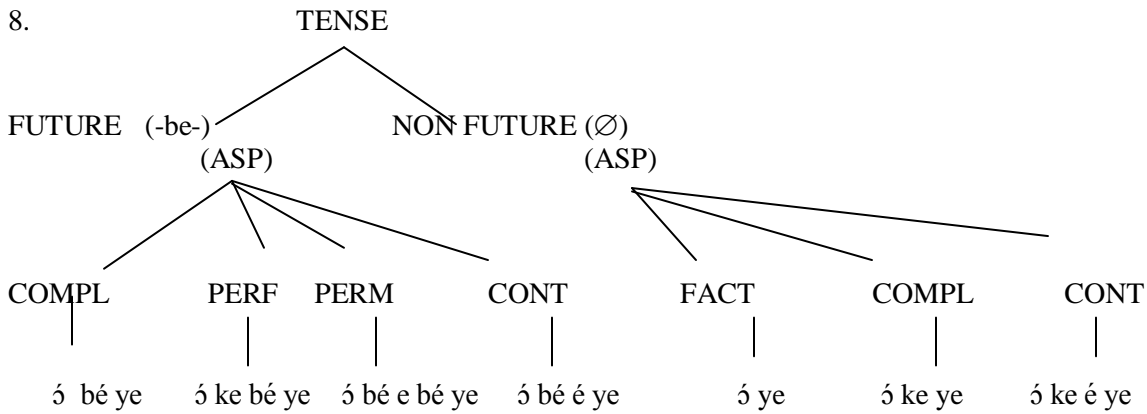
We observe that the choice of the vowel of the grammatical items in Ọ̀şùgù is low vowel harmony controlled . The choice of ‘ɔ’ for the grammatical items by the root vowel is limited to the vowels with [+ATR] specification. The vowels are i, e, o, u.

Before presenting utterances that manifest low vowel harmony in Ọ̀şùgù preverbal elements, for better understanding, I will examine a typical Àbèsàbèsì tense and aspect.

2.2 Tense and Aspect in Àbèsàbèsì

Agoyi (2008) argues that pre-verbs in Àbèsàbèsì attest v owel harmony. The above assertion is evident in Àbèsàbèsì preverbal elements that mark tense and aspect in the language . Àbèsàbèsì marks two tenses . The tenses are future and non future. The two indicate completive, continuous, and permissive as well as perfective aspect. The phenomenon is captured in a tree diagram as follows:

8.



He will see he must have seen he may/might see he will be seeing he sees he has seen he is seeing
 The vowel of the aspect marker in the language is harmony driven (cf. .Agoyi 2010)
 The type of vowel harmony Ọ̀şùgù (one of Àbèsàbèsì lets) attests is the focus of this paper’

3. Tense and Aspects in Ọ̀şùgù

Data from Ọ̀şùgù reveal interesting features about vowel interaction in sentences that indicate tense and aspect. Illuminating examples as portrayed in the syntactic tree diagram in 8 above are shown in 9 below.

9. (A) Future
 (I) Completive

[+ATR]	Èşùkù	Dája	Gloss
i, e, o, u → ɔ (bɔ)	ó b́ mǐ n̄	ó b́ mǐ n̄	‘s/he will do (inflict on) me’
	ó b́ ʃǐ n̄	ó b́ ʃǐ n̄	s/he will have me
	ó b́ yé n̄	ó b́ yé n̄	‘s/he will see me’
	é b́ ɖ́ é n̄	é b́ ɖ́ é n̄	‘it will pain me’
	ó b́ kó n̄	ó b́ kó n̄	‘s/he will ‘sing (grumble about) me’
	ó b́ ʃo n̄	ó b́ ʃo n̄	‘s/he will weep for me’
	ó b́ hu n̄	ó b́ hu n̄	‘he will die for me’
	ó b́ du n̄	ó b́ du n̄	‘s/he will fetch for me’
[-ATR] ε, ɔ, a → a (ba)	é b́ kedi n̄	é b́ kedi n̄	‘it will hatch for me’
	ó b́ semé n̄	ó b́ semé n̄	‘s/he will greet me’
	ó b́ ɲɔ	ó b́ ɲɔ	‘s/he will drink’
	ó b́ t́ é	ó b́ t́ é	‘s/he will born it’
	ó b́ sà	ó b́ sà	‘s/he will know’
	ó b́ yayi	ó b́ yayi	‘s/he will sell’

