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**Does Gokana Really Have No Syllables?
(Or: What's So Great About Being Universal?)**

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ABSTRACT

Over 25 years ago, Hyman (1983, 1985) made the claim that Gokana, an Ogoni (Niger-Congo) language of Nigeria, does not organise its consonants and vowels into syllables. This was a radical and in principle non-welcome position, given the centrality of the syllable in almost all phonological work at the time. Still, as Richard Hayward pointed out many years later, the extensive treatment of Gokana largely went unnoticed:

Hyman's account of the Nigerian language Gokana and in particular his well-argued claim that Gokana represents a case where invocation of the syllable buys nothing insightful for explaining the phonology of the language should have disturbed profoundly the settled orthodoxy surrounding the universality of the syllable. That a vowel (the quintessential syllable nucleus) is not guaranteed syllable membership is a very strong proposal, but one has little sense that it has attracted overmuch comment.... In my view it would be unfortunate if Gokana were to be regarded simply as an interesting oddity, rather than as the limiting case in a clinal situation in which many languages may participate to some degree in the course of their phonologies. (Hayward 1997:78)

While there was almost no response to the claim of no syllables in Gokana, the proposal of Hyman (1983, 1985) to establish moras as a central building block in phonology did gain currency, and was particularly welcome by specialists of Japanese, long viewed as exclusively moraic in its prosodic structure. Since that time work on the syllable has gone in opposite directions: While Kubozono (1999, 2003) has presented evidence that the syllable may in fact play a role in Japanese, Steriade (1999) and Blevins (2003) have argued that the syllable is less needed elsewhere, e.g. to account for phonotactic constraints and perhaps certain rhythmic effects (Steriade 2009). It seems that the status of the syllable is thus once again up for grabs, as has been the case in its rocky "on-again, off-again" past.

In this paper I take a new look at the Gokana facts and the original claim to ask the question in my title, motivated in part by overlooked (possibly ambiguous) evidence for the syllable in Gokana. The paper will end by situating the issue within the context of recent discussions of universals vs. diversity (Evans & Levinson 2009), with my claim that English and Gokana are at the opposite ends of the "clinal situation" which Hayward suspected in the above quote.*

* Earlier versions of this paper were presented at the University of California, Berkeley, the Laboratoire Dynamique du Langage (Lyon), and at the Queen Mary University of London Workshop on Tones and Prosodic Constituents (March 25-6, 2010).

1. Introduction

The purpose of this paper is to take a new look at Gokana, the only language which has been explicitly claimed to lack syllable structure entirely (Hyman 1983, 1985). As the Hayward (1997) quote in the above abstract makes clear, the Gokana case has, with few exceptions (e.g. Blevins 1995:236, Broselow 1995:202), largely gone unnoticed. This may seem surprising, given that most researchers assume the syllable to be a building block in all languages, a psycholinguistic reality which is phonetically grounded in articulation and/or perception and supported by experimental evidence, language acquisition, and orthographies (see, for example, the collection of papers in Cairns & Raimy (2010). Given recent evidence that the syllable may be less implicated in accounting for phonotactics (Steriade 1999, Blevins 2003) and rhythmic effects (Steriade 2009) than previously believed, the question naturally arises as to what the remaining status is of the syllable: Where is it needed vs. not needed? Can it be completely absent, and, if so, does some other structure take its place? In this paper I have two goals. First, I reexamine the same and additional evidence and present an overlooked argument for the syllable in Gokana, which although ambiguous, may be welcome by those who insist on the universal status of the syllable. Second, I situate the Gokana material within the context of recent discussions of universals vs. diversity (Evans & Levinson 2009). I will suggest that the Gokana situation makes perfect sense once we recognise the highly theory-dependent interpretation of linguistic universals in general and the property-driven approach we should take to phonological typology in particular.

The paper is organized as follows. In §2 I will address some general issues of theory and interpretation as concerns the syllable. §3 then presents the case for no syllables in Gokana, based on Hyman (1983, 1985). Potential evidence for the syllable in Gokana is then presented in §4, followed by discussion in §5 and further implications in the conclusion in §6.

2. Theory, interpretation, and the syllable

I begin with an observation: It is amazing how many different views have been taken on the syllable over the past 100 years or so. This includes:

- (1) a. whether the syllable exists or not
- b. what the syllable is (phonetic vs. phonological, articulatory vs. acoustic, abstract)
- c. what the syllable can (vs. cannot) do
- d. how syllable structure should be represented (flat vs. hierarchical, slots vs. moras, iterations of CV only, maximally CVX etc.)
- e. how syllabification should be implemented (sonority- vs. edge-based, lexical vs. postlexical etc.)
- f. what is universal vs. language-specific

While other linguistic constructs such as the morpheme, word or sentence have had their own definitional and analytical problems, none has had such a “checkered” past: At one end of the spectrum, various universal claims have been made for the syllable such as those in (2).

- | | | |
|-----|------------------------------|--------------------------------|
| (2) | <i>claim</i> | <i>alleged counter-example</i> |
| a. | All languages have syllables | Gokana Hyman (1983, 1985) |

- | | | |
|--|--------------|-----------------------------------|
| b. All languages have CV syllables | W. Arrernte | Breen & Pensalfini (1999) |
| c. All segments belong to a syllable | Bella Coola | Bagemihl (1991) |
| | Piro | Lin (1997) |
| d. Syllabification is always predictable | Barra Gaelic | Kenstowicz & Kisseberth (1979) |
| | English | Bloomfield (1933), Blevins (1995) |

Some of the few alleged counterexamples are listed to the right. At the other end of the spectrum, in the early generative phonology era, the syllable was claimed either not to exist or to be totally redundant and not necessary (Kohler 1966). How can it be that some scholars assume that syllables are universal, restricted to CV in all languages (Lowenstamm 1996), or are subject to a maximal CVX syllable structure (Duanmu 2008), while still others deny the syllable's appropriateness in some or all of phonological analysis?

The problem is that the above claims are necessarily theory-dependent. Consider the claim in (2d) that syllabification is always predictable:

“One argument that has been raised against phonological syllables is that, unlike segments, the location of a syllable boundary *within a morpheme* can never be phonemic. That is, two morphemes such as /a\$pla/ and /ap\$la/ cannot differ only in syllable structure.” (Hyman 1975:192)

Although oft-repeated (Clements 1986:318, Hayes 1989:260, Steriade 1999:224, McCarthy 2003:10, Blevins 2004:232, etc.), care must be taken to interpret exactly what the nature of the claim is: Is (2d) a DESCRIPTIVE claim stating that an underlying (surface?) contrast between monomorphemic *a.pla* and *ap.la* is not possible, or is it an ANALYTIC claim stating that any such contrast, if attested, would have to be formalised other than by contrastive syllable structure? In the first case one is making the empirical claim that an identical intervocalic /pl/ sequence could not have two sets of properties within different morphemes. In the second case, one is making the formal claim that if two such sets of properties did exist, they would not be analyzed as a difference in syllabification. Rather, some other representation or device would necessarily be appealed to.

This, in turn, raises the question of which devices one would be willing to invoke to “explain away” apparent counterexamples to (2d). Marking one of the syllabifications as exceptional, e.g. /apla/ vs. /ap.la/, would clearly violate (2d). One might therefore instead set up an abstract contrast between geminate and single consonants, i.e. /apla/ (→ *a.pla*) vs. /appla/, which first syllabifies as *ap.pla* and then undergoes degemination to become *ap.la*. A variant of this analysis could be an empty C slot, i.e. /apla/ vs. /apCla/. Alternatively, one might posit a ghost V slot whereby /apla/ → *a.pla* vs. /apVla/ which would first become *a.pV.la* then *ap.la*. The question is not only whether such analytic moves are motivated, but whether one or another of them violates the spirit of (2d). Does an extraneous C or V slot effectively undermine the basic point, that we should be able to predict syllabification within morphemes?

