

THE INTERPRETATION OF TONE IN PRINCIPENSE CREOLE

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It has been claimed that Principense Creole is a tone language with high, low, and rising pitches with the latter deriving from Portuguese words of two syllables of which the last is stressed. The correctness of these claims is examined and evidence adduced that they should be modified. The alternative view of pitch contrasts in Principense Creole offered is that they manifest a system with a free pitch accent. The origins of the surface contrast between a rising and falling pitch are traced to putative simplifications during pidginization in the segmental shape of original Portuguese words. It is claimed that Rising, Falling, and High pitches are all functionally identical, being realizations of phonological prominence in different contexts.

Günther [1973] treats Principense as a tone language.<sup>1</sup> This is of interest for two reasons: firstly, it is not *a priori* obvious that a creole based on tone languages, e.g. Bini, and a stress language (Portuguese) should be a tone language rather than a stress language, and secondly, as Günther points out, to describe a creole as a tone language constitutes a departure from the

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<sup>1</sup>Principense is the language of the island of Príncipe, now part of the Republic of São Tomé and Príncipe. According to a census of 1963 quoted by Valkhoff [1966:79], out of a total population of 7790, Príncipe had 4104 "Moncós", the name by which the Principense speakers were known to the Portuguese. No figure was given for Principense speakers in São Tomé, but a small number of them do live on the larger island. The three islands of the Gulf of Guinea, São Tomé, Príncipe, and Annobón, were discovered by the Portuguese at dates between 1470 and 1472. Perhaps a decade or so later, São Tomé, the nucleus of the three islands, was the first to be settled. The first settlers arrived in São Tomé from Portugal in 1485 and 1493, and 920 slaves from the Bight of Benin, a Kwa-speaking area, had been brought to the island by 1499. In the 16th century, many of the slaves were brought from the Congo, in the Bantu-speaking area. The population of Príncipe came from São Tomé from the beginning of the 16th century. Principense is a Portuguese-based creole, with a pronounced Kwa and Bantu substratum (cf. Ferraz [1975]).

usual treatment of pitch or accentual phenomena in creoles, viz. that European-based creoles normally are regarded as stress languages.<sup>2</sup>

Günther bases his conclusion on the following observations. First, he claims that stress contrasts have in fact been replaced by pitch contrasts according to a rule of wide generality:

$$P \begin{bmatrix} +\text{stress} \\ -\text{stress} \end{bmatrix} \rightarrow Pr \begin{bmatrix} \text{high pitch} \\ \text{low pitch} \end{bmatrix}$$

This rule does not account for what he estimates to be 10% of the total vocabulary, namely for substratum forms from Bini or some other language for which it has not been possible to establish synchronic cognates in order to compare tones. Nevertheless these forms also manifest the same pitches found on words of Portuguese origin. Second, in addition to the contrast of H and L pitch, there is a rising pitch. (Günther marks H as ' , rising as ^ , and L with no pitch mark.) He traces this pitch "...to Portuguese words of 2 syllables of which the last is stressed" where the medial consonant has been deleted. He cites Pr/kwê/ < P/ku'řer/ 'to run' via \*kuré → kuóé = kué (p.50), (however, it is unclear what the relevance of kué is to the form in question, viz. kwê ). One finds minimal pairs such as kwé 'rabbit' and kwê 'run', and this leads Günther to postulate a system of three tonemes H, L, and R.

The present co-author Luiz Ferraz recorded samples of a dialect of Principense during a visit to Príncipe in 1969/1970, and we have examined his data against the background of Günther's claims about its tonal structure. While we find that some of Günther's conclusions can be sustained in our data, others cannot or else they require to be generalized to a wider range of facts before they can. We also find Günther's argument to be incomplete with respect to his own data, since it leaves unexplained certain facts about the

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<sup>2</sup>A claim attributed to E. Hamp which may conflict with these assertions is reported by C-J. Bailey and K. Maroldt [1976:1, 17]. It is that the prosodics of a creole will be those of the indigenous language. If, as seems likely, the tone language Bini contributed substantially to the formation of Principense creole, and as such qualifies as the indigenous language, Hamp's claim would not be true of the synchronic tonal prosodics as interpreted by us. However the history of Principense makes it impossible to rule out a different tonal system at an earlier stage.

