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**Do All Languages Have Word Accent?  
Or: What's so great about being universal?**

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The purpose of this paper is to address the question: Do all languages have word accent? By use of the term “word accent” I will first consider the traditional notion of “stress accent” at the word level, as so extensively studied within the metrical literature. However, I will also ask whether certain other phenomena which privilege a single syllable per word should also be identified at some higher level of abstraction as “word accent”, whether on a par with stress, or different. There of course have been claims that all languages have word accent, e.g. most recently:

“A considerable number (probably the majority, and according to me: all) of the world's languages display a phenomenon known as **word stress**.” (van der Hulst 2009:1)

On the other hand, a number of scholars have asserted that specific languages lack word stress. This includes certain tone languages in Africa, but also languages without tone. In 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).

In fact, many languages do not provide unambiguous evidence of word accent. In many cases the interpretations have been theory-dependent and highly personal: Some people see (and even hear) stress where others don't. Given this fact, it will be extremely difficult to demonstrate to the satisfaction of all that stress either is or isn't universal.

The approach that I advocate is what I call “properties-driven typology” (PDT). Whereas word-prosodic typology has been concerned with pigeon-holing languages and giving them names such as “tone”, “stress” and “pitch-accent” (see Hyman 2006, 2009a for a critique of this practice), the approach of PDT is to eschew this concern and typologize on the basis of the individual properties which may or may not satisfy preconceived definitions and prototypes. In the current context focus is on the properties that one vs. another language manifests which have stress-like qualities. Thus, (1) summarizes what I earlier identified as a possible “prototype” of a stress system, namely one which, like English, piles on property after property which unambiguously point to stress (Hyman 2009a:217) :

- (1) a. stress location is not reducible to simple first/last syllable
- b. stressed syllables show positional prominence effects
  - i. consonant-, vowel-, and tone positions are greater on stressed syllables
  - ii. segments are strengthened in stressed syllables (e.g. Cs become aspirated or geminated, Vs become lengthened, diphthongized)

- c. unstressed syllables show positional non-prominence effects
  - i. consonant-, vowel-, and tone oppositions are fewer on unstressed syllables
  - ii. segments are weakened in unstressed syllables (e.g. Cs become lenited, Vs become reduced)
- d. stress shows cyclic effects (including non-echo secondary stresses)
- e. stress shows rhythmic effects lexically/postlexically (cf. the English “rhythm rule”)
- f. lexical stresses interact at the postlexical level, e.g. compounding/phrasal stress
- g. lexical stress provides the designated terminal elements for the assignment of intonational tones (“pitch-accents”)
- h. other arguments that every syllable is in a metrical constituent which can be globally referenced

What makes English so unambiguous is that metrical stress is multiply “activated” throughout the phonology—as we shall see below, English “cares” a lot more about stress than many other “stress languages”. The key notion here is “phonological activation”:

“... features are specified in a given language only to the extent that they are needed in order to express generalizations about the phonological system” (Clements 2001:2).

As a result of the thorough-going phonological activations in (1), it would be folly to attempt to analyze English without stress. At best, obvious generalizations would be missed. The issue of interpretation becomes more relevant when approaching systems which, unlike English, show only a mild interest in stress.

While (1) was presented as a possible prototype for stress, and hence a reference point for comparing other potential stress-accent systems, I now believe that English is an outlier: While a large plurality of languages show some evidence for word stress (including some tone languages), few are like English in making stress the central issue of their word-level phonology and morphology. Examples include Hungarian, where “stress does not play a significant role in the word level phonology...” (Kenesei, Vago & Fenyves 1998:428) and 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. What I will argue is that stress is not special in being obligatorily activated in all phonological systems, rather it is like most other properties, for example, nasality: While some languages care a great deal about the feature [nasal], allowing it to characterize not only consonants but also vowels, making it into a prosody or harmony, nasality is more restricted in most languages (e.g. as a segmental feature on consonants), or even absent entirely (e.g. in several Lakes Plain languages of New Guinea). And so it is with stress. A language without stress would be one in which syllables are undifferentiated from each other, showing none of the classical signs of stress in (1). If such a language makes it so hard to find the stress, one naturally has to ask whether stress is phonologically activated at all.

Which brings us to the meta question in my subtitle: Does it matter if stress is “universal” or if it is only very common? Does this change the research agenda of theoretical phonologists or the activities of descriptivists in the trenches? I do not think so: Either way one wants to know (i) why so many languages “phonologize” stress, drawing either on the tendency to mark word edges (Hyman 1977, Bybee et al 1998) or the root-affix asymmetry; and (ii) what the universal tendencies are once a language decides to phonologize stress. In other words, even if stress is not

universal, it is still a highly complex and variable phenomenon that can keep many phonologists busy for a lifetime.

In the following sections I provide a definition of stress and its major properties, considering phonetic, functional, and formal interpretations. I then address the problem that definitions of word stress require that all languages have syllables and words, assumptions which have themselves occasionally been questioned (e.g. by Hyman 1985 and Schiering, Bickel & Hildebrandt 2010, respectively). I also consider languages where the marking of “accent” is done by phrase, or where the accent-bearing unit is not the syllable, but rather the mora. While there is some typological value in grouping together all such phenomena, the question, again, is not one of determining what should vs. should not be called “accent”, but rather what properties can be obligatory vs. culminative in marking words and other domains. Rather than taking a strong (and often arbitrary) universalist stand, I suggest, following Evans & Levinson (2009) and others, that it will be more revealing to map out the diversity—as in StressTyp (Goedemans & van der Hulst, to appear) and in other cross-linguistic studies on stress systems. In short, all researchers should take a properties-driven approach in addressing this most murky area of phonological typology.