Steriade (1999:224) proposes that the absence of such syllabification contrasts may have a functional basis. Citing the absence of a contrast between monomorphemic *as.ka* and *a.ska*, Steriade suggests that there would be insufficient perceptual cues to signal such a contrast. Note, first, that such contrasts are possible across morphemes and words, e.g. *my space* vs. *mice pace*, where timing and aspiration differences at least potentially disambiguate the two. Returning to /apla/, if one were to combine English aspiration with Icelandic open-syllable lengthening

(Vennemann 1972), the surface contrast would be between [a:p^hla] and [ap.la], which we can assume to be quite sufficiently distinct.

If we turn to other phenomena we see that the issue is not so much one of perceptibility, or even CC syllabification, but rather whether specific theories allow underlying syllabification or not. The contrasts in (3), all of which are attested, would be as much a problem for such theories as a contrast between /a.pla/ and /ap.la/:

(3)	<i>unpredictable contrast</i>		“solutions”
a.	V syllabification	ai vs. a.i	glide vs. vowel: /ay/ vs. /ai/ ghost C: /ai/ vs. /aCi/
b.	syllabicity of G vs. V:	yu vs. iw	underlying C vs. V slots, or [±cons]
c.	secondary stress:	<i>objèct</i> [ábdʒèkt] <i>súbject</i> [sábdʒíkt]	diacritic accent on <i>objèct</i> underlying /ɛ/ vs. /i/ (but cf. <i>objèct</i> , <i>subjèct</i> , both with [ɛ])

Again we must ask whether the proposed “solutions” are in the spirit of (2d). The case of (3c) is particularly pertinent. If one assumes that stress is a property of syllables, and if unpredictable stress must be indicated lexically, diacritic accents and other such indications necessarily mark syllable properties (Inkelas 1995:295) and are hence not in the spirit of (2d).¹ Citing the near-minimal pair: *Ida* [áyda] vs. *Aida* [a.íy.da], Blevins (1995:221) writes:

“... in the general case syllable structure is not present in underlying representations.... For exceptional forms like [ʔa.íy.da] we can assume that minimal structure is specified in the lexicon.”

However, in a later work, she writes: “... syllabifications within a given language are never contrastive” (Blevins 2004:232). While not specifically talking about syllables, Bloomfield (1933:121) assumes representations that make the syllabicity of sonorants unpredictable:

“Whether a sonant in any word is syllabic or non-syllabic, is determined in different ways in different languages. If the syllabic or non-syllabic character of a sonant depends entirely upon the surrounding phonemes (as in *bird* vs. *red*), then the difference is not distinctive.... In many cases, however, the syllabic or non-syllabic character of the sonant is determined arbitrarily, and constitutes a phonemic difference. Thus, in *stirring* [ˈstɪrɪŋ] the [r] is syllabic, but in *string* [ˈstrɪŋ] it is non-syllabic; in the second syllable of *pattern* [ˈpɛtɹn] the [r] is syllabic, and the [n] is non-syllabic, but in the second syllable of *patron* [ˈpeɪtrn] the [r] is non-syllabic and the [n] is syllabic.” (Bloomfield 1933:121)

Here we directly observe the theory-dependence issue and the importance of agreeing on the analysis. We can ignore Bloomfield’s first pair of examples, since *stirring* is bimorphemic, but

¹ The same need for lexical syllabification can be made concerning concerning unpredictable tone, if the tone-bearing unit is the syllable: “...if syllables were allowed to bear features [i.e. tone], they would be the only feature-bearing units whose extension was completely predictable by an algorithm referring to other linguistic units.” (Leben 1980[1973]:192).

the fact that he represents *pattern* vs. *patron* with phonemic syllabic sonorants, rather than with schwas, i.e. /pætərn/ vs. /pətrən/, in more modern terms would require lexical indications of syllabification.

The picture which emerges is not entirely clear. The possibilities seem to be those in (4).

- (4) a. no syllabification in underlying representations (i.e. morphemes cannot contrast in syllabification)
 b. syllabification in underlying representations only in exceptions
 c. syllabification in underlying representations only where not “predictable”
 d. syllabification in underlying representations even if predictable

What I hope to have shown is how difficult it is to maintain a coherent position across platforms: To evaluate any of the claims in (2) one must also know what the theoretical assumptions are, as well as what one would be willing to consider as a counterexample. It is with this indeterminacy that we now consider the perhaps more radical claim of no syllables in Gokana.

3. No Syllables in Gokana

In §2 we went through a number of universal claims that have been made about syllables in (2) and considered (2d), the claim that syllabification is always predictable, in some detail. A number of potential problematic cases were briefly mentioned as well as different moves one could take to avoid violation of (2d). Some of these were judged either questionable or not in the spirit of (2d), but not everyone would necessarily agree. Either way, one should ask how good a universal is if it is so easy to “accommodate” it with representations such as in (3)? In this section I recapitulate the case for no syllables in Gokana, a Cross-River Niger-Congo language of the Ogoni subgroup spoken in Nigeria.² The meta-theoretical question we face in this context is: What would it take to convince us that a language does not have syllables? Hyman (1983, 1985) argued that such a case is to be found in Gokana, which organises its phonology exclusively around moras (“weight units”). As an introduction to the problem, consider the sentence in (5a).

- (5) a. mɛ́ɛ̀ ɛ̀ kō m̄m̄ kɛ̀ɛ̀ɛ̀ɛ̀ɛ̀ɛ̀ ‘who_i said I woke him_i up?’ (~ = nasalization)
 b. kɛ̀ɛ̀ + ɛ̀ + ɛ̀ + ɛ̀ + ɛ̀ < / kEE + È + ÈÈ + ‘EE + É /
 wake -CAUS -LOG -3SG -FOC [+nasal]

As seen, the utterance ends in six lengths of [ɛ̃]. (5b) shows that that the six surface lengths derive from eight underlying vocalic moras: both /ÈÈ/ ‘logophoric’ and /‘EE/ ‘3sg. object’ undergo a rule which shortens a geminate vowel after another vowel (see (14b) below).³ The

² The material presented in this study is based on the speech of Godwin Zoranen, who served as linguistic consultant for two field methods courses in the early 1980s at the University of Southern California, as well as beyond. I would again like to thank both Godwin for his extraordinary insights as well as †Kay Williamson who sent me studies on Gokana written by students from the University of Ibadan and the University of Port Harcourt (see references).

³ /E/ stands for an archiphoneme which is realised [ɛ] after /ɛ, ɔ, a/, [e] after /i, u, e, o/, and [ɛ̃] when nasalised. H(igh) tone is marked with an acute (´) accent, L(ow) with a grave (̀) accent, and M(id) is

question is how many syllables there are in the form in (5b)? How can one determine? Assign a syllable to each vocalic mora, hence 6 syllables? Or to each pair of moras, hence 3 syllables? One indirect argument against syllable structure in Gokana was that it was virtually impossible to answer this question. However, Hyman did recognise the following problem:

“It is of course logically impossible to prove that a language does not have syllables, since it may be the case that it has them but does not show obvious evidence of it—it may also be the case that some future linguist might discover evidence for the syllable in Gokana which I have simply overlooked.” (Hyman 1985:27)

Although one cannot definitively “prove” the ABSENCE of syllables, Hyman appealed to two kinds of indirect arguments to support his original position: (i) a good-faith, but unsuccessful, effort has been made to find the PRESENCE of syllables, based on the usual evidence and criteria; (ii) the system can be insightfully analyzed without syllables.

In (6) I list the properties which have provided the usual evidence for syllables and syllable structure in other languages.

- (6) a. distributional constraints conditioned by syllable structure
- b. phonological rules conditioned by syllable structure
- c. morphological rules or allomorphy conditioned by syllable structure
- d. prosodies or word-stress targeting the syllable as a feature-bearing unit
- e. prosodic grouping of syllables into higher order constituents, e.g. feet

(6a-d) are taken up in the following four subsections; (6e) will be treated in §4.