(ii) Perfective

[+ATR]	Èşùkù	Èşùkù	Gloss
i, e, o, u → ɔ (bɔ)	ó kɔ b́ mi n̄	ó kɔ b́ mi n̄	‘s/he will have done (inflected) me’
	ó kɔ b́ ʃǐ n̄	ó kɔ b́ ʃǐ n̄	‘s/he will have had me’
	ó kɔ b́ yé n̄	ó kɔ b́ yé n̄	‘s/he will have seen me’
	ó kɔ b́ kó n̄	ó kɔ b́ kó n̄	‘s/he will ‘sing (grumble about) me’
	ó kɔ b́ hu n̄	ó kɔ b́ hu n̄	‘s/he will have died for me’
[-ATR] ε, ɔ, a → a (ka bá)	ó ka b́ semé n̄	ó ka b́ semé n̄	‘s/he will have greeted me’
	ó ka b́ t́ ó n̄	ó ka b́ t́ ó n̄	‘s/he will have burnt me’
	ó ka b́ sà n̄	ó ka b́ sà n̄	‘s/he will have known me’

(iii) Permissive

[+ATR] i, e, o, u → ɔ (bó ɔ́ bó)	ó bó ɔ́ bó mi nǎ	ó bó ɔ́ bó mi nǎ	's/he may/might do (inflict on) me'
	ó bó ɔ́ bó ʃí nǎ	ó b bó ɔ́ bó ʃí nǎ	's/he may/might have me'
	ó bó ɔ́ bó ye nǎ	ó bó ɔ́ bó ye nǎ	's/he may/might see me'
	ó bó ɔ́ bó ɖe nǎ	ó bó ɔ́ bó ɖe nǎ	's/he may/might ea met'
	ó bó ɔ́ bó ko nǎ	ó bó ɔ́ bó ko nǎ	's/he may/might sing'
	ó bó ɔ́ bó ʃo nǎ	ó bó ɔ́ bó ʃo nǎ	's/he may/might weep for me'
	ó bó ɔ́ bó hu nǎ	ó bó ɔ́ bó hu nǎ	's/he may/might died for me'
ó bó ɔ́ bó du nǎ	ó bó ɔ́ bó du nǎ	's/he may/might fetch for me'	
[-ATR] ε, ɔ, a → a (bá á bá)	é bá á bá kedi nǎ	é bá á bá kedi nǎ	it may/might hatch for me'
	ó bá á bá sɛmɛ nǎ	ó bá á bá sɛmɛ nǎ	's/he may/might greet me'
	ó bá á bá ɲǎ	ó bá á bá ɲǎ	's/he may/might drink'
	ó bá á bá tǎ nǎ	ó bá á bá tǎ nǎ	's/he may/might burn me'
	ó bá á bá sà nǎ	ó ba á bá sà nǎ	's/he may/might know me'
	ó ba á bá yayi	ó ba á bá yayi	's/he may/ might sold'