## **2. Defining stress-accent**

As indicated in §1, there are not only conceptual, but also terminological issues concerning “stress” and “accent”. While I will sometimes write “stress” or “stress-accent” to refer to the traditional notion of stress, the phrase “word accent” is designed to be potentially more general, perhaps encompassing additional phenomena that might not be called “stress” per se. Let us begin with stress(-accent) and then turn to these other phenomena.

Approaches to defining stress-accent have been of three types:

(i) The phonetic approach is concerned with the realization and perceptibility of stress. The typical question is how stress is phonetically manifested? The acoustic properties of  $f_0$ , duration and amplitude (intensity) are typically investigated, as are the articulatory gestures involved in enhancing the properties of stressed syllables (cf. Lehiste 1970).

(ii) The functional approach typically focuses on the communicative motivations of stress-accent (cf. Garde 1967, Martinet 1960). The obligatory and culminative parameters of “one and only one primary stress per word” are said to communicate the number of words that are present. If primary stress is “fixed” on the same syllable in every word, e.g. first or last, it assumes also a “demarcative” function, indicating where the actual word boundaries are. Especially when “echo stress” iterates, such rhythmic marking enhances the other functions, as syllables build up to or away from the primary stress.

(iii) The formal approach is interested in stress in terms of its organizational or structural properties. Although not opposed to the other approaches, it is possible to study the formal properties of stress without addressing communicative or phonetic implications. In this sense, we could also refer to such approaches as “phonological” or perhaps better “grammatical”, as phonology is a component of grammar. In this approach emphasis is on the construction of metrical constituents (e.g. feet), often with regard to other aspects of grammar (cf. Halle & Vergnaud 1987, Hayes 1995 etc.).

Despite considerable overlap in actual practice, the questions raised by each of the three approaches can be quite different: What are the acoustic correlates of stress across languages? What is the relative perceptibility of the different acoustic correlates of stress-marking across languages? What is the range of structural rules assigning stress across languages?

All of the above assumes that we know stress when we see/hear it. In Hyman (2006:231) I presented the following definition of stress:

- (2) A language with stress-accent is one in which there is an indication of word-level metrical structure meeting the following two central criteria:
- a. *obligatoriness* (OBLHEAD): every lexical word has AT LEAST one syllable marked for the highest degree of metrical prominence (primary stress)
  - b. *culminativity* (CULMHEAD): every lexical word has AT MOST one syllable marked for the highest degree of metrical prominence

As a result of combining the properties in (2a,b), every lexical word must have ONE AND ONLY ONE (primary) stress, the prosodic head of that word. The above seems to be a very workable definition characterizing a very common and recognizable prosodic type known as stress-accent. If we attempt to generalize this definition to all kinds of accent, problems arise having to do each of the five elements mentioned in (2):

- (3)
- a. accent is obligatory
  - b. accent is culminative
  - c. the accent-bearing unit is the syllable
  - d. the accentual domain is the word
  - e. accent represents metrical prominence

First, there are languages which satisfy (2a) but not (2b), and vice-versa. Second, the obligatory or culminative property in such languages typically involves a fixed H(igh) tone, and nothing else, thereby making it hard to show in some cases that this H = metrical prominence. Third, in some of these languages, the obligatory or culminative H tone is assigned to the mora, while the stress-bearing unit is generally assumed to be the syllable (or syllable rime). In fact, in such languages, two kinds of “accent” contrast within a syllable: if the H goes on the first mora, the result will be a [HL] falling tone; if it goes on the second mora, the result will be a [LH] rising tone. As an illustration, consider the following examples from Kinga, a language in which all words must have a H tone (Schadeberg 1973):

- (4)
- |    |               |                     |      |
|----|---------------|---------------------|------|
| a. | okúheka       | ‘to laugh’          | [H]  |
|    | okúvala       | ‘to count’          |      |
|    | okugeendélela | ‘to walk around’    |      |
| b. | okugéenda     | ‘to go’             | [HL] |
| c. | okuhwaánana   | ‘to become similar’ | [LH] |

In the infinitive a /H/ is assigned to the antepenultimate mora (vowel). This results in a simple [H] in (3a), where the antepenultimate mora also constitutes a short CV syllable. In (3b) and (3c), however, where the /H/ is assigned to the first vs. second mora of a bimoraic CV: syllable, the result is a contour tone. A similar result is found in Somali, where /H/ is culminative, but not obligatory, e.g. verbs and most subject nouns are realized without H (Hyman 1981, Saeed 1999). While terms such as “pitch-accent” are often applied in such cases, the larger question is whether obligatory or culminative /H/ tone should be equated with accent. Finally, in some languages the

obligatoriness or culminativity is met not at the word, but rather at phonological phrase level. This is the situation in Chimwiini, which exhibits both obligatory H and culminative vowel length at the phrase level (cf. §3 below).

Such problems leave us with at least two options. The first option would be to distinguish two kinds of word accent: stress-accent, which meets the criteria in (2), and “pitch-accent” which meets either a subset of the properties of stress-accent or a set of related properties. One could, for example, stipulate that pitch-accent refers to a tone (or vowel length?) that has to be either obligatory or culminative, and whose accent-bearing unit can be either the syllable or the mora. However, as I argue in Hyman (2006, 2009a), this would yield a rather loose set of “pitch-accent” systems, with relatively little in common: obligatory vs. culminative vs. obligatory and culminative, syllable vs. mora, word vs. phrase etc. The problem gets even worse if we consider other “evidence” for accent, e.g. considering positions which show greater consonant- or vowel contrasts as “accented” (cf. §4 below). Of course, it might be interesting to compare different kinds of phonetic or phonological properties which can be obligatory and/or culminative. However, it is doubtful that a culminative “at most one” glottal stop per word can make a language “accentual”.