3.1. Distributional constraints

The most revealing constituent affecting distributional constraints in Gokana is what I shall refer to as the “prosodic stem” (PRSTEM), consisting of an obligatory root plus possible suffixes.

- (7) a. shapes: CV, CVV, CVC, CVCV, CVVCV, CVCVV, CVVV, CVVCVV, CVVVV
- b. $C_1 = \begin{matrix} p & t & k^y & k & kp & ? \\ b & d & g^y & g & gb \\ f & s \\ v & z \\ l & (= /D/) \end{matrix} + \begin{matrix} [m \ \eta \ n \ \eta] \\ (= /B, v, D, z, g/ \text{ with} \\ a [+nasal] \text{ prosody}) \end{matrix}$
- c. $C_2 = /B, D, G/$ (pronounced [m, n, η] when in a [+nasal] morpheme)

In (7a), I use the symbol V to indicate a mora. Unless subscripted as V_iV_i or V_iV_j , VV represents either a long vowel or a sequence of (like or unlike) vowels. As seen, the PRSTEM may consist of one to four moras. It must begin with a consonant (C_1) and may have a second consonant (C_2) or not. Examples of each of the above structures are given in (8).

unmarked, or occasionally marked with a macron (¯). Thus, the 3sg. object pronoun /'EE/ has M tone with a preceding floating H.

(8)	CV	té	‘tree’	gɔ́	‘hide’
	CVV	bèè	‘plantain’	gbuu	‘swell’
	CVC	búl	‘mat’	mɔn	‘see’
	CVCV	kávà	‘tick’	kpári	‘sweep’
	CVVCV	bùùrù	‘ashes’	kaàná	‘pick (fruit)’
	CVCVV	tɔnàà	‘branch’	kúmiè	‘pound [+logophoric]’
	CVVV	ʔòà	‘return’	kɛɛɛ	‘wake up (tr.)’
	CVVCVV	gɔɔmáá	‘cowry’	zaàriè	‘scatter (+log.)’
	CVVVV	béèàè	‘pass +log’	kɛɛàè	‘wake up (intr. +log)’

Where possible, I have provided both a noun and a verb to exemplify. However, as the glosses indicate, the shapes CVVV and CVVVV are restricted to verbs, which, unlike nouns, are capable of taking suffixes (see §4). Note that nasalization or “nasal harmony” is a prosody in Gokana, affecting vowels and converting /B, v, l, z, g/ to [m, ŋ, n, ɲ, ŋ].⁴ Thus, *kaàná* ‘pick (fruit)’ is underlyingly /kaaDa/ [+nasal] ‘pick (fruit)’ and pronounced [kã̀nã̀]. Vowel nasalization will be transcribed only when there is no nasal consonant in the form, e.g. *kɛɛɛ* ‘wake (someone) up’.

As indicated in (7b), the stem-initial C₁ consonant can be any of 16 oral consonants plus the nasal variants, while C₂ is limited to the three archiphonemes /B, D, G/, which may be realised as oral or nasal. When occurring orally, the archiphonemes are realised [b, l, g] finally and [v, r, g] intervocalically, as exemplified in (9a).⁵

(9)				“coda-like”		“onset-like”	
	a.	oral	/B/ :	zob	‘dance’	tóví	‘throw’ /tóB + i/
			/D/ :	kil	‘go’	darà	‘pick up’ /dà + Da/
			/G/ :	pig	‘mix’	viigà	‘swing’ /viig + a/
	b.	nasal	/B/ :	num	‘groan’	kúmí	‘pound’ /kúB [+nas] + i/
			/D/ :	ban	‘beg’	bííná	‘ask’ /bíí [+nas] + Da/
			/G/ :	ʔaŋ	‘pull out’	maŋà	‘laugh’ /BàG [+nas] + a/

The major issue, therefore, is how to account for the dramatic decrease in consonant contrasts in C₂ position. Although I have arranged the above forms in columns where the C₂ is labeled as “coda-like” vs. “onset-like”, it is clear that syllable structure cannot account for the limitation of C₂ to /B, D, G/. A move to arbitrarily assign the C₂ to coda position in all cases, as in (10), not only is counterintuitive, but forces an analysis with an otherwise unattested long-vowel CVVC syllable in (10b).⁶

⁴ /B/ represents an archiphoneme which is realised [m] when nasalised, e.g. *má* ‘breast’ is underlyingly /Bá/ [+nasal] and pronounced [mã̀].

⁵ Other dialects realise /B/ as [β] intervocalically (Arekamhe 1972:15; Asinyirimba 1972:18; Okotie 1971/72:29)

⁶ Two exceptional CVVC words with non-identical vowels, *piob* ‘tsetse fly’ and *biɔm* ‘fingernail, claw’, do occur in a lexicon of approx. 700 entries. Both Arekamhe (1972:23) and Okotie (1971/72:18) also report *tám* for ‘cat’, whereas I recorded *nwámbáná*, a likely frozen compound. Brosnahan (1964:47) also reports *biin* ‘bean’, an obvious borrowing.

- (10) a. tov.i ‘throw’ b. viig.a ‘swing’
 dar.a ‘pick up’ bíín.a ‘ask’
 kúm.í ‘pound’
 maj.a ‘laugh’

It also can be seen in the last column of (9) that morphological structure cannot account for the distributions: the C₂ consonant may belong to the root or to a suffix.

A solution that does work is to say that a postvocalic consonant can only be /B, D, G/. This is true whether the generalization is stated with respect to the PRSTEM or to the word, as there are no vocalic prefixes.⁷ Alternatively, one could simply refer directly to the C₂ position within the PRSTEM. Either way, syllable structure is irrelevant.

3.2. Phonological rules

As discussed in Hyman (1985) and earlier work, the major phonological rules of Gokana are nasal spreading, vowel harmony, and, most relevant to this study, the realization of /B/ and /D/ intervocally.⁸ Since Gokana lacks underlying /y/ and /w/, the intervocalic context can be captured via [-cons], i.e. without reference to syllabicity.⁹

- (11) a. { B, D } → { v, r } / [-cons] ____ [-cons]
 b. { B, D } → { b, l }

Had there been a contrast between /i, u/ and /y, w/, it might have been necessary to refer to syllable structure in stating (11a). The absence of /y, w/ thus may not be an accident, but rather a further indication that Gokana does not reference syllables in its phonology.

3.3. Allomorphy

A third area where syllables seem quite beside the point concerns the statement of allomorphy. Gokana has two inflectional suffixes which vary allomorphically as in (12).

- (12)
- | | | | |
|----|--|------|-------------------------------------|
| | <i>2nd pers. pl. subj. logophoric</i> | | |
| a. | after CV _i V _i : | -rii | -rèè i.e. -DVV |
| b. | after CVC : | -ii | -èè -VV |
| c. | after (C)V : | -i | -è -V |

⁷ The only potential nominal prefix (proclitic?) in the language is a homorganic nasal /N-/ marking diminutives, e.g. *gà* ‘skewer’, *ŋgà* ‘needle’. All other pre-stem grammatical morphemes are either proclitic or join with each other to form a separate phonological word.

⁸ Within the PRSTEM and also vocalic enclitics, vowel harmony affects mid vowels which are realised [ɛ, ɔ] after /ɛ, ɔ, a/, [e, o] after /i, u, e, o/, and [ẽ, õ] when nasalised.

⁹ Although Vopnu (1991:29) reports variation between C₁ [v] ~ [w] and [z] ~ [y] in other dialects, and setting aside ambiguous /C^yV, CyV, CiV/, the only [w] and [y] attested in the dialect under discussion here concerns an optional “slight homorganic glide” (Hyman 1985:66) between a long /ii/ or /uu/ and the following vowel, e.g. [siie] ~ [si^ye] ‘catch him!’, [ʔuúe] ~ [ʔuú^we] ‘cover him!’. I consider such “glides” simply to be phonetic transitions between the vowels.

