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A NOTE ON SYLLABLE AND TONE IN VAGLA VERBS

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Surface tones of verb stems in Vagla reflect differences of grammatical category, syntax, syllable structure and underlying tone.

Two hypotheses are set up to account for the data. According to the first, verb stems are divided into two major classes on the basis of their different tone patterns. Two sets of sandhi rules are established for the verb-complement boundary.

The second hypothesis regards the 'heavy' syllables as basic, and the 'light' syllables as reductions. It explains the data more satisfactorily, and eliminates the need for two verb stem classes and two sets of sandhi rules.

Les tons actuels des radicaux des verbes en Vagla reflètent des différences d'ordre grammatical et syntaxique, ainsi que des modifications de la structure de la syllabe et des tons fondamentaux.

Deux hypothèses d'analyse des données sont formulées. Selon la première hypothèse, les radicaux des verbes se divisent en deux classes primaires selon leur structure tonale. Deux séries de règles sandhi peuvent être établies pour marquer la limite entre le complément et le verbe.

La hypothèse seconde considère les syllabes 'lourdes' comme fondamentelles et les 'légères' comme des reductions. Elle permet ainsi d'expliquer les données de manière plus satisfaisante, et il n'est plus nécessaire de distinguer deux classes de radicaux verbaux et deux séries de règles sandhi.

0. INTRODUCTION

This paper directs attention to interlocking criteria of grammatical class, syntax, syllable-structure and underlying toneme in determining the surface tones of verbs in the context of data from Vagla, a language of the Southwestern Grusi sub-group of Central Gur (Bendor-Samuel 1965, 1971; Swadesh et al. 1966; Manessy 1969). Vagla is spoken in the west of the Northern Region of Ghana, northeast of the town of Bole¹.

Vagla is written with an orthography comprising the letters a, e, ɛ, i, o, ɔ, u for the vowels, and consonants b, ch, d, f, g, gb, h, j, k, kp, l, m, n, ny, ŋ, ŋm, p, r, s, t, v, w, y, z. These symbols correspond to a phonemic segmental analysis except that i, u, and a each represent both members of a cross-height vowel harmony pairing (/i/ + /ɪ/, /u/ + /ʊ/, /a/ + /ʌ/ respectively); vowel harmony within the word often resolves the ambiguity (as e/ɛ, o/ɔ contrasts are symbolised).

1. SYLLABLE, ROOT AND STEM

1.1 The most common syllable-patterns are CV₁V₁ (same vowels), CV₁V₂ (diverse vowels), and CVC, though V, V₁V₁, V₁V₂, VC and N are also found (usually as pronouns, particles or in loan words):

N	n	'I'			
V	u	'he'	CV	de	'there'
V ₁ V ₁	ɛɛ	'to do'	CV ₁ V ₁	mɛɛ	'father'
V ₁ V ₂	ia	'you (pl.)'	CV ₁ V ₂	lau	'to catch'
VC	ol	'meat'	CVC	hɔŋ	'skim'

1.2 The phonetic tones observed in isolated monosyllables are High, Low, Rise and Fall (ṡ, Ṡ, Ṣ, Ṥ). In longer utterances or more complex forms, sequences of these tones occur. A pitch lower than an immediately preceding High also occurs. This tone establishes a pitch ceiling for following high tones and is, therefore, regarded as Downstepped High (ṡṡ)².