The second option is to insist that accentual = metrical and that there is no difference between “accent” and “stress”. While “stress accent” is a coherent notion, namely the prosodic type defined by (2), the more general concept “word accent” is not. Recall from §1 that typology should be properties-driven, not names-driven. The reason there is no controversy giving the name “stress-accent” to systems which meet the criteria in (2) is that they constitute a combination of recurring properties, a tight system which is capturable exclusively in terms of metrical concepts. Note that (2) only establishes whether a language has a stress-accent system. It has nothing to say about whether it also has tone as a separate parameter, as in the Germanic cases. And speaking of Germanic, (2) does not specify the degree of phonological activation of the metrical system. Many scholars have been impressed with the fact that Germanic languages tend to “care” more about stress than, say, Romance languages (cf. the elusive “stress- vs. syllable timed” distinction). Thus, van Coetsem (1996:39) speaks of two kinds of prominence: “dominant” vs. “non-dominant”. Although the distinction is sometimes presented as one of realization (e.g. concerning whether or how much stressless syllables are “reduced”), the alternative is to view the putative differences more generally in terms of the degree of phonological activation. Languages which exploit metrical structure for multiple purposes, as in (1), will exhibit the kind of “metrical coherence” found in Germanic (Dresher & Lahiri 1991), van Coetsem’s “dominant” type of prominence. Languages such as Hungarian or Turkish, cited in §1, seem different because their metrical structure has little or no relevance outside the stress system itself. The contrast with English, whose phonology cares so much about stress, is quite striking. At the other extreme, Bella Coola cares so little that we can’t even determine if it has word stress at all.

To appreciate this, consider what it would mean for a language not to have stress-accent. The brief answer is that syllables within a word are undifferentiated from each other, showing none of the classical signs of stress in (1). The lack of systematic differentiation of one and only one primary stress per word is what motivated Newman (1947) to comment that Bella Coola does not have word stress. It is of course difficult to demonstrate the absence of stress, especially given its abstract nature and variability across languages. In my view, however, if a language makes it so difficult for a trained linguist of the distinction of Stanley Newman to find the primary word stress, maybe it’s because it’s not there. In fact, there are quite a few languages

which have been claimed to lack word stress. Some of these are tonal, but not all. Examples of the four logical combinations of tone and stress are given in (5).

(5)

	<i>Stress</i>	<i>No Stress</i>
<i>Tone</i>	Seneca, Fasu, Mayá, Copala Trique...	Yoruba, Igbo, Hakha Lai, Skou...
<i>No Tone</i>	English, Russian, Ojibwe, Swahili...	Bella Coola, French, Tamazight...

In the following section, we further consider some of the ways languages fail to meet the criteria for stress-accent in (2).

### 3. More on languages without word stress

In §2 we both presented the definition of stress-accent in (2) which crucially refers to syllables and words. It was said that cases where an obligatory and/or culminative /H/ is assigned to a particular mora (rather than syllable) cannot be assumed to represent stress-accent. An even more serious challenge to the universality of (2) comes from another aspect of Bella Coola, where according to Bagemihl (1991), all syllables must contain a vowel or sonorant consonant. However, there are full words and utterances that consist solely of voiceless obstruents, e.g. *xʔpʰχ<sup>w</sup>hʔhʔs k<sup>w</sup>c* ‘then he had had in his possession a bunchberry plant’ (Nater 1984:5, cited by Shaw 2002:1). In addition Hyman (1985:26-32) claims that there are no syllables in Gokana at all (cf. Hyman 2009b for an updated statement). If we insist that stress-accent can only be assigned to syllables, and if these studies are correct, then either some words (Bella Coola) or all words (Gokana) can lack stress-accent.

A similar problem would arise in any language which could be demonstrated to lack (phonological) words (cf. Schiering, Bickel & Hildebrandt 2010), or at least those where stress appears to be phrasal, as perhaps in French. Consider the following variations in word- and phrase-based penultimate stress in Yowlumne (Newman 1944:28-9, Archangeli 1984-5:112):

(6)

a.	[ʔóhom]	[maʔ	ním	hiʔ]	[dab	wíyen]	[mókyi]	‘you, then, will not tell my
b.	[ʔohóm	maʔ]	[ním	hiʔ]	[dab	wíyen]	[mókyi]	wife’
c.	[ʔohóm	maʔ]	[nim	hiʔ	dab]	[wíyen]	[mókyi]	
d.	[ʔohom	maʔ	ním	hiʔ]	[dab	wíyen]	[mókyi]	
	not	you	my	will	then	tell.FUT	wife	

As Newman (1944:28) put it:

“A group of words composing a phrase is pronounced as a stress unit, taking the stress on the penultimate syllable. Nouns and verbs tend to keep their word stress unmodified in the phrases, largely by acting as the phrase nucleus in drawing to themselves any preceding unaccented words.... However, the grouping of words into phrases is extremely plastic.... In faster speech the phrases tend to be longer and the stresses, as a result, fewer in number.”

The multi-word bracketings in (6) are consistent with Bickel, Hildebrandt & Schiering’s (2009:64) claim that “stress-related domains tend to be universally larger than other domains.”