Examples are provided in (13).

- (13) a. oò sii-rii ‘you pl. caught’ aè sii-rèè ‘he_i caught’
 b. oò zov-ii ‘you pl. danced’ aè zov-èè ‘he_i danced’
 c. oò tu-i ‘you pl. took’ aè tu-è ‘he_i took’

While a pure allomorphy solution is certainly tenable, Hyman (1985:66) interprets the alternations as phonological, proposing a /D/ insertion rule as in (14a).

- (14) a. $\emptyset \rightarrow D / \begin{array}{c} \mu \quad \mu \\ \diagdown \quad \diagup \\ [-\text{cons}] \end{array} _ \begin{array}{c} \mu \quad \mu \\ \diagdown \quad \diagup \\ [-\text{cons}] \end{array} \quad (\text{D-insertion: } \emptyset \rightarrow D / \text{V: } _ \text{V: })$
[r]
 b. $\begin{array}{c} \mu \quad \mu \\ \diagdown \quad \diagup \\ [-\text{cons}] \end{array} \rightarrow \begin{array}{c} \mu \\ | \\ [-\text{cons}] \end{array} / \begin{array}{c} \mu \quad _ \\ | \\ [-\text{cons}] \end{array} \quad (\text{vowel shortening: } \text{V:} \rightarrow \text{V} / \text{V } _)$

As seen, D-insertion requires that both the preceding and following vowels be geminate: a single set of [-cons] features linked to two moras. In (13c), D is not inserted since the preceding vowel is short. Instead, the rule in (14b) applies to shorten a geminate vowel when it is directly preceded by a vowel, whether long or short.¹⁰ In neither rule is there any reason to refer to syllables. A second condition on D-insertion is that it is limited to the PRSTEM. Thus, when the 3rd person singular enclitic /'EE/ follows a long vowel, there is no epenthesis. Instead, vowel shortening applies: /aÈ sii 'EE/ → aè s*ie* ‘he caught him’, /aÈ sii 'ii/ → aè s*ii* ‘he caught us’.

It should be noted that the rules in (14) do not seem to improve syllable structure: In other languages such as Turkish, Japanese and Korean, where some suffixes are vowel-initial after a C-final base, but consonant-initial after a V-final base, the effect is to optimise alternating CV syllables. What the rules in (14) do seem to have in common is that they minimise certain sequences of vocalic moras. However, as seen in examples such as in (15), they are hardly effective:

- (15) a. kuàà ‘to open (intr.)’ 2 pl. kuuai log. kuààè
 b. ñááá ‘to change (intr.)’ ñááai ñááàè
 c. kèèè ‘to wake up (tr.)’ kèèèi kèèèè

The forms in the first column involve CVV roots followed by a -V derivational suffix, either anti-causative -a or causative -È. The second and third columns add the familiar 2pl. subject and logophoric inflectional suffixes to these forms. The result is four successive vocalic moras uninterrupted by a consonant. Note finally the forms in (16).

- (16) a. bua ‘to cook (intr.)’ 2 pl. buai log. buàè
 b. mèà ‘to be born’ mèai mèàè
 c. tóa ‘to carry on head’ tóai tóàè

¹⁰ While (14a) inserts /D/ when the two long vowels succeed each other within the PRSTEM, (14b) instead applies when the second long vowel is an enclitic, e.g. the 3sg pronoun /'EE/: /mii ='EE/ → mi*é* ‘his/her blood’ (cf. *ménÉÉ* ‘his/her neck’, *búe* ‘his/her pus’) (Hyman 1985:39).

The question is: If D-insertion were claimed to have the function of creating more C-initial syllables, why doesn't it apply after CV and CV_iV_j bases? Why only after geminate vowels?

The forms in (16) indicate that Gokana fails to insert an onset to create a second, well-formed syllable: **bua-rii*, **buà-rèè*, etc. We now consider another morphological process which in fact REMOVES what would be an onset C₂ consonant. As seen in (17a), CV, CVV and CVC add an *-a* suffix to form an “anti-causative” which is usually, but not always intransitive:

(17) a.	CV	:	gó	‘hide (tr.)’	góá	‘hide (intr.)’
	CVV	:	bii	‘press (tr.)’	biià	‘press (intr.), be too tight’
	CVC	:	ʔig	‘twist (tr.)’	ʔigà	‘twist (intr.)’
b.	CVCi	:	ʔóví	‘roast, burn (tr.)’	ʔóvá	‘burn (intr.)’
	CVVCi	:	zaari	‘scatter (tr.)’	zaàrà	‘scatter (intr.)’
c.	CVCa	:	darà	‘pick up’	daàà	‘begin, pick up (intr.)’
	CVVCa	:	kuùrà	‘open (tr.)’	kuùà	‘open (intr.)’
	CVCE	:	bere	‘lean (tr.)’	bèèà	‘lean (intr.)’

Verbs which end in *-i* replace this suffix with *-a*, as in (17b). The most surprising result is seen in (17c): When a CV(V)CV verb ends in *-a* or *-ε*, the C₂ consonant is deleted, the preceding vowel is lengthened (if it is not already long), and the final vowel is again *-a*. In producing CVVV sequences in both (16) and (17c), the associated operations indicate an apparent disinterest in syllable onsets, at least with respect to C₂.

Still in the context of morphology, note finally in (18) that reduplication does not identify the syllable as the template for the proposed reduplicant:

(18) a.	dɔ	‘fall’	dɔ-dɔ	‘falling’
b.	dib	‘hit’	di-dib	‘hitting’
c.	darà	‘pick up’	da-dàrà	‘picking up’
d.	piigà	‘try’	pi-piigà	‘trying’

Instead, the reduplicant copies the first CV mora of the base.

3.4. Prosodies and word-stress

In some languages prosodies have been reported whereby a syllable may bear a prosodic feature as a unit, e.g. the “emphatic” feature of Aramaic (Hoberman 1988). The two prosodies in Gokana, nasal harmony and vowel harmony, are not so restricted. First, while some syllables are completely nasal and others oral, it is possible for a CV sequence to have an oral consonant and a nasalised vowel, e.g. *bá* ‘pot’, *gbí* ‘look for’, *kɛ* ‘place’. In addition, both harmonies clearly extend beyond a single syllable and, in fact, outside the PRSTEM onto vocalic enclitics. There thus is no need to see either as syllable-based.

This leaves the question of word-stress. It is clear that Gokana does not have “stress” in the sense of English and other such languages. This should not be surprising, as the typical features of stress (f₀, duration, intensity) are not likely to be available in Gokana: First, since the language has an underlying three-height tone system of /H/, /M/ and /L/, and a fourth derived downstepped

·M tone, there is little room for f_0 to play a role. Second, recalling (5), we have seen sequences of up to six moras of identical vowel length, making duration particularly unavailable for marking stress. This leaves intensity. While no differences have been observed in the realization of identical C_1 and C_2 consonants, e.g. in stems such as *miimii* ‘red’ and *náná* ‘to pick up’, dramatic inventory differences in the contrasts that are allowed on C_1 vs. C_2 were pointed out in (7). Is the more extensive set of C_1 contrasts evidence of initial stress?

This question will come up again in §4. For our present purpose the issue is rather whether a putative initial stress provides evidence for the syllable. One of the assumptions concerning word stress is that it is necessarily a property of syllables, or at least the rime, which is either stressed or unstressed. Any system that requires a heavy syllable, e.g. CVV, to contrast intrasyllabic prominence, e.g. on its first vs. second mora, at the very least involves something more than stress (typically, tone). In order to determine whether there is initial syllable stress in Gokana, we have to establish what the possible structures are of the putative initial syllable. Where the PRSTEM has the shape CV, CVC or CV_iV_i , there seems to be no question. What about CV_iV_j stems such as those seen earlier in (16)? How many syllables are there in forms such as *buai* ‘to cook (intr.) + 2pers pl.’, *kuùàè* ‘to open (intr.) +log.’, and ultimately *kεεεεεεε* in (5)? Suffice it here to say that even if we accept initial prominence, we have not been able to uniquely parse the PRSTEM into syllables. This issue is further explored in the next section.