1.3 Morphemes which are roots of verbs or nouns can be analysed as having underlying contrastive lexical tone:-

húú	'bee'
hùú	'a defect'
húù	'grasshopper'
(cf. hùù	'to blow a horn')

The patterns H, L, R, F and their combinations are all found in underlying forms of these roots. The Downstep sequence H¹H is not found in underlying root forms but rather across morpheme and word boundaries.³

This paper focuses on the boundary between the verb and its immediately-following complement which may be a direct object, an indirect object or a goal of motion according to the verb-type. Vagla basic clause word order is S - V - (IO) - O:

U lau ol.	U tɛɛ u mɛɛ ol.	U la yawa.
'he caught meat'	'he gave his mother meat'	'he went (to) market'

1.4 The root of the verb may function alone as a stem or may be suffixed with one or more extensors. The most common meaning expressed by extensors is "plural", which with transitive verbs involves acting on multiple objects, and with intransitives the action of multiple agents:

kpu	'kill'	kpuuzi	'kill (many), massacre'
so	'bathe'	soogi	'bathe (many)'
lau	'catch'	lauri	'catch (many)'

The resultant verb stems have the following CV patterns:

CV	ba	'come'	so	'sit'	di	'eat'
CV ₁ V ₁	hee	'chew'	saa	'stir'	taa	'push'
CV ₁ V ₂	lau	'catch'	dau	'put down'	siu	'die'
CVC	zum	'know'	sag	'hang'	pal	'flow'
CVCi	wazi	'increase'	lizi	'take out'	bizi	'spill'
CV ₁ V ₁ Ci	daali	'cook'	faari	'begin'	jaami	'greet'
CVC ₁ C ₁ i	binni	'look at'	sunji	'beg'	lalli	'lift'
CVC ₁ C ₂ i	bargi	'separate'	fogli	'rub'	dinzi	'extinguish'

1.5 All Vagla clauses are either in focus or not, with various discourse and grammatical conditions determining choices within the focus system. High tone on the verb or a verbal particle⁴ is the normal mark of focus, as will be exemplified in the following sections.

1.6 The verb stem may be inflected for aspect (perfective/imperfective). Imperfective is marked by a pre-verbal particle *ra* plus falling tone on the verb. When the verb phrase is in focus, the tone of the particle is high; when it is out of focus, the particle is on a low tone:

U rá¹káali Kumasi (in focus, imperfective)
'he is going (to) Kumasi'

U zuu loore di rà káali (second clause out of focus, imperfective)
'he entered lorry and was going'

The perfective aspect is unmarked except that when certain classes of verb are in focus as well as perfective their tone changes to high:

U kaáli Kumasi (in focus, perfective)
'he went (to) Kumasi'

U zuu loore kaali (second clause out of foc., perf.)
'he entered lorry (and) went'

1.7 Cross-cutting the contrasts of focus and aspect there is a further system opposing realized to unrealized which mainly functions to convey distinctions of tense. The realized form when combined with imperfective aspect expresses a present tense; past tense is conveyed by realized perfective without further marking, or in conjunction with some particle with an intrinsically past meaning ('yesterday', 'previously', &c.). The unrealized form when

in focus expresses a future tense; out of focus the sense is rather that of purpose, not grammatically contrasted with serial clauses in a future sentence (there is additional marking of future tense with particles *daŋ* or *doo* and in the case of certain verbs by tone - see 3.1, Table 1 below).

1.8 The verb stem may further be inflected for the absolute construction, which appears with a transitive verb which is not followed by a complement. When the verb is in focus and perfective the absolute suffix is *-wo* (with variants); in the negative and other special cases it is *-we*. Where the mark of focus is carried by a preverbal particle (2.5 and fn.⁴) absolute is marked by a suffix *-u* on the verb stem:

U *SEEWo*
'he agreed'

Waa *SEEWWe*
'he-did-not agree'

U *jaá SEEU*
'he now (foc.)
agreed'

2. VERB-STEM TONE-CLASSES

2.1 Verb stems may be divided into two major classes on the basis of different tone patterns in the following contexts:-

- a. Combination of categories of aspect and focus
- b. Combination of categories of tense and focus
- c. With a verbal suffix
- d. With a pronoun-complement enclitic
- e. With a following noun-complement

Examples of these verb-classes are given in Table 1.