One of the claims made by Bickel et al in the above studies is that the phonological word may be non-distinct from the phonological phrase in certain “monosyllabic” languages. Their

example is Vietnamese. The one we will consider here is Kuki-Thaadow, whose mostly monosyllabic words exhibit the following syllable and tone contrasts:

(7)		/H/ (→ LH)		/HL/		/L/	
	CVV:	mũu	‘hawk’	vâa	‘bird’	khàa	‘body lice’
	CVD:	kăm	‘mouth’	nôw	‘seedling’	mòl	‘stick’
	CVVD:	dăay	‘dew’	kêeŋ	‘leg’	vàan	‘sky’
	CV?:	phě?	‘mat’	tsê?	‘brick’	vò?	‘pig’
	CVT:	-----		-----		kòt	‘door’
	CVVT:	-----		khûup	‘knee’	-----	

In the vast majority of cases a Kuki-Thaadow word is monomorphemic and monosyllabic. The shapes of these monosyllables are indicated in the first column of (7), where T = /p, t/; D = /w, y, l, m, n, ŋ/, VV a long vowel or one of the two diphthongs, /ie/ and /uo/. The three underlying tones are /H/, /HL/ and /L/. As indicated, /H/ is realized LH in isolation (Hyman 2010). The question is whether there is evidence that all (or certain) monosyllabic words are stressed.

One possible relevant fact is that a rule of vowel shortening affects /CVV/ words within phrases, e.g. when a noun is followed by a modifier:

(8)	vâa	‘bird’	mũu	‘hawk’	khàa	‘lice’
	vá lien	‘big bird’	mù lien	‘big hawk’	khà lien	‘big lice’
	vá thũm	‘three birds’	mú thũm	‘three hawks’	khà thũm	‘three lice’
	vá thâa	‘bird’s strength’	mú thâa	‘hawk’s strength’	khà thâa	‘lice’s strength’

While I will ultimately reject the following interpretation, someone who is concerned that all languages should have word stress might claim that the phrases in (8) are phonological words with final stress. That is, CVV → CV is a “reduction” process due to lack of stress on the initial nouns in (8). However, against this interpretation I would present the following arguments:

(i) The derived CV behaves exactly like other syllables. Other than the shortening, there is no segmental or tonal reduction. The tonal alternations on the shortened versions of /vâa/, /mũu/ and /khàa/ are the seen in (8) are exact the same as those which are found on CVT, CVVT, CVD, and CVVD. This includes the obligatory simplification of contours on all non-final syllables.

(ii) Length is not affected (“reduced”) in closed syllables, e.g. *vàan lien* ‘big sky’. The shortening rule is specific to underlying /CVV/ which does not contrast with /CV/.

(iii) Shortening can apply to several CVV words in a row. In the following examples, /hòo/ is a plural marker:

(9)	vâa	+	hlàa	+	gùu	+	hòo	→	vá hlà gù hòo	‘bird’s wing-bones’
	múu	+	lúu	+	khâa	+	hòo	→	mú lú khá hòo	‘hawk’s head lice’

It would seem counterintuitive to claim that the forms on the right constitute quadrisyllabic phonological words (as opposed to phonological phrases).

(iv) There are some CVV words which fail to shorten because they derive historically from \*CV? (present-day CV/ derives from earlier \*CV(V)k and \*CV(V)r). A minimal pair is shown in (10).



- (10)    *nàa* + *màn* → *nà màn* ‘work price’  
          *nàa* + *màn* → *nàa màn* ‘leaf price’ (cf. Hakha Lai *nǎ?* ‘leaf’)

It is of course possible to analyze ‘work’ as /*nàa*/ and ‘leaf’ as /*nàC*/, making it identical with other CVC forms, but why should /CVV/ show a tendency to stresslessness while /CVC/ does not? It is important to note that the CVV → CV rule is the only phonological process that differentiates syllables. Otherwise, if word stress is obligatory, one would have to say that every non-CV syllable is “stressed”. At best, this would be redundant.

Two additional problems for the universal stress-accent hypothesis come from Chimwiini (Kisseberth 2009). The first is that the “accentual” criteria do not line up. Chimwiini has two culminative properties: (i) vowel length, which can be realized only on the penultimate or antepenultimate syllable; (ii) H tone, which can be realized only on the penultimate or final syllable. The two culminative properties produce the four combinations in (11).

- |      |                      |                                       |  |                         |
|------|----------------------|---------------------------------------|--|-------------------------|
| (11) |                      | <i>antepenultimate V:</i>             |  | <i>penultimate V:</i>   |
|      | <i>final H</i>       | <i>na:-ku-já</i> ‘you sg. are eating’ |  | <i>ji:lé</i> ‘you ate’  |
|      | <i>penultimate H</i> | <i>na:-kú-ja</i> ‘s/he is eating’     |  | <i>jí:le</i> ‘s/he ate’ |

The question is: Which of these culminative properties represents the “accent” that universalists might identify with stress? While Selkirk (1986) provided a metrical analysis of culminative length similar to the Latin stress rule, the one H is more stress-like in the sense that it is both culminative and obligatory. However, there is another problem in Chimwiini: both properties are culminative (and H is obligatory) at the phrase level. Thus compare the sentences in (12) with those in (11):

- |      |                      |   |                                  |
|------|----------------------|---|----------------------------------|
| (12) | <i>final H</i>       | <i>jile ma-tu:nda</i> ‘you sg. ate fruit’ | (cf. <i>ji:lé</i> ‘you sg. ate’) |
|      | <i>penultimate H</i> | <i>jile ma-tú:nda</i> ‘s/he ate fruit’    | (cf. <i>jí:le</i> ‘s/he ate’)    |

As seen, the underlying length of the first word /*ji:le*/ is not realized. Second, the final vs. penultimate H of the one-word utterances *ji:lé* ‘you ate’ and *jí:le* ‘s/he ate’ is not only lost, but the contrast is actually “transferred” to the following noun object /*ma-tu:nda*/, which is underlyingly toneless. It seems that neither of these would-be accentual properties can be equated with word stress.