4. The prosodic stem revisited

In the preceding section we ended by raising the issue of whether the distributional properties of consonants suggest an initial stress. The question is how to account for the asymmetries between C_1 and C_2 , which are reminiscent of onset-coda asymmetries. First, C_1 has a much fuller inventory than C_2 (cf. (7b) vs. (7c)). Second, C_1 is obligatory vs. C_2 , which is not. It is not just consonants which show such an asymmetry, but also vowels. Restricting ourselves to lexical entries having the shapes $C_1V_1(:)C_2V_2(:)$, the tables in (19) show that the vowels which follow C_2 are significantly restricted:

(19) a. nouns (74 out of a total of 311 noun entries)

		V ₂ :						
		i	e	ε	u	o	ɔ	a
V ₁ :	i	3	0	0	0	0	0	6
	e	0	11	0	0	0	0	1
	ε	0	0	8	0	0	0	0
	u	1	1	0	4	0	0	0
	o	0	0	0	0	7	0	1
	ɔ	1	1	0	0	0	8	4
	a	5	0	0	0	0	0	12

b. verbs (159 out of a total of 316 verb entries)

		V ₂ :						
		i	e	ε	u	o	ɔ	a
V ₁ :	i	8	6	(4)	0	0	0	15
	e	3	2	0	0	0	0	9
	ε	4	0	9	0	0	0	6
	u	7	3	(1)	1	0	0	8
	o	5	2	0	0	0	0	8
	ɔ	8	1	6	0	0	0	8
	a	9	0	5	0	0	0	19

In (19a) I only counted nouns which meet the shape requirements in (7), i.e. ignoring compounds and obvious borrowings (which would not have changed the results significantly). As seen, 64/74 or 86.5% of these nouns have an identical V₁ and V₂ or an /i-a/ or /a-i/ sequence. Those cells which are shaded show either no entry or one exceptional case. The story is different in verbs where, as seen in (19b), the V₂ has one of the suffix shapes /i/, /a/ or /E/, the last harmonizing as [e] after /i, u, e, o/ and [ε] after /ε, ɔ, a/. (The V₂ vowels in parentheses are the result of nasalization, which permits [ɛ̃], but not *[ẽ].) As seen, only one verb, *bunu* ‘break’, has a rounded V₂.

Clearly all seven vowels contrast as V₁, but not as V₂, just as all consonants occur as C₁ but not as C₂. In recognition of the fuller distribution of C₁ and V₁, Hyman (1990) proposed a compromise: Perhaps Gokana syllabifies the first CV of the word, while any remaining segments remain unsyllabified. If syllabified, all segments contrast; if not syllabified, there are significant restrictions. However, the above asymmetries are clearly reflexes of stem-initial prominence, which licenses a fuller set of contrasts (Beckman 1998; Hyman 1998, 2008; Smith 2002). In this connection, note that there is pervasive evidence that the “prosodic stem” is definable in terms of foot structure in related languages, e.g. in Ibibio, another Cross-River language (Akinlabi & Urua 2003, Harris 2004). As Akinlabi & Urua demonstrate, Ibibio verbs show evidence of a heavy-light trochee in the negative:

(20)	<i>Affirmative</i>	<i>Negative</i>		<i>Affirmative</i>	<i>Negative</i>	
a.	dí	dííyé	‘come’	kpù	kpùùyó	‘be in vain’
	sé	sééyé	‘look’	dó	dóóyó	‘be’
	dá	dááyá	‘stand’	nò	nòòyó	‘give’
b.	/díp/ [d̥íp]	d̥íppé	‘hide’	/dùt/ [d̥l̥t]	d̥l̥ttó	‘drag’
	dép	déppé	‘buy’	nám	námmá	‘do, perform’
	bót	bóttó	‘mould’	bén	bénné	‘carry [w/hand]’
	kòk	kòkkó	‘vomit’	sàŋ	sàŋŋá	‘go’
c.	déép	dééβé	‘scratch’	wèem	wèemé	‘flow’
	síit	síiré	‘seal an opening’	ɲòòŋ	ɲòòŋó	‘crawl’
	wúúk	wúúyó	‘drive sth. in’	kóóŋ	kóóŋó	‘hang on hook’
d.	tòβó	tòβóké	‘make an order’	yómó	yómóké	‘talk noisily’
	kéré	kéréké	‘think’	síné	sínéké	‘put on dress’
	fèyé	fèyéké	‘run’	sàŋá	sàŋáké	‘walk’

e.	dààrá	dààráké	‘rinse’	γόγιό	γόγιόké	‘plaster [a wall]’
	tòòró	tòòróké	‘praise’			
f.	dáppá	dáppáké	‘dream’	dámmá	dámmáké	‘be mad’
	sítte	sítteké	‘remove stopper’	ɲànná	ɲànnáké	‘stretch’
	sàkkó	sàkkóké	‘faint’	wóηηó	wóηηóké	‘turn’

In (20a), when the negative suffix /-ké/ is suffixed to a CV verb base, three things happen: (i) the root vowel lengthens; (ii) the /k/ voices and spirantises to [ɣ]; (iii) the vowel of /-ké/ assimilates in rounding and lowness to the preceding vowel. The same vowel assimilations are observed in (20b), where the /k/ assimilates to the preceding consonant and (20c), where the /k/ is deleted. As a result, the root+negative forms have the shape CVV.CV or CVC.CV in (20a-c), i.e. a heavy-light trochee. The remaining forms in (20d-f) show that when the verb base already has two syllables, whether CV.CV, CVV.CV or CVC.CV, the negative suffix fails to undergo any of the modifications seen in (20a-c) and is instead realised as [-ké]. The explanation is that /-ké/ is modified only when it constitutes the second syllable of the trochaic foot, which determines the realization of C₂ and V₂ segments. Can such a foot analysis work for Gokana?

To help address this question, consider the internal structure of the Gokana verb stem in (21).

(21)	<i>ROOT</i>	+	<i>(derivational suffix)</i>	+	<i>(inflectional suffix)</i>
	-È, -DE		‘causative’		-ii ‘2pl. subject’
	-a		‘anti-causative’		-ÈÈ ‘logophoric’
	-mà		‘instrumental’		
	-Da, -i		(frozen, lexical)		

As seen, there are three “slots”: an obligatory root, a possible derivational suffix, and a possible inflectional suffix. Since each of these slots can be filled by only one morpheme, the PRSTEM has a maximum of one derivational and one inflectional suffix. Thus, when one of the productive suffixes, *-mà* or *-a*, is added to a verb which has an unproductive suffix, the latter deletes:

(22)	lexical -Da:	berà	‘lean on sth.’	kerà	‘hang on neck’
	causative -DE:	bere	‘lean (tr.)’	kere	‘hang (tr.)’
	anti-causative -a:	bèèà	‘lean (intr.)’	kèèà	‘hang (intr.), droop’
	instrumental -ma:	bèèmà	‘lean with’	keèmà	‘hang with’

Just as one cannot stack derivational suffixes, inflectional logophoricity cannot be marked when the subject is 2nd person plural.

Having established the above morphological definition, recall from (7a) that the PRSTEM is restricted to the following shapes: CV, CVV, CVC, CVCV, CVVCV, CVCVV, CVVV, CVVCVV, and CVVVV. As indicated, the PRSTEM must begin with a consonant.¹¹ In addition, it has a maximum of two Cs and four Vs. We saw in (7c) that C₂ is restricted to /B, D, G/. The

¹¹ There is no advantage to analyzing roots such as ?ú ‘to die’ and ?éβ ‘to look at’ as /ú/ and /éβ/ with the glottal stop being epenthetic, since this glottal stop is always present. I thus included /ʔ/ as one of the C₁ consonants in (7b).