(iv) Continuous

	Èṣùkù	Dája	Gloss
[+ATR] i, e, o, u → ɔ (bó ɔ́)	ó bó ɔ́ mí nǎ	ó bó ɔ́ mí nǎ	's/he will be doing (inflict on) me'
	ó bó ɔ́ ʃí nǎ	ó bó ɔ́ ʃí nǎ	's/he will be having me'
	ó bó ɔ́ yé nǎ	ó bó ɔ́ yé nǎ	's/he will be seeing me'
	é bó ɔ́ ɖé nǎ	é bó ɔ́ ɖé nǎ	'it will be paining me'
	ó bó ɔ́ kó nǎ	ó bó ɔ́ kó nǎ	's/he will be singing (grumble about) me
	ó bó ɔ́ ʃo nǎ	ó bó ɔ́ ʃo nǎ	's/he will be weeping for me
	ó bó ɔ́ hu n ǎ	ó bó ɔ́ hu n ǎ	he will be dying for me
ó bó ɔ́ du n ǎ	ó bó ɔ́ du n ǎ	's/he will be fetching for me	
[-ATR] ε, ɔ, a → a (bá á)	é bá á kedi n ǎ	é bá á kedi n ǎ	it will be hatching for me
	ó bá á sɛmɛ n ǎ	ó bá á sɛmɛ n ǎ	s/he will be greeting me
	ó bá á ɲǎ	ó bá á ɲǎ	's/he will be drinking'
	ó bá á tǎ é	ó bá á tǎ é	's/he will be burning it'
	ó bá á sà nǎ	ó bá á sà nǎ	's/he will be knowing me'

9(b) None Future

(i) Factive

[-LOW] i, e, o, u → ɔ	ó mí n ñ	ó mí n ñ	's/he does/did (inflict on) me'
	ó ʃí n ñ	ó ʃí n ñ	s/he has/had me
	ó yé n ñ	ó yé n ñ	's/hel sees/saw me'
	é dʒé n ñ	é dʒé n ñ	'it pains/pained me'
	ó kó n ñ	ó kó n ñ	's/he sings/sang (grumble about) me'
	ó ʃo n ñ	ó ʃo n ñ	's/he weeps wept for me'
	ó hu n ñ	ó hu n ñ	'he dies/died for me'
	ó du n ñ	ó du n ñ	's/he fetches/fetched for me'
	é kɛ̀dì n̄	é kɛ̀dì n̄	'it hatches/hatched for me'
	ó sɛ̀mɛ̀ n̄	ó sɛ̀mɛ̀ n̄	's/he greets/greeted me'
	ó ɲɔ	ó ɲɔ	's/he drinks drank'
	ó tó é	ó tó é	's/he burns/burnt it'
	ó sà	ó sà nã	's/he knows/knew me'

(ii) Completive

	Èşùkù	Dája	Gloss
[+ATR] i, e, o, u → ɔ (bɔ)	ó kɔ mi n̄	ó kɔ mi n̄	's/he has done (inflected on) me'
	ó kɔ ʃí n̄	ó kɔ ʃí n̄	's/he has had me'
	ó kɔ yé n̄	ó kɔ yé n̄	's/he has seen me'
	ó kɔ kó n̄	ó kɔ n̄	's/he has sang (grumble about) me'
	ó kɔ du n̄	ó kɔ du n̄	's/he has fetched for me'
[-ATR] ɛ, ɔ, a → a	ó ka t ó n̄	ó ka t ó n̄	's/he has burnt me'
	é ka kɛ̀dì n̄	é ka kɛ̀dì n̄	it has hatched for me'
	ó ka sà nã	ó ka sà nã	's/he has known me'

(iii) Continuous

[+ATR] i, e, o, u → ɔ (kɔ ó)	ó mí n̄	ó kɔ ó mí n̄	's/he is doing (inflict on) me'
	ó kɔ ó ʃí n̄	ó kɔ ó ʃí n̄	's/he is having me'
	ó kɔ ó yé n̄	ó kɔ ó yé n̄	's/he is seeing me'
	é kɔ ó dʒé n̄	é kɔ ó dʒé n̄	'it is paining me'
	ó kɔ ó kó n̄	ó kɔ ó kó n̄	's/he is singing (grumble about) me
	ó kɔ ó du n̄	ó kɔ ó du n̄	's/he is fetching for me
[-ATR] ɛ, ɔ, a → a (ka á)	ó ka á sɛ̀mɛ̀ n̄	ó ka á sɛ̀mɛ̀ n̄	s/he is greeting me
	ó ka á tó é	ó ka á tó é	's/he is burning it'
	ka á sà nã	ka á sà nã	's/he is knowing me'