The above discussions of Kuki-Thaadow and Chimwiini examine the “accentual” potential of vowel length. Vowel length is often cited as evidence for stress in Bantu languages in two situations: (i) Languages which have lost the Proto-Bantu \**V:/\*V* contrast may have penultimate vowel lengthening. (ii) Languages which have preserved the contrast may restrict *V:* to the penult, or to antepenultimate and penultimate positions, as was seen in Chimwiini. However, Bantu penultimate lengthening is a phrasal phenomenon, often intonational, as in Shekgalagari, where lengthened is observed in declaratives, but not interrogatives:

- |      |  |  |   |
|------|--|--|---|
| (13) | <i>declarative</i>                                   |  | <i>interrogative</i>                              |
|      | a. <i>ri-nâ:ri</i> ‘buffalos’                        |  | <i>ri-nárí</i> ‘buffalos?’                        |
|      | b. <i>a-bal-a ri-nâ:ri</i> ‘he is counting buffalos’ |  | <i>a-bal-a ri-nárí</i> ‘is he counting buffalos?’ |



In (16a) not only is the penultimate long, but so are the preceding vowels in each form. The forms in (16b) look rather similar, with the vowel length of the initial syllable being licensed by the long penultimate [íí]. However, note that the vowels are short in the corresponding related forms to the right. It is these that show that the first syllables are underlyingly /vuu/, /taa/ and /ʃaa/, which must be shortened before the short penult in *vulúka* etc. Not only must the penult be long, but there cannot be an interruption in the chain of long vowels: CVV.CVV.CVV.CV is well-formed, but CVV.CV.CVV.CV is not. (16c) shows that this is not length agreement, as the first syllables remain short before long penultimate vowels. While such licensing of pre-penultimate length appears to be mostly word-bound, (16d) shows that part or more of the noun phrase (and perhaps other constituents) may form “prosodic groups” in which the first word optionally undergoes shortening. Maniacky (2002:20) thus observes:

“Pour finir, signalons que la perte de longueur vocalique est assez aléatoire au niveau post-lexical. La position pénultième dont on doit tenir compte est celle du mot, et non celle de l'énoncé tout entier. Dans notre étude tonale, nous définirons un groupe prosodique qui correspond au syntagme nominal. Dans ce cas-là, l'abrègement est plus sensible à l'ensemble de l'énoncé, sans vraiment être systématique.”

While the (ante-) penultimate length effects definitely indicate that all positions are not equal in “prominence”, two points should be noted: First, different positions may be privileged for tone vs. length. Besides the non-overlap we saw in (11) from Chimwiini, the Nguni languages show penultimate lengthening, but rightward attraction of a H to antepenultimate position. Second, these positions do not usually have segmental effects, whether on the inventory of contrasts or on the phonetic realizations. An exception to this comes from the variety of Makonde described by Liphola (1999, 2001). As seen in the following examples, Makonde has the familiar process of root-controlled vowel height harmony found in many Bantu languages. It also has penultimate lengthening which in the following examples applies to the applicative suffix /-il-/:

- (17) a. /ku-pelivilil-il-a/ → ku-pelevelel-eel-a ‘to not reach a full size for’  
 b. /ku-kolumul-il-a/ → ku-kolomol-eel-a ‘to cough for’

As seen, the triggers of vowel harmony are the root vowels of /pel/ and /kol/. This much is unsurprising. What is unusual, however, is that pre-penultimate mid vowels may optionally “reduce” to [a]:

- |         |                                |    |                   |                      |
|---------|--------------------------------|----|-------------------|----------------------|
| (18) a. | ‘to not reach a full size for’ | b. | ‘to cough for’    |                      |
|         | /ku-pelivilil-il-a/            |    | /ku-kolumul-il-a/ |                      |
|         | ku-pelevelel-eel-a             |    | ku-kolomol-eel-a  | (no vowel reduction) |
|         | ku-pavelelel-eel-a             |    | ku-kalomol-eel-a  | (one application)    |
|         | ku-palavelel-eel-a             |    | ku-kalamol-eel-a  | (two applications)   |
|         | ku-palavalel-eel-a             |    | ku-kalamal-eel-a  | (three applications) |
|         | ku-palavalal-eel-a             |    |                   | (four applications)  |

This apparent reduction process does not require the penult vowel to be long (the process applies even when the verb has a short penult in phrase-internal position) or even a mid vowel ([e] and

[o] can reduce to [a] even if the penultimate vowel is /a/). There are two facts that point to the penult as a prominent position: First, whether long or short, penult [e] and [o] cannot themselves reduce to [a]. Second, the reduction of pre-penultimate mid vowels to [a] cannot be interrupted by [e] or [o]. Thus, forms such as *\*ku-palevalel-eel-a* and *\*ku-kolomal-eel-a* are ungrammatical. What this means is that there a cline building up to the penult: a vowel further to the left (and hence lower on the cline) cannot fail to reduce if a vowel further to the right and hence higher on the cline) doesn't. We now see the relation to Ngangela, where an earlier pre-penultimate vowel cannot be long if a later (penultimate or pre-penultimate) vowel is short. The further a syllable is away from the penult, the more likely it is to undergo vowel shortening in Ngangela and vowel reduction in Makonde.

#### 4. More on positional prominence and “accent”

The Ngangela and Makonde examples are quite interesting in that there appears to be a gradual cline in prominence up to the penultimate position. If such effects are “accentual”, however, the penult does not seem to have Drescher & Lahiri’s “metrical coherence”. In most Bantu languages the root-initial syllable contrasts more vowels than other positions, including the penult (see (21) below). We would like to know not only how widespread such positional prominence effects are cross-linguistically, but whether there are non-stress languages in which all of the prominence effects cohere in a single position.