PRSTEM also is the domain of D-insertion (14a). Recall the verb form with six lengths of [ɛ̃] from (5a), repeated in (23a).

- (23) a. mɛ́ɛ̃ ɛ̃ kɔ̃ m̃m̃ kɛ̃ɛ̃ɛ̃ɛ̃ɛ̃ɛ̃ ‘who_i said I woke him_i up?’
 b. [kɛ̃ɛ̃ + ɛ̃ + ɛ̃] = ɛ̃ = ɛ̃ < /kEE + È + ÈÈ + ‘EE + É /
 wake -CAUS -LOG] 3sg. FOC [+nasal]

As indicated in (23b), the PRSTEM consists of the root plus two suffixes (causative /È/, logophoric /ÈÈ/). It is in turn followed by two enclitics: /‘EE/ ‘3sg. object’, /É/ ‘focus marker’. Given the underlying input to the right in (23b), D-insertion could have applied between the logophoric suffix and the 3sg., both of which consist of a long vowel, but does not, because the enclitic falls outside the PRSTEM. Instead, both the logophoric suffix and the 3sg enclitic undergo vowel shortening (14b), which applies both within and outside the PRSTEM.

Another effect of the PRSTEM is tonal. The PRSTEM is restricted to at most a bitonal melody, e.g. HM, ML, MH, calculated on the basis of the root tone + morphological tone. If the M toned 3sg. enclitic belonged to the PRSTEM, this would produce a tri-tonal melody MLM. This not only would exceed the bitonal melody restriction, but also contain a prohibited output *L-M which, if present in the input, surfaces as M-M, e.g. /kè-Dè/ → [kɛ̃ɛ̃] ‘to hang (tr.)’ (Hyman 1985:108).¹²

Given the structure of the verb stem in (21) and the restrictions of at most one derivational and one inflectional suffix, the PRSTEM will never be longer than CVV(C)VV. Nouns which exceed this length look suspiciously as compounds, reduplications, or borrowings:

- (24) ʔàáŋkéré ‘groundnut’ kɔ́gɔ́ró ‘iron’
 begèsi ‘length’ lɔ́rɔ́gà ‘orange’
 kúrúté ‘hip, waist’ dúdúntɔ́ ‘knee’
 kúkúúkè ‘dove’ kúkùd̀̀̀̀ ‘ceiling’

Of the 22 such nouns in my lexicon, several suggest frozen noun class prefixes, e.g. *págbàrà* ‘man’ (cf. *gbàrà* ‘man’, *pàbia* ‘woman’), *vikoko* ‘chimpanzee’ (cf. *vígà* (~ *íj-gà*) ‘needle’, where *ví-* likely was a diminutive prefix cognate with Proto-Bantu class 19 **pi-*).

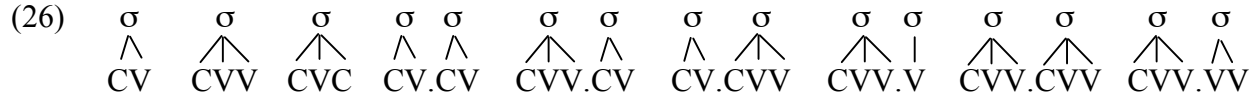
The crucial question is how to capture the fact that the PRSTEM has the maximum length CVV(C)VV? Among the possibilities are that the PRSTEM consists of a maximum of (i) four Vs; (ii) four moras; (iii) two moraic trochees; (iv) two heavy syllables. While all four correctly predict that there cannot be a fifth V (or mora), only the last accounts for two additional sets of prohibitions in (25).

- (25) a. *CVCVCV, *CVCVCVCV
 b. *CVCVVV, *CVVVCV

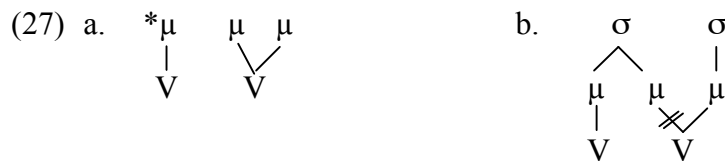
As we have said, the PRSTEM can have at most two Cs, hence structures such as in (25a) are impossible. Somewhat more surprising is the unacceptability of the structures in (25b), where the C₂ occurs between one and three Vs. Recall that both CVVCVV and CVVVV are well-formed.

¹² In fact, L-M is often converted to M-M in the postlexical phonology as well (Hyman 1985:114-115). Still, an alternate pronunciation *kɛ̃ɛ̃ɛ̃ɛ̃* has also been recorded.

All of this can be readily captured if we assume that the PRSTEM is subject to a maximum size constraint of two heavy syllables, i.e. a $[\sigma_s\text{-}\sigma_w]$ trochee, where each syllable can have one or two Vs (or moras). Under this assumption the nine CV PRSTEM shapes in (7a) have the following syllable structures:



An unexpected biproduct of this analysis can be seen in its interaction with the conspiracy motivating the two processes in (14): Both D-insertion and vowel shortening respond to the constraint in (27a) which prohibits a long vowel following another vowel (whether long or short):



As seen in (27b), if the first vowel were short, the result could be a long vowel split between two syllables. Since such a structure is often prohibited in languages, the fact that vowel shortening applies to delink the long vowel, as indicated, is not an unwelcome result.¹³

This completes the case for the syllable in Gokana: The PRSTEM consists exactly of one foot which in turn can be mono- or bisyllabic, with either syllable being heavy or light. Note that while this analysis correctly accounts for the ill-formedness of (25a,b), it does not do everything: We still need to explain the restricted distribution of stem-final C₂ and the non-occurrence of consonant clusters within the PRSTEM :

- (26) a. CVC vs. (*CVVC), *CVCVC, *CVVVC etc.
 b. *CVCCV, *CVCCVV etc.

While several of the starred sequences in (26) can be ruled out by the maximum of two Cs, the bisyllabic trochee does not directly account for this limitation. Nor does it explain why *CVVVC is unacceptable, since it could be syllabified as CVV.VC on analogy with CVV.V and CVV.VV. One idea might be to assume that a stem-final C is necessarily a syllable, which might include an empty nucleus (Kaye 1990) and function as word-final onsets as proposed by Piggott (1999), Harris & Gussman (2002) and others. One might go further to assume that consonant clusters also have an intervening nucleus (see Scheer 2004 and references cited therein). Under this interpretation both *CVCVC and *CVCCV would necessarily consist of three syllables, hence exceeding the bisyllabic maximum of the PRSTEM. This approach would be particularly compelling if *CCV and *CCVV were well-formed prosodic stems, with initial CC clusters disallowed in longer forms. An empty nucleus or “ghost V” approach will certainly be a bit

¹³ One would still have to explain why a form such as /tú-‘ÈÈ/ ‘take [+logophoric]’, realised [tùè], is not instead syllabified *tù.èè vs. CV.CVV, which is an acceptable PRSTEM structure, e.g. /zoB + ‘ÈÈ/ → [zo.vèè] ‘dance [+logophoric]’.

abstract for many phonologists who, like myself, would be willing simply to impose further constraints on final consonants and consonant clusters.¹⁴

Still, it must be pointed out that there is some evidence that CVC verbs are not consonant final. In Gokana, verb roots show a binary tonal contrast, which I refer to here as H vs. non-H (cf. however Hyman 1985:108ff). It turns out that CVC verbs all have non-H tone, while CVC-i verbs almost all have H tone.¹⁵

(27)	<i>CVC</i> (= 45 verbs)	<i>CVC-i</i> (= 36 verbs)
	lab ‘disperse (tr.)’	láví ‘pick’
	ʔul ‘blow’	ʔúrí ‘boil (intr.)’
	pig ‘mix’	pógí ‘scratch’
	num ‘groan (in pain)’	nyímí ‘be sour’
	kin ‘reject, refuse’	kéní ‘tremble’
	ʔaŋ ‘pull out’	séŋí ‘use up sth. Gradually’

The tonal complementarity seen in (27) suggests that the CVC verbs are probably best analyzed as CVC-i, with a tonally-sensitive rule deleting the *-i* suffix. It turns out that this *-i* appears in the aorist (“zero”) tense, which adds a L tone suffix when the subject is first or second person (Hyman 1985:109). Thus compare the various realizations of the future and aorist forms in (28).