Table 1: Monosyllabic Verb Classes

	<u>Class 1</u>	<u>Class 2</u>
a*)	<i>ba</i> 'come' <i>la</i> 'go' <i>kpo</i> 'go home'	<i>sa</i> 'dance' <i>ga</i> 'pass through' <i>di</i> 'eat' <i>lizi</i> 'take out'
b*)	<i>so</i> 'sit' <i>chi</i> 'stand'	<i>faari</i> 'begin' etc.
c)	<i>hee</i> 'chew' <i>lau</i> 'catch' <i>zum</i> 'know' <i>daali</i> 'cook' etc.	

*The lexemes listed in Class 1 a and b are the entire class. All other CV verbs belong to Class 2

Within Class 1 three subclasses are distinguished by differences of tone appearing with various combinations of focus and aspect, as detailed in Table 2.

Table 2: Focus/Aspect Tone Patterns

Perfective		Imperfective
Out of Focus	Focus	
a) bà	bá	bá
b) sò	sògó	só
c) heè	heé	héè
daàlì	daálí	daálì

The Class 1 subclasses are also distinguished by their tone patterns in the unrealized tense. It is a specific feature of unrealized out-of-focus (purpose) constructions that a low-tone verb is raised by a preceding High, but the result is a simple High in Subclass 1a and a Fall (H-L) in Subclass 1c, as indicated in Table 3.

Table 3: Effects of Tone Raising

Unrealized in-focus (future) ⁵	Unrealized out-of-focus (purpose)	
	Normal	Preceded by High
a) bá	bà	bá
b) sò	só	só
c) sàà	saà	sàà
daálì	daàlì	daálì

2.2 All the verb classes of Table 1 (except Subclass 1.2 which are intransitive) are distinguished by their tonal behavior when followed by the suffixed or enclitic object pronouns of the singular persons and the neuter plural. The resultant forms are summarized in Table 4, where it is particularly noteworthy that the Class 1.c stem, which is normally low in tone when out of focus (see Table 2), becomes high with a pronoun object.

Table 4: Effect of Pronoun Object (-u)

	Focus	Out of Focus
Class 1a (do not take pro. object)		
1b	chígóù	chíù
1c	saáù	saáù
	daáluù	daáluù
Class 2	sá'ù	sáù
	líz'ù	lízù

The major Classes 1 and 2 contrast by their tones when bearing the absolute suffix as in Table 5.

Table 5: Effect of Absolute Suffixes

	Verb + -wɔ	Verb + -wɛ	Verb + -u
Class 1a	bállɔ	bállɛ	baú
1b	chɪgɔ	chɪgɛ	chiú
1c	saáwɔ	saáwɛ	saàú
	daálɔɔ	daálɛɛ	daàlùú
Class 2	sáwɔɔ	sáwɛɛ	saú
	lízɔɔ	lízɛɛ	lízùú

2.3 The tone-sandhi at the boundaries we are considering (verb-complement, see 1.3) may be stated in terms of a short list of simple statements which could readily be formalized as explicit ordered rules. However, it is necessary to establish two different sets of rules, each applying to a different group of verbal forms in accordance with the classification we have outlined above (Table 1)

Set I

1. Low is raised to High immediately following High.
 - 1.a A High tone following such a raised Low is downstepped.
 - 1.b A Low tone in this context is unchanged.
2. High is unchanged immediately following High.

Set II

1. High is downstepped immediately following High.
2. Low is unchanged after High.

In all contexts a Low tone on the verb occasions no changes except for automatic downstep of a following High.