A limited such case may be provided by Leggbó (Hyman & Udoh 2007). The relevant phenomenon is illustrated in (19).

(19) a.	CV	du	‘beat’	du-ε	‘beat him’	du-ó	‘beat you’
b.	CVV	zoo	‘find’	zoo-ε	‘find him’	zoo-ó	‘find you’
c.	CVC	dum	‘bite’	dum-ε	‘bite him’	dum-ó	‘bite you’
d.	CVC-i	bini	‘carry’	bini-ε	‘carry him’	bini-ó	‘carry you’
e.	CVC-a	tùma	‘stop’	tùùm-εε	‘stop him’	tùùm-òó	‘stop you’
				/tùma+ε/		/tùma+ó/	

The forms in (19) show how the two pronominal enclitics *-ε* ‘him/her’ and *-ó* ‘you sg.’ are realized after verb stems of different shapes. Everything is straightforward in (19a-d). In (19e), however, we see that the final /a/ of *tùma* ‘stop’ fuses with the enclitics, producing long *-εε* and *-òò*. This much also is straightforward. What is not expected is that the root vowel also lengthens—and only in this context. While Hyman & Udoh consider various analyses, including an otherwise unattested process of length harmony, given Ngangela and Makonde, this may not seem so far-fetched: A less prominent non-root vowel can be long only if the more prominent root vowel also is. Whereas Ngangela shortens a less prominent long vowel if followed by a more prominent short vowel, Leggbó appears to lengthen the more prominent short vowel to agree with the less prominent long vowel. As Hyman & Udoh lament, Leggbó unfortunately does not provide appropriate longer words to test whether lengthening might be iterative: stems are maximally bisyllabic, or trisyllabic when verb roots occur with the *-azi* pluractional suffix.

What can be tested, however, is whether the root syllable is in fact prominent in other ways. The table in (20) presents the consonant contrasts in stem-initial, stem-medial, and stem-final position:

(20) a. <i>initial</i> = 38	b. <i>medial</i> = 10	c. <i>final</i> = 4
p t c k kp pp tt cc kk kkp		kk
b d g gb bb dd jj gg ggb	bb dd	
	ff ss	
v z vv ddz		
w l y ww ll yy	l	l
m n ŋ mm nn ɲɲ ɲɲ	m n ŋ	m n ŋ
	mm nn ɲɲ	

As seen, 38 consonants contrast stem-initially vs. ten stem-medially. Since fortis consonants (indicated as double) cannot occur finally, this leaves only four of the ten medial consonants to appear stem-finally. As in so many languages of the Nigeria-Cameroon border area, Leggbó exhibits a much larger set of contrasts stem-initially than non-stem-initially. The same is true of vowels: /i, e, ε, u, o, ɔ, a/ appear in the first stem syllable, long and short; only short /i, u, a/ occur in the second syllable.

The question which naturally arises at this point is whether the Leggbó stem-initial prominence effects should be equated with stress, and similarly concerning the penult in Ngangela and Makonde. While there does not seem to be any problem in doing so in Leggbó, the two Bantu languages bring us to a possible contradiction. On the basis of the following vowel and tone distributions, Bennett (1978:14-15) argues for stem- and final stress in Proto-Bantu:

(21) *prefix V - first stem V - internal Vs - final stem V*

*i *I *U  *a *L	*i *u *I *U *ε *ɔ *a *H, *L	*i *I *U  *a *L	*i *u *I *U *ε *ɔ *a *H, *L
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By inheritance, many present Bantu languages maintain fuller vowel and tone contrasts stem-initially, but have subsequently introduced penultimate lengthening. This includes Shona, the language on which Beckman (1997) originally based her model of positional faithfulness, and Tswana:

Shona: “When an utterance consists of several phonological words, the final word of the utterance, which may be followed by a pause, carries a marker of penultimate length relatively longer than those of preceding vowels. *úya* ‘come’, *úya kúnó* ‘come here!’, *úya kúnó*, *mwà.má* ‘come here, child!’, *úya kúnó mwà.ná:ɲgù* ‘come here, my child!’” (Fortune 1980:1.36)

Tswana: “Full length occurs in the penultimate syllable of a word pronounced in isolation or at the end of a sentence.... This constitutes the characteristic penultimate accent of Tswana.... When a word is in non-final sentence position, it still retains its penultimate accent, but in much lesser degree, i.e. only half-length is used. Normal short length occurs in final and non-penultimate syllables, and in some monosyllabic words.” (Cole 1955:55)

How should word stress be characterized in such languages? Stem-initial? Penultimate? One primary, one secondary? Once again, as in the case of Chimwiini tone vs. vowel length, the criteria do not line up. There is a lack of metrical coherence.

Despite the fact that most current-day Bantu languages maintain at least some of the Proto-Bantu distributional asymmetries in (21), descriptive statements about stress placement in Bantu are largely geographical: Stem-initial stress has mostly been posited for Northwest Bantu languages, e.g. Duala, Kukuya, Bobangi, Ntomba, Bolia, Tetela, while claims of penultimate stress mostly concern Eastern and Southern Bantu, e.g. Kinande, Chichewa, Shona, Xhosa. While stress is often not even mentioned in descriptions of Bantu languages, overt claims of no stress are more scattered. Besides Luganda in Eastern Bantu, consider the more westerly Lomongo and Ntomba:

“...l'accent dynamique est entièrement éclipsé [en Lomongo] par la marcation bien plus essentielle des tons.” (Hulstaert 1934:79)

“...even [those Ngombe speakers] who readily recognize the position of tone in the words of their own language, find it difficult to decide where the stress of a given word lies.” (Price 1944:28)

To this we can add that Hulstaert (1961:129) ran experiments showing that there is no stem-initial stress in Lomongo, which is however NW Bantu.