(28)	<i>future</i>	<i>aorist</i>	
	CV:	òó sa	ò saà ‘you sg. (will) choose’
		òó tú	ò túù ‘you sg. (will) take’
	CVC:	òó dib	ò divì ‘you sg. (will) hit’
	CVC-i:	òó kóri	ò kóri ‘you sg. (will) call’
	CVV:	òó bìi	ò bìi ‘you sg. (will) squeeze’
		òó síi	ò síi ‘you sg. (will) catch’

While CV verbs add a mora with L tone in the aorist to which the root vowel can spread, CVC verbs appear to add *-i*. In reality this is the underlying /-i/ suffix that accompanies CVC verbs, e.g. /diB-i/ ‘hit’, but which otherwise drops out in the non-H tone class. The last examples in (28) show that a H CVC-i verb and both tone classes of CVV verbs do not insert an additional mora to take the L tone. A reasonable interpretation, then, is that these aorist forms assign a L suffix which cannot link to the V₁. As a result, an additional mora will be required whenever the verb base is CV.

While there is reason to posit a “floating” *-i* suffix after CVC verbs, there is no corresponding evidence in the case of nouns, which contrast all three tones:

(29)	<i>H</i> (31)	<i>M</i> (16)	<i>L</i> (7)
	dém ‘tongue’	dəm ‘rock’	dùm ‘life’
	dóm ‘husband’	kib ‘louse’	kùn ‘basket’
	ʔól ‘farm’	kòm ‘wound’	kòl ‘forest’

¹⁴ It also would not explain why CVVC is generally prohibited (but cf. note 6).

¹⁵ Three CVC-i verbs have been found with M-M tone: *bugi* ‘count, read’, *bagi* ‘tear’ (= *baa*), *ʔivi* ‘fetch?’.

In this context consider the genitive construction in Gokana. As seen in (30a,b), when a noun has H or L tone, the genitive consists of a simple juxtaposition of possessed + possessor:

- (30) a. CV H té ‘tree’ té nɛn ‘tree of person’
 b. L gɛ̀ ‘knife’ gɛ̀ nɛn ‘knife of person’
 c. M tɔ ‘house’ tɔ̀ nɛn ‘house of person’
 d. CVC mɛn ‘neck’ mɛ̀n nɛn ‘neck of person’
 e. CVV mii ‘blood’ miì nɛn ‘blood of person’
 f. CVCV kigi ‘axe’ kigi nɛn ‘axe of person’

In (30b-f), however, we observe that there is a L tonal morpheme that marks the genitive after M tone nouns. The example in (30c) shows that this L requires an inserted mora when the noun is CV (Hyman 1985:24). Crucially no mora is inserted when the M noun is CVC, as in (30d) or CVV (30e), nor when the noun is bisyllabic M-M (30f). It seems, therefore, that nouns such as in (29) are really /CVC/ and that we must simply accept that final consonants are allowed in Gokana—but only when a word is monosyllabic.¹⁶ In the next section we consider some of the implications of these findings.

5. Discussion

In §4 we presented the following potential evidence in support of the syllable in Gokana:

- (31) a. the maximum prosodic stem structure CVV(C)VV can be characterised either as two syllables or four moras
 b. if we assume two syllables, each with a maximum of two moras (Vs), the absence of *CVCVVV and *CVVVCV structures is accounted for
 c. if we assume two syllables, we can account for why the prosodic stem allows only two CVs, i.e. *CVCVCV, *CVCVCVCV
 d. the trochaic [σ_s - σ_w] structure is consistent with the C_1/C_2 and V_1/V_2 asymmetries
 e. the vowel shortening rule in (14b) which “conspires” with D-insertion in (14a) to avoid a sequence of vowel + long vowel prevents a long vowel being split between two syllables
 f. if a final C must count as a syllable, we have an explanation as to why the prosodic stem can be CVC, but not *CVCVC; (*CVVC is left unexplained)

Among the above arguments (31a-c) are stronger than (31d-f), as the latter either have other possible explanations, e.g. positional prominence, or are highly theory-dependent, e.g. requiring a final C to be a syllable. It should be noted here that (31a) was insufficient in the absence of (31b,c), since it would be possible to characterise the CVV(C)VV structure either as a bisyllabic trochaic foot or as a “colon” consisting of two moraic trochees (cf. Michael 2010 for such a need in Iquito, an Zaparoan language of Peru). There is a hidden assumption that prosodic maxima

¹⁶Recall, however, the exceptional CVVC nouns mentioned in note 6, specifically M tone *piob* ‘tsetse fly’ and *biɔm* ‘fingernail’. The fact that they appear as *piob nɛn* and *biɔ̀m nɛn* in the genitive rather than **piòb nɛn* and **biòm nɛn*, may argue that they are better analyzed as /pyɔB/ and /byɔB/ [+nasal].

should be characterizable as prosodic constituents, just like prosodic minima. In this connection note the variations in maximal stem size reported for NW Bantu languages spoken to the East of the Cross-River area (Hyman 2006):

- (32) a. four - syllable maximum: Yaka (Hyman 1998), Bobangi (Whitehead 1899)
 Punu (Fontaney 1980, Blanchon 1995)
 b. three (~four) - syllable maximum: Koyo (Hyman 2008)
 c. three-syllable maximum: Tiene (Ellington 1977), Basaá (Lemb & Degastines 1973,
 Hyman 2003), Kukuya (Paulian 1975)

In Bobangi out of 3,324 verbs found in Whitehead's (1899) dictionary, only three have stems of five syllables, while in Koyo, only the durative *-Vg-* suffix is capable of producing a fourth syllable in the stem. Although there is no additional evidence, perhaps these four syllables constitute a colon of two bisyllabic (trochaic?) feet. What then to think about the three-syllable maximum languages, where both Basaá and Kukuya show the middle syllable to be "weak"? Are these trisyllabic (s-w-w) feet, or are they bipedal (s-w)(s)? Paulian's (1975) analysis suggests the latter, as she claims that the first CV has a primary accent and the third CV a secondary accent.

Assuming that the Gokana PRSTEM does consist of a maximal bisyllabic trochee, this still leaves open the question of how to syllabify moras which lie outside the stem. How should the extra two moras of (23b) be interpreted—as one bimoraic or two monomoraic syllables? Up until now we have tacitly proceeded by assigning stem moras to syllables in a left-to-right, two-by-two fashion. This would mean that forms like those in (16) would be syllabified as in (33a,b).