distribution of pitch contrasts. Our attempts to explain these restrictions and to encompass a wider range of facts has led us to the conclusion that Principense cannot be characterized adequately as a tone language. The alternative that is proposed will emerge in the course of the argument that follows

We begin by citing a number of facts which are not mentioned by Günther. The first of these is that there is a falling pitch in addition to the high, low, and rising pitches:

(1)	sa:	[\ ]	'pull'	Port. pu'xar
	fu:ta	[\_]	'steal'	Port. 'furta
	to:tu	[\_]	'skew'	Port. 'torto
	su:du	[\_]	'deaf'	Port. 'surdo
	suo	[\ ]	'sweat'	Port. su'or

(Stress is marked with ' in the Portuguese forms.)

The minimal pairs in (2) illustrate the phonetic contrast.

(2)	fu:ta	[\_]	'steal'	Port. 'furta
	fu:ta	[/_]	'bread fruit'	Port. 'fruta
	pe:tu	[\_]	'near'	Port. 'perto
	pe:tu	[/_]	'black'	Port. 'preto

The second point which is also clearly illustrated in (1) and (2) is that dynamic pitches appear on long vowels. In fact they only appear on long vowels or a sequence of vowels. In some cases this "extra quantity" is realized as a rearticulated vowel. This is most clearly heard in citation forms; in less deliberately enunciated forms a long vowel may replace a rearticulated vowel.

Günther's claim that "...it can be shown clearly that the rising tone developed historically from Portuguese words of 2 syllables of which the last is stressed" [p.9, our translation, AT/LF] is therefore not correct. The examples in (1) and (2) show clearly that dynamic pitches are associated with either an initially stressed or finally stressed syllable in the (admittedly synchronic) Portuguese forms. Third, while Günther's rule concerning stress to tone correspondences is indeed fairly general, there are a few cases where the placement of high pitch does not correspond to an original Portu-

guese stress:<sup>3</sup>

(3)	peru	[ <u> </u> ]	'turkey'	Port. pe'ru
	gina	[ <u> </u> ]	'hen'	Port. ga'linha
	nuvĕ	[ <u> </u> ]	'cloud'	Port. 'nuvem

Fourth, in the speech of our informants it is not the case that stress differences are wholly missing. What we find is that it is always possible to identify a point of *prominence* in a word, but this is not uniformly associated with only a high pitch. Rather it may be realized as stress and heightened pitch on a short vowel, stress and heightened pitch with a slight increase of length in the vowel, though not to equal the length of the vowels in (1) and (2), or simply heightened pitch.<sup>4</sup> This variability suggests that one should adopt the term *prominence* when dealing with this aspect of Principense prosodics. This will appropriately subsume the increases in loudness, pitch, and length noted. The fact that *prominence* may manifest itself solely in the form of heightened pitch and the absence of *prominence* in the form of a lower pitch, both on syllables that are equally stressed (loud), shows that one is not dealing with a single dimension of loudness variation.<sup>5</sup>

We turn now to our fifth observation, which involves the distributional behaviour of the "tones" in Günther's data. Since we have identified an additional dynamic pitch (falling) we shall refer to its distribution as well. The four pitches have an extremely restricted distribution. In forms of two

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<sup>3</sup>Note that certain Principense verbs seem to have been derived from Portuguese infinitives, while others are from 3rd person forms. For example, pika [ ] 'prick' < Portuguese pi'car (infinitive) but kosa [ ] 'scratch' < Portuguese 'çoça (3rd person). Spurious cases of Principense high tone failing to correspond to Portuguese stress could be provided if these two sources are not kept in mind.

<sup>4</sup>The observations on pitch and length are derived from spectrograms. The stress judgements are based on auditory impression.