The following sentences can be used to illustrate how the different sets operate:

Ù hée á'ól	Underlying tones:	ù 'he'
'He chewed that meat'		hée 'chew' (in focus)
		à 'that' (dem.)
		ól 'meat'

The low tone of u occasions no change of tone on the following word. Since hée belongs to Class 1, the High tone on it raises the following Low tone of a (Set I - rule 1). Though High tone is unchanged following a normal High (I-2), the tone of a was originally low, having been raised by I-1, therefore the High tone of ol is downstepped following it (I-1.a). Note the following sentence:

Ù dí à ól	Underlying tones:	dí 'eat'
'He ate that meat'		

In this case the verb *dí* is from Class 2 and the High tone it carries does not raise the Low tone of *a* (II-2). However, when a verb of this class is out of focus, it follows Set I rules:

Ù dí á'ól	Ù dí á kàbílà
'he ate that meat'	'he ate that fufu'

In these two examples the tone of *a* has been raised (I-1). The High tone of *ól* has been downstepped (I-1.a) and the Low of *kabila* is unchanged (I-2). A full set of examples of the various tense-focus combinations is given in Tables 6 and 7.

Table 6: Realized Tense Examples

	Set-Rule		Set-Rule
Foc. U heé'ól	I-2	U dí híí	II-2
O.F. U heè'ól	-	U dí híí	I-2
'He chewed meat'		'He ate yam'	
Foc. U lá Sòg'lá	I-1,1.a	U gá Sòg'lá	II-1
O.F. U là Sòglá	-	U gá Sòg'lá	I-1,1.a
'He went to Sawla'		'He passed through Sawla'	
Foc. U rá'hée'ól	-	U rá'dí híí	I-2
O.F. U rà hée'ól	-	U rà dí híí	I-2
'He is chewing meat'		'He is eating yam'	
Foc. U rá'lá Sòglá	II-1	U rá'gá Sòg'lá	I-1,1.a
O.F. U rà lá Sòglá	II-1	U rà gá Sòg'lá	I-1,1.a
'He is going to Sawla'		'He is passing through Sawla'	

Table 7: Unrealized Tense Examples

	Set-Rule		Set-Rule
Fut. U dan hée'ól	-	U dan dí híí	I-2
'He will chew meat'		'he will eat yam'	
Purp. -- ú hée'ól	-	-- ú dí híí	I-2
'--(so that) he eat meat'		'--(so that) he eat yam'	
Fut. U dan lá Sòglá	II-1	U dan gá Sòg'lá	I-1,1.a
'He will go to Sawla'		'He will pass Sawla'	
Purp. -- ú lá Sòglá	II-1	-- ú gá Sòg'lá	I-1,1.a
'--(so that) he go to Sawla'		'-- (so that) he pass through Sawla'	

3. THE TONE/MORA HYPOTHESIS

3.1 One possible way of analyzing this material is to consider that a heavy syllable contains two moras [(C)V₁.V₁, (C)V₁.V₂, (C)V.C] and that the mora is the unit which bears¹ the underlying tone:

Hypothesis I

1. Syllable = Mora 1 (Mora 2)
2. Mora 1 = (C)V₁
3. Mora 2 = {V₁, V₂, C}
4. Assign a High or Low tone to each mora in an underlying form

Rules operating on underlying tone-sequences would then generate the surface tones of constructions. This would be the simplest and most economical solution in terms of inventory, as units originally postulated as Rise and Fall are reanalysed as L-H and H-L sequences respectively.

3.2 However, a look at the patterning of the language reveals that if syllables are to be regarded as the phonological "building blocks" of a language, then (C)V₁V₁, (C)V₁V₂ and (C)VC are the more natural and productive candidates to be considered basic syllable structures. Here are a few factors against analysing phonetic heavy syllables as comprising two basic (mora-) units:

1. (C)VC, (C)V₁V₁ and (C)V₁V₂ words pattern with one-syllable words, not with two-syllable words. For example, they take the absolute suffixes -wɔ and -wɛ instead of the -ɔ and -ɛ which are found with two-syllable verbs:

saa ---> saawɔ ct. lizi ---> lizɔɔ

If these heavy syllables are analysed as disyllabic, such verbs in their root form would be the only two-syllable verbs not to end in -ɪ.

2. To consider the heavy items as bi-unitary, results in word-patterns which intuitively seem wrong. For example, ka.a.li, ha.a.ŋ, fɔ.g.li would all contain three units.