Examples in 9 (cf. 9a:i, ii, ii iv and 9b: ii and ii) show that vowel 'i' 'e' 'o' 'u' occur with 'ɔ'; also vowels 'ɛ,' ɔ', 'a' choose 'a'. Vowel 'i', 'e' 'o' and 'u' have [+ATR, -LOW] features in common. 'ɔ' has [-ATR, -LOW, +BACK, +ROUD]. The only feature that is common to 'ɔ', 'i', 'e', 'o', and 'u' is [-LOW]. What is the driving force of this phenomenon? If the answer to the above question is [LOW] harmony, why are other [-LOW] vowels exempted? Furthermore why did other [-LOW] vowels 'ɛ,' ɔ' fail to choose 'ɔ'? Above questions can be answered with reference to the behaviour of vowels in other Àbèsàbèsì lets. Agoyi 2008, (2008) shows that Akpes another Àbèsàbèsì lets manifests full [ATR, +ROUND], while Èkiròmì attests partial [ATR +Round] harmony Ìluèñì attests {ATR} and vestige [LOW] harmony.

The implication is that All Àbèsàbèsì lets have the potentials for the three types of harm ony. The data under investigation in Òṣùgù is a manifestation of gradual lost of the [ATR, +ROUND] vowel harmony phenomenon in Àbèsàbèsì. The low vowel harmony constraint in Òṣùgù disallows [+ATR] specification from spreading.

Therefore the underling [+ATR+ROUD] low vowel harmony driven in Òṣùgù drops the [+ATR] feature a step down to choose a [-ATR+ ROUD] vowel ɔ, as an alternant at the phonetic level. The constraints are:

10. *[+ATR]/Right and *[+ATR]/left

Summary

11a) i [+ATR +ROUND] (Reduced) i, e, o, u → ɔ

ii. [-ATR-ROUND] ε, ɔ, a → a

b) LOW-VOWEL HARMONY [-LOW] i, e, o, e, ε ɔ → ɔ
 [+LOW] a → a³

4.0 Optimality Account of Àbèsàbèsì Vowel Harmony.

The range of variation observed in the attested Vowel Harmony system (especially in À bèsàbèsì) is best conceptualized as an ‘optimization problem’ (Prince and Smolensky 1993; Mc Carthy and Prince 1993a) in which the observed effects are driven by a small set of general principles, some of which are potentially in conflict with one another. The context of these principles will be shown to be constant across ‘member languages’. Cross – Linguistic variation is characterized in terms of relevant weight or importance each of these principles has in determining the overall system. The properties which involve constraints are based on perceptual and articulatory properties. The central element of the theory advanced here is the claim that Vowel Harmony is perceptually motivated. We identify twelve perceptually motivated constraints. The constraints are:

12. IDENT-IO [HIGH] ‘if an input segment is [α high] then the output correspondent is [α HIGH]’ (Kager 2001:395).
13. IDENT-IO [BACK] ‘Let α be a segment in the input, and β be a correspondent of α in the output. If α is [π back], then β is [π back]’ (Kager 2001:260).
14. IDENT-IO [ROUND] ‘An output segment has the same value for round as its input correspondent’ (Kager 2001:409)
15. ALIGN: (F, R, morphological word, R): “For any parsed feature F in morphological category MCat (= root, word), the right edge of F is associated to the rightmost syllable of MCat .” (Krämer 1998:3)
16. ALIGN: (F, L, morphological word, L) For any parsed feature F in morphological category MCat(=root, word) the left edge of F is associated to the leftmost syllable of MCat.” (F in 130-1132 = ATR)
17. ALIGN [-low]R: ‘the value for -low in the lexical item should spread to the right edge of the grammatical word.
18. ALIGN [RO]L: The value for round in the lexical item should spread to the right edge of the grammatical word.
19. ALIGN [RO]L if Hi: The value for round in the lexical item with high vowel should spread to the left edge of the grammatical word.
20. *Rt/Hi “a local conjunction of constraints (cf. Smolensky (1993, 1995) which stipulates that a high vowel must not be produced with a Retracted Tongue Root”.
21. *A/Lo “a local conjunction of constraints which stipulates that a low vowel must not be produced with Advanced Tongue Root”.
22. *[A]R “local conjunction of constraints which stipulates that [ATR] specification should not spread to the right.”
23. *[A]L “local conjunction of constraints which stipulates that [ATR] specification should not spread to the left.” Each language sub-group arranges/ranks the constraints in order of preference thus: Òṣùgù ranking order is as seen in 24.
24. *Rt/Hi> *A/Lo>*[A]R> *[A]L> ALIGN [-lo]R > IDENT-IO [hi] > IDENT-IO[bk] > IDENT-IO [ro] > ALIGN[ro]L >ALIGN [ro]L if Hi>ALIGN-A-R > ALIGN- A- L.

³ Akpes also attests low vowel harmony at morphological and phrasal domains similar to Òṣùgù full low vowel harmony as evident in the data collected (cf. Agoyi 2008).

The computation for optimal candidate in Oşùgù is shown in a tableaux⁴ I-VII:

ÒŞÙGÙ

Tableau I

+A /ó ka á mǐ nǎ/ Hi	*Rt/ Lo	*A/ Lo	*[A] R	*[A]]L	ALIGN N [- Lo]R	IDENT -IO[H i]	IDENT -IO[bk]	IDEN T- IO[ro]	ALIG N[ro] L	ALIGN[r o]Lif Hi	ALIG N-A- R	ALI GN- A- L
ó ka á mǐ nǎ					*!							
ó ke é mǐ nē			*!									
ó ki í mǐ nī			*!									
ó ko ó mǐ nō			*!									
☞ ó kó ó mǐ nǎ			*	*				*			*	
ó ke é mǐ nē			*	*			*!***					
ó ku ú mǐ nu			*!									

/ó kó ó mǐ nǎ/ ‘he is already inflicting on me’ is the winning output on tableau I

Tableau II

+A /ó ka á yé nǎ/ Hi	*Rt/ Lo	*A/ Lo	*[A] R	*[A] L	ALIGN [-Lo]R	IDENT- IO[H i]	IDENT- IO[bk]	IDEN T- IO[ro]	ALIG N[ro]L	ALIG N[ro] Lif Hi	ALIG N-A- R	ALIG N-A- L
ó ka á yé nǎ					*!							
ó ke é yé nē			*!									
ó ki í yé nī			*!									
ó ko ó yé nō			*!									
☞ ó kó ó yé nǎ								***			*	
ó ke é yé nē							*!***					
ó ku ú yé nu			*!									

/ó kó ó yé nǎ/ ‘he is already seeing me’ is the winning output on tableau II.

Tableau III

+A /ó ka a kó nǎ/ Hi	*Rt/ Lo	*A/ Lo	*[A] R	*[A] L	ALIGN [-Lo]R	IDENT- IO[H i]	IDENT- IO[bk]	IDENT -IO[ro]	ALIG N[ro] L	ALIG N[ro]L if Hi	ALIG N-A- R	ALIG N-A- L
ó ka á kó nǎ					*!							
ó ke é kó nē			*!									
ó ki í kó nī			*!									
ó ko ó kó nō			*!									
☞ ó kó ó kó nǎ				*				***			*	
ó ke é kó nē				*			*!***					
ó ku ú kó nu			*!									