<sup>5</sup>The constellation of higher pitch and increased intensity and duration as phonetic correlates of stress is well known [Lehiste 1970:125ff]. However, the fact that Principense so strikingly uses three pitch variations [/ \  ] to mark "stressed" syllables, shows that one is not dealing with a conventional "stress language". Notice that the emergence of predominantly pitch contrasts from so-called stress differences is a natural development.

or more syllables one syllable may carry H(igh), R(ise), or F(all), but only one of these may appear; more than one syllable, however, may bear the L(ow) pitch. Illustrating with a CVCV base we have the following possibilities:

- (4) a.    HL        RL        FL  
           LH        LR        LF  
       b. \*HH       \*RR       \*FF       \*LL  
       c. \*HR       \*HF       \*RF  
           \*RH       \*FH       \*FR

The patterns in (4a) show the six permissible sequences and (4b) and (4c) the 10 other conceivable but not attested sequences of pitches. The fact that H, R, and F may not appear in combination in CVCV (or longer) forms but may be preceded or followed only by L, is suggestive of their functional identity. Recall that there is always only one prominent syllable in a word; the remaining syllables manifest lack of prominence with a L. From a perceptual point of view too, syllables with R and F are prominent in the same way as syllables previously identified as carrying the complex [+stress, +length, + higher pitch].

What these severe restrictions on pitch distribution suggest is that one is not dealing with a conventional "segmental" tone language at all (Fromkin [1972], McCawley [1970]).<sup>6</sup> If the distributional facts argue against Principense being a free tone language and a number of phonetic facts argue against it being a conventional stress language, how are we to classify the language? The suggestion we wish to make is that it is a *free, pitch accent language* [Voorhoeve 1973]. The term which originates in an unpublished paper of McCawley's [1964], which we have not seen, applies to languages where *any* syllable in a word may be prominent (hence "free"), with the prominence being

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<sup>6</sup>Günther [1973:49] shows he is aware of the problem when he notes the absence of words with like tones, i.e. for his tones HH, LL, RR. The status of two words in his data is unclear to him between HL or LL. If the latter "... this could be strong argument for the phonological classification of Principense' (as a tone language) [p. 41; the translation is ours, AT/LF]. However, the case is decided for him by the minimal pair pwé [ˀ] vs. pwê [ˀ] where the contrast rests only on a H vs. R pitch. The conclusion that Principense is a tone language therefore becomes irresistible.

"musical", rather than involving loudness (the latter would be referred to as stress-accent [Hyman 1975]). Our decision to treat Principense as having a pitch accent system, rather than a stress accent system, may seem arbitrary in view of the observation above that loudness does indeed play a part in marking prominence. However, as we noted, loudness is *always* accompanied by heightened pitch, and prominence is frequently marked *without* an accompanying increase in loudness. We feel, therefore, that the type of prominence we are dealing with is predominantly a matter of pitch, with loudness as only an optional secondary concomitant.<sup>7</sup>

So far we have appealed to distributional and phonetic facts to provide support for our claim. There remains however one other crucial characteristic of a pitch accent language which is found in Principense; it is the operation of an "accent reduction rule". What this refers to is the reduction of prominence on all syllables of a phonological word before or after the prominent syllable. Put differently, all pitch distinctions are neutralized to L on unaccented syllables of the word. The words in (5) vary in length from 2 to 5 syllables, only one of which bears the prominence (marked " "); all other syllables are L:

(5)	"vaka	[ <sup>-</sup> _ ]	'cow'	Port. 'vaca
	ba"xi	[ _ <sup>-</sup> ]	'basin'	Port. ba'cia
	"ɔzεge	[ <sup>-</sup> - _ ]*	'gecko'	Port. 'osga
	ko"neta	[ _ <sup>-</sup> _ ]	'horn'	Port. cor'neta
	kaka"no	[ _ _ <sup>-</sup> ]	'heel'	Port. calca'nhar
	mixi"dadi	[ __ <sup>-</sup> ]	'need'	Port. necessi'dade
	pulumu"nia	[ ___ <sup>-</sup> ]	'pneumonia'	Port. pneumo'nia

\* Successive low tones are subject to downdrifting, hence the two levels on which L is realized on the second and third syllable.

These observations seem to be sufficient to establish our claim that Principense has a free pitch accent system. However, for the reader who still re-

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<sup>7</sup>We are aware of the possibility that the degree to which stress en-  
croaches on the basic pitch accent system may be a function of the very  
strong Portuguese influence to which Principense has been subjected since the  
turn of this century [Valkhoff 1966:85].

mains sceptical we offer the data in (6):

(6)	"ɓa:su	[/_]	'embrace'	Port. a'braço
	"ɓasu	[_]	'spleen'	Port. 'baço
	"fu:ta	[/_]	'breadfruit'	Port. 'fruta
	"fu:ta	[\_]	'steal'	Port. 'furta
	"pɛ:tu	[\_]	'black'	Port. 'preto
	pi"ka	[_]	'prick'	Port. pi'car
	kje"se	[_\]	'forget'	Port. esque'cer

The examples in (6) so clearly involve pitch contrast that it would be ridiculous to cling to an account of Principense syllable prominence that failed to capture this fact.