4. AN ALTERNATIVE ANALYSIS

4.1 In view of these difficulties with Hypothesis I, an alternative analysis is desirable. One fact that stands out is that the complicating factor in much of this data is the behavior of the light monosyllabic verbs. In fact, in the language as a whole light monosyllables are not common. It would, therefore, not be unreasonable to treat heavy syllables as basic and consider the light syllables as found in verbs of classes 1.a, 1.b and 2 as having undergone some process of reduction.

Hypothesis II

1. The basic syllable structure of Vagla is (C)V₁ $\left\{ \begin{array}{c} C \\ V_1 \\ V_2 \end{array} \right\}$

2. The basic tones of Vagla are High, Low, Rise (L-H) and Fall (H-L): Any syllable as defined in 1. above may have any of these tones but no other.

A number of different types of evidence support this hypothesis:

(i) There are very few (C)V words in Vagla at all; no noun has this shape which is only found in grammatical particles and the verbs under discussion here. Such words are all characterised by unusual tonal effect on following morphemes.

(ii) CV verbs of Class 2 become CVV when an extensor suffix is added:

ta 'throw'	taagi 'throw (many)'
ma 'build'	maari 'builder'

(iii) When the absolute suffix is added, CV verbs of Class 1.a yield a form of structure $C_1VC_2C_2i$. The appearance of the long C_2 makes these derivatives match those of CVC verbs:

ba --> ballo, la --> lanho, kpo --> kponno cf. hum --> hummo

There is also a consonant when these verbs are given a class-changing affix:

u balaa 'his coming;
u laṇaa 'his going'
u laṇri bōr 'his destination (going-place)'

(iv) The verbs of Class 1.b have a -gō~-go suffix in perfective in-focus forms⁶:-

U sogo dia	U chigo bossee
'he sat (in the) house'	'he stood outside'

The -g- is also present with class-changing suffix:

U sogaa summo	U sogni bōr
'its sitting is-sweet'	'his sitting-place'
'It is comfortable'	

(v) Just as the segmental shape of the syllable is modified in these forms the tone is also modified. Only High and Low are found on (C)V syllables. All verbs of Class 2 have falling tone except the monosyllables which are all CV in shape and all have High tone. This could indicate that the one-syllable verbs of this class have lost their final V or C, and with that the final Low tone of the characteristic H-L of this class.

5. DISCUSSION

What are the advantages of the analysis of Hypothesis II? The most convincing is that, while other analyses like Hypothesis I or a system which included Downstep as an emic tonal unit may describe the data, this analysis can also explain the data and reveal the underlying patterns of the language. By recognizing CV verbs as being modifications of longer underlying forms the tone-sandhi rules are considerably simplified:-

- | | |
|--------------|---------------------------------|
| 1. Basic Low | High in in-focus form |
| 2. Basic H | Fall |
| 3. Basic F | Low in Class 1, Fall in Class 2 |

This can be displayed as in Table 8.

Table 8: Summary Chart of Tone Rules

	Focus Perfective	Imperfect	Future	Out-of-focus Perfective
Class 1.a	Set I	Set II	Set II	(low tone)
1.b	Set I	Set II	Set II	Set II
1.c	Set I	Set II	Set II	(low tone)
Class 2	Set II	Set I	Set I	Set I

The verbs which have a surface form in isolation which is shortened from the underlying form are one-syllable verbs of Class 2 and the verbs of Class 1.a, 1.b: All of these become CV as shown in Table 9.