/ó kó ó kó nǎ/ /he is already grumbling about me’ is the winning form on tableau III.

⁴ On each tableau * means constraint violation, *! Means serious violation while the shades mean the candidates are out of the competition.

Tableau IV

+A /ó ka á bú nã/	*Rt/ Hi	*A/ Lo	*[A] R	*[A] L	ALIGN [-Lo]R	IDENT- IO[H i]	IDENT- IO[bk]	IDEN T- IO[ro]	ALIG N[ro] L	ALIGN [ro]Lif Hi	ALIG N-A- R	ALIG N-A- L
ó ka á bú nã					*!							
ó ke é bú nẽ			*!									
ó ki í bú nĩ			*!									
ó ko ó bú nõ			*!									
☞ó kó ó bú nõ								***			*	
ó ke é bú nẽ							*!***					
ó ku ú bú nũ			*!									

/ó kó ó bú nõ/ 'he is already beating me' is the winning output on tableau IV.

Tableau V

/ó ka á ló nã/	*Rt/ Hi	*A/L o	*[A] R	*[A] L	ALIGN [-Lo]R	IDENT- IO[H i]	IDENT- IO[bk]	IDEN T- IO[ro]	ALI GN[r o]L	ALIGN[r o]Lif Hi	ALIG N-A- R	ALIG N-A- L
☞ó ka á ló nã				*	*!							
ó ke é ló nẽ			*!									
ó ki í ló nĩ			*!									
ó ko ó ló nõ			*!									
ó kó ó ló nõ				*				**				
ó ke é ló nẽ				*			*!***					
ó ku ú ló nu			*!									

/ó kó ó ló nõ/ 'he is already throwing me' is the winning candidate on tableau V.

Tableau VI

/ó ka á tɛɛ nã/	*Rt/ Hi	*A/L o	*[A] R	*[A] L	ALIGN [-Lo]R	IDENT- IO[H i]	IDENT- IO[bk]	IDEN T- IO[ro]	ALIG N[ro]L	ALIGN [ro]Lif Hi	ALI GN- A- R	ALIG N-A- L
☞ó ka á tɛɛ nã				*								
ó ke é tɛɛ nẽ			*!									
ó ki í tɛɛ nĩ			*!									
ó ko ó tɛɛ nõ			*!									
ó kó ó tɛɛ nõ				*				***				
ó ke é tɛɛ nẽ				*			*!***					
ó ku ú tɛɛ nu			*!									

/ó ka á tɛɛ nõ/ 'he is already giving birth after me' is the winning output on tableau VI.

Tableau VII

/ó ka á sà nã/	*Rt/ Hi	*A/L o	*[A] R	*[A] L	ALIGN [-Lo]R	IDENT- IO[H i]	IDENT- IO[bk]	IDEN T- IO[ro]	ALIG N[ro]L	ALIGN[r o]Lif Hi	ALIG N-A- R	ALIG N-A- L
☞ó ka á sà nã				*								
ó ke é sà nẽ			*!									
ó ki í sà nĩ			*!									
ó ko ó sà nõ			*!									
ó kó ó sà nõ				*				*!***				
ó ke é sà nẽ				*			*!***					
ó ku ú sà nu			*!									

/ó ka á sà nã/ 'he is already knowing me' is the winning output form on tableau VI

Conclusion

The paper discusses The Phonology of Oşùgù an Àbèsàbèsì sub-language vowel harmony.

It is important to state that the type of [LOW] Vowel harmony Oşùgù attests is underlying driven by the feature [ATR+ROUND] which Akpes and Èkiròmí attest. Akpes and Èkiròmí are two other Àbèsàbèsì sublanguages. Agoyi (2008) argues that the type of rounding harmony Akpes and Èkiròmí attest is similar to the type of harmony found in Yawelmani, a dialect of Yokuts an Amerindian language, and Khalka a dialect of Mongolia (Atlantic language family that is closely related to Turkic language family).

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