In the following section of the paper we examine the putative "pidginizing rules" that operated on Portuguese forms to create long vowels with dynamic tones. We then argue that our decision to treat Principense as a pitch accent language provides an explanation for these facts. Words of African origin with long vowels and dynamic tones are easily interpretable in terms of this explanation.

The data in (7) illustrate how certain segments or syllables were deleted during the formation of Principense:

(7)	<u>Portuguese</u>		<u>Principense</u>
	'preto	'black'	pe:tu [/_]
	'perto	'near'	pe:tu [\_]
	ca'roço	'pip'	ko:su [/_]
	ma'rido	'husband'	ma:ɗu [/_]
	mo'lhado	'wet'	mwadú [_]
	ga'linha	'chicken'	gina [_]
	'nasce	'is born'	nase [_]
	'serve	'serves'	ʃi:vi [\_]
	ver'dade	'truth'	vedadĩ •[_]

Without going into all the details, a CVCV structure is produced through reduction in the number of syllables or apparent deletion of certain consonants in an initial or medial cluster. If the consonant was a sonorant and the margin of a stressed syllable, one might wish to claim that compensatory

lengthening of the peak took place; if a sonorant was the margin of an unstressed syllable no lengthening took place. The reason for our diffidence towards the claim of deletion and compensatory lengthening will emerge in the discussion below.

thus	'preto } 'perto }	→ 'pe:tu
but	ver'dade	ve'dadi

What is of interest is the resulting pitch, since, as can be seen from the pair preto/perto, the result is not uniform. For most of the examples quoted the facts are clear: a rising pitch results from what appears to be deletion in pre-accentual position and a falling pitch from deletion in post-accentual position. In an unaccented syllable deletion has no effect on pitch, and the pitch is low. An exception like gi'na [ ] 'chicken', which does not appear as the expected \*gi:na [/\_], can be explained most plausibly by postulating a shift of accent to the last syllable *before* the deletion and elisions reduce ali to i: (as we noted above, the position of the Principense accent need not correspond to the original stressed syllable in Portuguese). The result "mwaðu [ ] 'wet' from mo'lhado appears to be exceptional since one might expect \*"mwa:ðu [/\_] or \*"ma:ðu [/\_] (cf. "ba:ta [/\_] < ba'rata ). However, this may have arisen through compensatory lengthening of /a/ being blocked because of the retention of /u/ and its subsequent consonantalization and loss of tone.<sup>8</sup>

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<sup>8</sup>We have not explored fully the various restrictions on vowel sequences and their effects on tone. However, we may note how sequences like [aro] (caroço), [ara] (barata) and [u/a] (molhado) do not simplify in the same way, although all involve the deletion of the consonant. This presumably has to do with restrictions ruling out unlike adjacent vowels or three identical vowels in sequence. If a sequence V<sub>i</sub>V<sub>j</sub> arises, V<sub>i</sub> becomes a glide, i.e. non-syllabic, if it is /i/ or /u/, but it is deleted if it is /a/. A sequence of three identical vowels is reduced to two like vowels. An example whose (objectively measured) pitch we are unable to explain is "kwe 'run' with a fall-rise [ ] < 'corre or co'rrier. We simply note this as well as the fact that Günther's pitch for "kwe, i.e. R, differs from the one we observed. A rising pitch would derive from deletions etc. on the infinitive co'rrier.

We now offer a natural explanation for the fact that the disappearance of certain consonants in pre- and post-accentual position is compensated for with rising and falling pitches. Pitch variation is variation in fundamental frequency ( $F_0$ ). If one examines the spectrographic evidence it is clear that  $F_0$  can drop by as much as 100 c.p.s. for a voiced consonant from the pitch level of the surrounding vowels. Now, if the consonant in a VCV sequence is weakened (not completely deleted) by being stripped of certain features, with the adjacent vowel quality providing the segmental base to fill the gap, so to speak, the filler vowel will inherit the lowered  $F_0$  that was associated with the consonantal position.