Table 9: Shortening of Underlying Heavy Monosyllables

	<u>In Focus</u>	<u>Out of Focus</u>
Class 1a	*bál becomes bá	*bál becomes bā 'come'
1b	*sòg becomes sògó	*sòg becomes só 'sit'
2	*táá becomes tá	*táá becomes tá 'throw'

Referring back to Tables 6 and 7 it can be seen that in every case where Set II rules were followed the preceding syllable is one of these shortened forms which may be analyzed as Falling (H-L) tone in the underlying form. Thus gá Sòglá is from the underlying *gáá Sòglá, dí'hí from underlying *díí híí, and lá Sòglá from *láá Sòglá. The downstep in the second example can be explained by the Low tone preceding in the underlying form. Thus the general rule of automatic downstep accounts for these sequences as long as it is allowed to operate before the shortening or to refer to underlying tones. The Low tone initial in Sòglá in two of the examples is not raised because the preceding Low in the underlying form insulates it from the effect of the verb-initial High. We note that the out-of-focus tone for one-syllable verbs of Class 2 is High, not High-Low. This explains why these follow Set I rules when out of focus - there is no Low tone underlying to produce the relevant effects.

Only the verbs in Subclasses a and b of Class 1 (all surface CV verbs) follow the Set II rules, and then only in the imperfective aspect and unrealized tense. Remembering that the grammatical tone for Class 1 verbs in the imperfective aspect and unrealized tense is High-Low the reason becomes apparent: Again it is because of the loss of Low tone in the modified form:-

Class 1.a: underlying *báì --> bá surface [impf./unreal.]

Class 1.b: *s6è --> s6

By recognizing these underlying forms of verbs with their tones, the verb classes can be eliminated completely and the Set II rules are not necessary. Set I rules will apply to any verb-noun sequence if the underlying unmodified form is considered.

The rules of Set I can also be reduced when (C)V is recognized as a modified syllable. All low monosyllabic words are (C)V'; this suggests that Low actually becomes Fall as a result of tonal sandhi but because the Low monosyllables are (C)V this is in turn realized as High. Thus rules 1.a and 1.b of Set I which apply exclusively to syllables following (C)V words or within words beginning with Low tone are automatically accounted for. Low is not raised following these because the underlying form has H-L, and the final L does not affect a following L; a following H is downstepped, however, because of the underlying sequence H-L-H which automatically lowers the key.

6. CONCLUSION

It is suggested, therefore, that the best framework for an analysis of the tonal phenomena in Vagla is based on Hypothesis II with the following rules:

1. Succeeding High tones are lower than the preceding High if a Low intervenes (automatic downstep).
2. Low tone has no other effect on a following tone.
3. High tone has no effect on a following High.
4. High raises a following Low to High-Low in certain constructions, such as the verb-complement sequences discussed above. In these constructions:
 - a. Low tone on a (C)V word is realized as High.
 - b. Low tone on a (C)V{V} word is realized as Falling.
 {C}
 - c. Low tone on a two-syllable word is realized as H-L.
 - d. Rising tone on a monosyllable is realized as 'H.
 - e. Low-High on a two-syllable word is realized as H'H.

NOTES

¹ I have been working with the Vagla language and people since 1962. I owe more than I can say to the friendly help and cooperation of the Vagla, particularly in the village of Jentilpe. I have benefited from my colleagues Nancy Smiles, Barbara Popham and Pat Herbert. Some findings have been published in Crouch/Smiles 1963 and Pike, 1966. A much earlier version of the present paper was discussed with Dr. Kathleen Callow, and the present version owes much to the guidance and encouragement of Dr. Tony Naden. To all these various people my grateful thanks, and remaining errors or weaknesses are, of course, my own responsibility.

² See Hyman, 1979.

³ In context H¹ can appear within a basically L-H nouns when the initial Low is raised through tone sandhi.

⁴ When certain of the pre-verbal particles occur in an in-focus clause, the focus-marking High tone is carried by the particle, while the verb has its out-of-focus tone:

U jaá kaáll Kumasi (cf. examples in 2.6)
'he now (foc.) went (to) Kumasi

⁵ When the negation particle immediately precedes a future verb the verb retains its basic tones (as seen in the perfective out-of-focus form).

⁶ This cannot be considered an absolute suffix added to the stem since it appears even when followed by a complement as in the examples given.

⁷ There is one low CVV noun chlì 'a sponge'.

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