The above characterization of Ngombe speakers brings us back to formal vs. phonetic approaches to stress: As discussed in §1 and §2, the formal (metrical) approach insists that stress-accent is abstract and not necessarily detectable in terms of consistent phonetic features. On the other hand certain phonetic properties tend to accompany stress, e.g. effects on consonants and vowels. A curious reversal of strategy is to go directly from these expected phonetic properties to claims about stress: Many descriptions of stress are impressionistic, with possible interference from English or other languages. The logical extreme of this occurs when the realizational features of stress are exploited for distinctive purposes, e.g. contrastive tone and length (see Wetzels 2002:627)—and even intensity:

“...stress in Nilotic is privative, a feature with binary opposition.... a word may be stressed or not. The stress in itself may function as a morpheme in some cases and stress may occur on any of the three level tones.” (Gilley 2004:100)

Shilluk examples of alleged distinctive stress are cited in (22).

(22)	<i>singular</i>	<i>plural</i>		<i>singular</i>	<i>plural</i>	
a.	'dít	diêt	'bird'	b.	álàṭ	á'lẹṭ 'cloth'
	'tòok	tòok	'mouth'		péèm	'pèém 'chest'

Gilley (2004:117) describes the phonetics of distinctive stress as follows:

“Phonetically, stress in these Nilotic languages is characterized by a shortening of vowel length, and by an increased intensity or level of force on the syllable.”

The problem is that this interpretation leaves Shilluk with many unstressed words, in contradiction to the definition of stress-accent in (2). In other African languages outside Bantu, stress is often elusive and may be absent, e.g. in Igbo, Yoruba, Nupe, Ewe, Akan. However, Africanists do appreciate that a language can have tone and stress. Thus, Noonan (1992:42) describes Lango as follows:

“Primary stress in Lango is invariably placed on the root syllable.... Where the root is longer than one syllable — only possible in nouns — the first vowel receives stress.... Stressed vowels in Lango are somewhat louder and slightly longer than unstressed vowels. The difference between stressed and unstressed vowels is not as pronounced as in English; instead, the relation between them is closer to that found in syllable timed languages such as Spanish.” (Noonan 1992:42)

As evidence that stress is playing an active role in the phonology, he describes the following stress-sensitive tone rule:

“Following a H, L’s become H’s up to and including the next stressed L, or until a H is encountered, the last L to be affected becoming HL. The rule may apply across word boundaries.” (Noonan, p.51)

Examples of the operation of this rule are seen in (23).

- (23) a. /'dóg 'gwènò/ → dóg gwénò ‘a chicken’s mouth’ (‘mouth’ + ‘chicken’)  
 b. /'píg à'bòlò/ → píg ábòlò ‘plantain juice’ (‘juice’ + ‘plantain’)

In all of the above and especially in (2) it has been assumed that metrical prominence = stress-accent. One problem that was addressed with respect to Kinga in (4) is that metrical prominence is not restricted to syllables. In fact, in some cases tones are metricaly assigned. In a recent analysis Michael (2010:10) analyzes Igquito with both metrical structure and an obligatory but non-culminative H:

“All prosodic words in Iquito bear at least a single H tone, and if a given prosodic word lacks lexically specified high tones (a common occurrence), a high tone is assigned to the syllable bearing primary stress [= the penultimate mora].”

The examples in (24) illustrate a minimal pair between lexical and default H tone:

- (24)
- |    |                   |           |       |                     |                   |
|----|-------------------|-----------|-------|---------------------|-------------------|
|    |                   |           |       | <i>-ya</i> ‘plural’ | <i>kí-</i> ‘my’   |
| a. | lexical initial H | : /túuku/ | túuku | ‘tumpline’          | túuku-ya kítúuku  |
| b. | default penult H  | : /tuuku/ | tuúku | ‘ear’               | tuukú-ya kí-tuúku |

In (24a) there is a lexical /H/ on the first mora of /túuku/ ‘tumpline’ which remains in place when followed by the toneless suffix *-ya*. When preceded by the H tone prefix *kí-*, two H tones are observed in the word ‘my tumpline’. In (24b), the toneless word /tuuku/ ‘ear’ receives a H on its penult in isolation, but on its final mora when suffixed by *-ya*. Since there is already a /H/ on the prefix of *kí-tuuku* ‘my ear’, a default H is not assigned. As shown in (25) Michael proposes the right-to-left construction of bimoraic trochees. As expected, default H is assigned in (25a,b), but not in (25c). (25d,e) however show that default H will be blocked only if a lexical /H/ occurs in the last four moras (two feet; colon) of the word:

- (25) a. /pirusu/ → (pi)(rúsu) ‘electric eel’ (moraic trochees)  
 b. /pirusu-ka/ → (piru)(súka) ‘electric eels’

- c. /kí-pirusu/ → (kípi)(rusu) ‘my electric eel’ (no penultimate H)  
 d. /kí-pirusu-ka/ → kí(piru)(súka) ‘my electric eels’  
 e. /kí-pirusu-ka-hata/ → kí(piru)(suka)(háta) ‘with my electric eels’

In other words, H is obligatory (but not culminative) within the last four moras of the word.

Iquito again demonstrates that obligatory and/or culminative H tone by itself may not be stress-accent. The question is whether it should be identified as some other kind of accent, e.g. “pitch accent”? Such a decision comes with baggage. As Gussenhoven (2004:42) points out:

“‘Accent’... is an analytical notion and cannot be measured. [It is] thus different from stress, which is typically an observable phenomenon, and different also from tone, whose existence is equally measurable...”