If that is the phonetic origin of pitch contrast in Principense,<sup>9</sup> then what is its phonological representation to be? Clearly we do not want to attribute to the Principense lexicon deep / $r$ ,  $\lambda$ ,  $r$ / in the positions where they occur in Portuguese and then have a synchronic rule weakening them in the manner shown above. Rather the weakening must be attributed to the original pidginizing process which presumably reflected phonotactic contrasts in the African languages. The synchronic lexical entries for the forms discussed therefore do not have / $r$ ,  $\lambda$ ,  $r$ /.<sup>10</sup> We turn now to consider how the various surface tones can be derived from the underlying representation.

We have referred to the functional unity of [ $\bar{\quad}$ , \, /] as marking the accented syllable, in this case with a musical accent. Until this point, however, we have only mentioned but failed to apply that important aspect of pitch accent systems which Principense should possess if our characterization is correct, viz. the phenomenon of accent reduction on specified domains in

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<sup>9</sup>So far as we are aware, this kind of tonogenesis adds to the possibilities discussed in, for example, Hyman [1973]. The process of leaving a tonal trace of a weakened consonant has been noted by the co-author A. Traill in the speech of children learning their first language. The claim that a child has deleted a consonant (or syllable) should always be checked against the possibility of a "pitch trace" surviving which would show that only deletion of some features has taken place.

<sup>10</sup>This does not mean that there are no  $Cr$ , etc. clusters in *modern* Principense, or that / $r$ ,  $\lambda$ / may not appear intervocalically. Forms like  $k\acute{r}ok\acute{r}ot^{\text{c}}$  'large cockroach',  $ladr^{\text{a}}$  'thief',  $^{\text{a}}arba$  'weed',  $str^{\text{e}}tu$  'nar-

the context of an accent. As regards pitch accent, reduction would result in low tone. Using /r/ for exemplification, the facts of Principense can be interpreted easily in these terms:

Cr"V..	C"VrC..	CVr"V	Portuguese forms
CV"v <sup>11</sup>	C"VVC	CVV"V	feature stripping
Cv̇"V	C"Vv̇C	Cv̇v̇"V	accent reduction
[_ ]	[_ ]	[_ ]	pitch correlates
[ / ]	[ \ ]	[ / ]	surface form

This derivation involves the historical step of feature stripping. Synchronically, however, all Principense vowels that surface with either [ / ] or [ \ ] derive from a sequence of two vowels, one of which bears the accent. Thus [Ḅa:ta] [/\_] has the lexical shape /ba"ata/ and [pe:tu] [ \ ] the shape /p"eetu/ . Substrate forms with dynamic pitches are readily incorporated in this account, even though these pitches did not derive from the processes sketched above. For example, [Ḅwě:] [ \ ] 'keg' would be /bw"ěe/ underlyingly, and [swaswa:] [ \ ] 'snake' would be /swasw"aa/ .<sup>12</sup>

We feel that the above interpretation of Principense tone has a number of advantages. First, it accounts for all the phonetic facts. Second, it simplifies the phonetic diversity of pitch distinctions by revealing that a functional identity underlies them. Third, it does not strain the notion of a tone language by claiming what Günther did and leaving many questions unexplored. Fourth, it provides an account of "tonogenesis" that is based solely on natural phonetic parameters. And finally it may be used to explain how the phonetic details of Principense tones will change as Portuguese-derived segmental changes spread through the lexicon.

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row', doubtless testify to the Portuguese influence referred to in footnote 7. Synchronic variants like ti"igu/tr"igu 'wheat', with surface tone patterns [/\_] and [ \_ ] respectively, dramatically illustrate this influence and its effect on tones.

<sup>11</sup>We have measured the duration of these VV sequences and find that they are almost twice as long as single vowels.

<sup>12</sup>As a matter of interest, Bini has high, low, mid, rising, and falling tones [Dunn 1968].

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## NOTES AND QUERIES

This section is for short remarks on articles dealing with African languages which have appeared in *Studies in African Linguistics* or elsewhere and for contributions which are too short to constitute full articles. These may be short descriptive or historical statements of interesting phenomena in African languages or theoretical comments utilizing African language data.

Contributions to "Notes and Queries" should be less than 1000 words, including examples. No footnotes should be used, but references may be listed at the end.