- (33) a. $\begin{array}{c} \sigma \\ \wedge \\ \mu \quad \mu \\ \wedge \quad | \\ b \quad u \quad a \end{array}$ b. $\begin{array}{c} \sigma \quad \sigma \\ \wedge \quad | \\ \mu \quad \mu \quad \mu \\ \wedge \quad | \quad | \\ b \quad u \quad à \quad è \end{array}$ c. $\begin{array}{c} \sigma \quad \sigma \\ | \quad \wedge \\ \mu \quad \mu \quad \mu \\ \wedge \quad | \quad | \\ b \quad u \quad à \quad è \end{array}$
 'cook (intr.)' [+logophoric]

In (33a) /bua/ has been assigned to one syllable, although it could conceivably have been interpreted as two. In (33b), the first two moras have been assigned to the first syllable, and the third mora to the second syllable, basically for the reason of wanting to fill up the head syllable of the trochee before moving to the second syllable. The reverse in (33c), however, would not pose any problems and would be needed, in any case in forms like *da.ràè* 'pick up [+logophoric]'. Perhaps more serious indeterminacy arises in the case of enclitics. Consider the sentence in (34a) which should be compared with (23a):

- (34) a. $m\bar{e}\acute{e}\acute{e} \quad \acute{e} \quad k\bar{o} \quad m\bar{m}\bar{m} \quad k\bar{e}\bar{e}\bar{e}\acute{e}\acute{e}\acute{e}$ 'who_i said I woke him_j up??'
 b. [$k\bar{e}\bar{e} + \acute{e}$] = $\bar{e} = \acute{e}$ < /kEE + È + 'EE + É /
 wake -CAUS 3sg. FOC [+nasal]

As seen, (34a) differs from (23a) in not having the logophoric suffix /'ÈÈ/. As a result 'who' and 'him' are not coreferential. If we follow the left-to-right syllabification procedure we have applied thus far, the PRSTEM will syllabify as $k\bar{e}\bar{e}\bar{e}.\acute{e}$. But how do we syllabify the remaining two moras? If the 3sg. enclitic joins the causative suffix of the PRSTEM, this would produce $k\bar{e}\bar{e}\bar{e}.\acute{e}\bar{e}.\acute{e}$.

If syllabification is not permitted to apply across the PRSTEM-enclitic boundary, this will instead produce $k\bar{e}\bar{e}.é.\bar{e}\bar{e}$.

Whichever solution one adopts—and there seems to be no consequence of choosing one vs. the other—we still have the question of what to do with leftover moras: Do they form their own foot or do they remain unfooted? The problems of how to syllabify and how/whether to foot extra-PRSTEM moras also arise with proclitics, e.g. the *eaè* sequence in (35a).

- (35) a. $n\acute{e}n\ \text{?ea}\acute{e}\ m\grave{o}n\ a$ ‘the person that he saw’
 b. $n\acute{e}n\ \text{?eo}\grave{o}\ m\grave{o}n\ a$ ‘the person that you sg. saw’

This sequence is obtained by sequencing the relativiser /'e/, the 3sg. subject pronoun /a/ and the past tense morpheme /È/. (The final /a/ is a determiner which occurs at the end of relative clauses.) As seen from the initial glottal stop, the sequence is phrased off from what precedes it. The two questions concern how this sequence should be syllabified and whether it should be considered a foot. Following what has been said thus far, the most likely syllabification would be *?ea.è* rather than *?e.aè* or *?e.a.è*. The first syllabification would also be consistent with recognizing *?ea.è* as a $[\sigma_s\text{-}\sigma_w]$ trochaic foot. Consider, however, the corresponding sentence in (35b) which differs only in having a 2sg. subject. Following the same assumptions, when /ó+È/ fuses as *oò* not only would this produce the unusual syllabification *?eo.ò*, with the long vowel split between two syllables, but we would also have to explain why the resulting long vowel does not undergo shortening by (14b). While a number of solutions come to mind (rule ordering, blocking of (14b) when the result would be the loss of a full morpheme etc.), we have to at least recognise that questions of syllabification and footing are quite irrelevant once one leaves the PRSTEM domain.¹⁷ In other words, other than the PRSTEM-specific arguments in (31a-c), there is little reason to assume syllables in Gokana. We take up this last point in §6.

§6. Conclusion

To sum up the previous discussion, we have seen some advantage to recognizing syllables in Gokana and in characterizing the PRSTEM maximum as a weight-insensitive trochee. Without the syllable one would have to stipulate this maximum as four moras with additional statements to rule out CVCVVV and CVVVCV as well as any structure that would have three CVs. Another language which was once thought not to organise its phonology in terms of syllables is Japanese, which Trubetzkoy (1969[1939]:180) characterised as a “mora-counting language”. Although Japanese makes extensive use of the mora, often without regard to syllabification, Kubozono (1999, 2003) has provided both metrical and accentual evidence for the syllable. Going in the opposite direction, Steriade (1999) and Blevins (2003) argue for alternatives to the syllable in accounting for phonotactics. In many cases, phonotactic restrictions are most insightfully captured by reference to the foot (cf. Harris 2004), as we have also seen concerning the C_2 in Gokana. While much of the strongest remaining evidence for the syllable is thus metrical, e.g. concerning stress, which necessarily relies on syllables, or prosodic morphology, Steriade (2009) has questioned the reliability of syllables in accounting for certain rhythmic properties and rhyming.

¹⁷ Additional indeterminacies could be cited from other parts of the grammar but will be skipped to keep the discussion brief.

Although what we are left with at this point is anything but clear, it is in this context that we have had to address the questions of whether Gokana has syllables and whether the syllable is universal. As pointed out in §2, claimed syllable universals are often highly theory-dependent. I therefore seek to “normalise” the discussion and shift to the more basic question in my subtitle: What’s so great about being universal? Why does it matter? Whether evidence for the syllable can be found in all languages or in all languages except Gokana seems hardly to make a difference. If no language can exist without syllables, some may wish to make claims about inateness. However, if Gokana were the only language without syllables, wouldn’t the near-universality of the syllable raise the same research questions? It would seem that either position on its universality is compatible with attempts to ground the syllable in processing and/or production, and account for the overwhelming tendency to phonologise the CV vs. VC asymmetry into the familiar constituents known as syllables.

In my abstract I included a quote from Hayward (1997) which expressed surprise at the lack of response to the earlier claim that Gokana lacked syllables. Ironically, if Gokana has syllables, then perhaps the field was correct to ignore Hyman (1983, 1985), feeling that further investigations would ultimately reveal them. Independent of the confidence we may or may not have in the evidence presented for syllables in Gokana in this paper, I would like to follow Hayward and argue for a less “black and white” stance: Some languages care a lot about syllables, while others care much less. Gokana cares so little about the syllable that all we have is the ambiguous interpretation of the CVV(C)VV PRSTEM maximum. In fact, a moment’s reflection will reveal that lots of things in phonology are like this: Some languages care a lot about stress, like English, while others care less, e.g. Hungarian, where “Stress does not play a significant role in the word level phonology...” (Kenesei, Vago & Fenyves 1998:428) or Turkish, where stress can be identified mostly on the basis of f_0 (Levi 2005), but not a single phonological constraint or rule refers to stress. In fact, some languages care so little about stress that they have been claimed not to have stress at all, e.g. Bella Coola:

[There is] no phonemically significant phenomena of stress or pitch associated with syllables or words.... When two or more syllabics occur in a word or sentence, one can clearly hear different degrees of articulatory force. But these relative stresses in a sequence of acoustic syllables do not remain constant in repetitions of the utterance. (Newman 1947:132)

The same distinctions are observed in how phonetic features are phonologised: Some languages care a lot about nasality, others less, and still others lack nasality altogether, e.g. several Lakes Plain languages of New Guinea. It is well known that languages phonologise f_0 differently, e.g. as lexical tone, pitch-accents, boundary tones. However, even among lexical tone languages, some exploit tone much more and in more varied ways than others, and so forth. Phonological typologists should be concerned with characterizing and explaining these interesting variations in how phonetic substance is phonologised in different languages—but we needn’t claim that every available phonetic feature or structure will be exploited to the same extent in every language.

In a recent lead article, Evans & Levinson (2009) argue that the attention of linguists and cognitive scientists should be more directed towards explaining the enormous diversity found among the world’s languages which, they suggest, violate a number of claimed grammatical universals. Here too I would suggest the same “property-driven” approach as I have advocated for syllables: Most languages care a lot about recursion, constituent structure, and the difference

between nouns and verbs, while others care less, so much less that one sometimes has to dig to find evidence that they care at all. Instead of legislating syllables as a universal, the universal question should be: What properties do different languages really care about? How much does Gokana care about syllables?

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