We thus note the following: While some languages must be analyzed with stress, others with tone, and some with both, no language MUST be analyzed as a third prosodic type called “pitch accent”. A tonal interpretation is always possible. In some cases, a so-called pitch-accent language has both stress and tone; in other cases, its tone are simply restricted, e.g. obligatory, as in Iquito, or culminative, as in Somali.

An additional reason to reject the identification of restricted-tone systems with “accent” is that tone can do things that stress-accent cannot. As an example, consider Urarina (Olawsky 2006), whose words generally have a single final H in isolation, but belong to the four classes in (26).

- (26) *class tone pattern determined by A-D class of the phrase-initial word*  
 A first word = L; H is assigned to initial syllable of following word  
 B first word = L; H is assigned to 3rd syllable of following word  
 C first word = L; H is assigned to last syllable of final word of phrase  
 D first word keeps its final H tone when a word follows, all the rest = L

Examples are given in (27).

- (27) A raaná ‘peccary (sp.)’ → raana rú.a.kaa ‘he has carried peccary’  
 B obaná ‘peccary (sp.)’ → obana rü.a.káa ‘he has carried peccary’  
 C reemaé ‘dog’ → reemae rü.a.káa ‘he has carried dog’  
 D makusajarí ‘pepper’ → makusajarí rü.a.kaa ‘he has carried the pepper’

The important point is that stress systems do not have the property of the restricted /H/ in Urarina: No language has a set of four classes of words which correspondingly assign different stress patterns to the following word. This is something which tones do! Again note from the examples in (27) that H is obligatory only at the phrase level in Urarina, which is also not an expected property of stress systems.

Since tones may be assigned by metrical principles, let us briefly consider the issue of when metricality = stress? As was pointed out early in its development, the functions of metrical phonology can be to count and locate positions or to construct constituents. When performing the latter, there can again be two separate functions:



“The construction of bounded metrical constituents performs two separate functions. On the one hand, it subdivides the string into substrings of two (resp. three) elements each; on the other hand, it marks a particular element in the substring as its head by assigning it an asterisk that is then interpreted as stress.” (Halle & Vergnaud 1987:58)

What makes the head-marking so convincing in a stress-accent language is the globality factor: Headed, i.e. stressed syllables can have multiple effects throughout a system, as outlined in (1) above. Where metrical tools are needed to locate or place H tones, this globality is typically absent. As a result, it is totally adequate to characterize such cases as “restricted tone systems” (Voorhoeve 1973). Their metricality may be reminiscent of stress-accent, but everything else is like a tone system.

## **5. Summary**

In the preceding sections we defined stress-accent as word-level metrical structure identifying one obligatory and culminative head syllable per lexical word. Among the problems addressed were that some languages may have words without syllables or maybe no syllables at all, while other languages assign metrical structure at the phrase level. A properties-driven typology will of course ask what the relevant feature-bearing unit is, in what domain the generalizations hold, and so forth. However, since the possibilities are numerous and sometimes contradictory, it makes little sense to invoke a third category of “pitch-accent”. Even as a practical label, it tells us little: We need to know the specific properties.

To determine the relevant properties, I have invoked Clements’ notion of “phonological activation”. Languages may “care” a lot about stress in the sense of multiple activation, or relatively little, perhaps not at all, as in the case of other properties, e.g. nasality (§1). While I had presented (1) as a prototype for stress-accent in earlier work, with English particularly in mind, I now consider the extensive activation of stress in English to be an outlier: Stress may have extensive effects on segmental features, but this is only an option, not a necessary property. As Bybee, Chakraborti, Jung & Scheibman (1998:267) note, this option may correlate with other factors:

“... in a given language the less predictable stress is from the word boundary, the more likely that the language will have vowel reduction in unstressed syllables, vowel lengthening in stressed syllables, and consonantal changes restricted to stressed or unstressed syllables” (Bybee, Chakraborti, Jung & Scheibman 1998:267)

Towards the other end of the spectrum, recent psycholinguistic work has found that speakers of languages with only slight marking of stress may exhibit “stress-deafness” (Peperkamp & Dupoux 2002), e.g. French, Hungarian, and Finnish vs. English and Polish. The logical endpoint is languages without convincing word-level stress at all. This last possibility will not be welcome by all. Goedemans & van der Hulst (to appear), for instance would like to include stress under a broader, universal notion of “accent”:

“A comprehensive typology of accent manifestation remains to be developed, but given the broad area of cues and functions it is likely that many more languages may have word accent than just

those in which accent is manifested as “pitch” or “stress”. As a working hypothesis, we might assume that all languages have accent.”

Although considering the notion of “accent” to represent a spectrum of properties is very appealing, it will be useful only to the extent that we are clear as to what counts as accent and what does not. As we have seen in several cases, a language may have two (more?) accentual properties which conflict, e.g. by picking out different positions to mark as “heads” for vowel length vs. tone. While one may intuit that all of the above is accentual, there seems to be little advantage in doing so.

This leads us to the question in my subtitle: What’s so great about being universal? Why does it matter? If no language can exist without word stress, one might want to make cognitive claims, but even if only MOST languages have word stress, wouldn’t we have to ask the same question of why? Would it change the goals of StressTyp, for instance? Unless universality would mean that stress-accent is “innate” and widespread frequency would mean “highly unmarked”. Either way phonologists would still be left with the task of sorting out the tremendous complexities and variations in all systems that have ever been called “accentual”. It seems reasonable at this stage of the enterprise to suggest a shift: Rather than focusing on universality (and innateness), the real issue, following Evans & Levinson (2009), is to map out and address the extraordinary diversity found in prosodic systems and in phonology in general? Only then will we have a full picture of what is possible in human language.

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