Since each Burmese orthographic syllable contains an indication of pitch and of voice-quality features, usually in the form of symbols, such as ကက်, ခခ်, and ဝဝ်, but also in the form of absence of such symbols, e.g. ခ ‘dance’, ဝ ‘rise’, and ရ ‘drop’, it might at first sight seem that the three assumptions could claim the support of the phonological analysis implicit in the Burmese orthography but it will be shown later in this article that these indications can also be interpreted in a way that is opposed to the three assumptions.

A. The First Assumption

As regards the first assumption it is clear that the syllable is the tonal unit of such grammarians as Brown, Bridges, and Lonsdale, because it is implied by their tone-marking, which is syllabic; and in more recent analyses Armstrong and Pe Maung Tin, Cornyn, McDavid, and Bernot specifically state that the syllable is the unit on which their tonal analyses are based: (i) ‘the tone of a certain syllable pronounced in isolation, together with all its variants in connected speech, may be said to form one tone-family or toneme’; (ii) ‘each syllable consists of a consonant or a cluster plus a vowel, spoken on one of the four tones or atonically’; (iii) ‘chaque syllabe est affectée d’un ton et celui-ci suffit à différencier deux syllabes au phonèmes identiques’.

B. The Second Assumption

As for the second assumption Cornyn, for example, describes his four tones (I, II, III, IV) and his tonelessness as having the following combinations of (i) pitch, (ii) voice quality, (iii) vowel duration, and (iv) final vocalic and consonantal features:

<table>
<thead>
<tr>
<th>Tone</th>
<th>Pitch</th>
<th>Voice Quality</th>
<th>Duration</th>
<th>Vowel &amp; Consonant</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>High</td>
<td>Short</td>
<td>i</td>
<td>plain/nasal</td>
</tr>
<tr>
<td>II</td>
<td>High</td>
<td>Long</td>
<td>ii</td>
<td>plain/nasal</td>
</tr>
<tr>
<td>III</td>
<td>Low</td>
<td>Long</td>
<td>iii</td>
<td>plain/nasal</td>
</tr>
<tr>
<td>IV</td>
<td>High</td>
<td>Extremely short</td>
<td>iv</td>
<td>neutral vowel only</td>
</tr>
</tbody>
</table>

(JBRS, XLVII, ii, Dec. 1964.)
(the absence of any description under the heading (ii) can be taken to imply that tone-I, tone-II, tone-IV, and toneless syllables do not have the ‘slow or not so slow glottal closure’ that Cornyn attributes, under certain conditions, to tone-III). McDavid’s description corresponds closely to Cornyn’s, except that he gives the name ‘tone-V’ to Cornyn’s ‘toneless’ syllables. Mme. Bernot’s tones 1, 2, and 3 correspond to Cornyn’s III, I, and II respectively, her architoneme in stressed syllables to his tone IV, and her architoneme in unstressed syllables to his tonelessness; but apart from these differences of nomenclature her phonetic description differs from his only in two details: ‘une syllabe au ton 3 est caractérisée par — — une note moyenne (intermédiaire entre celles des tons I et 2)’ and ‘l’architonème [de syllabe accentuée] a les caractéristiques du ton (1) portées à un degré supérieur: la note est légèrement plus haute’. Armstrong and Pe Maung Tin’s also differs from Cornyn’s and McDavid’s analyses, and from Bernot’s, in number of tones and in nomenclature:

<table>
<thead>
<tr>
<th>i</th>
<th>ii</th>
<th>iii</th>
<th>iv</th>
</tr>
</thead>
<tbody>
<tr>
<td>tonicem I</td>
<td>medium</td>
<td>weak closure of glottis</td>
<td></td>
</tr>
<tr>
<td>high/mid/low</td>
<td>(a) “creaky”</td>
<td>extremely short</td>
<td>abrupt closure of glottis</td>
</tr>
<tr>
<td>slight fall</td>
<td>(b) —</td>
<td>very long</td>
<td>—</td>
</tr>
<tr>
<td>tonicem II</td>
<td>mid/low/very low</td>
<td>“breathy”</td>
<td>very long</td>
</tr>
<tr>
<td>level/slight rise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tonicem III</td>
<td>high/mid/low</td>
<td>“breathy”</td>
<td></td>
</tr>
<tr>
<td>falling/level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>low</td>
<td></td>
<td></td>
<td>extremely short</td>
</tr>
</tbody>
</table>

It is not, however, the difference in number of tones and in nomenclature that is relevant at this point but the fact that pitch features, voice-quality features, vowel-duration features, and such syllable-final features as vocality (Cornyn’s ‘plain final’), nasality, and glottal and other types of occlusive, are not treated separately from each other but combined in phonetic descriptions of each tone.

C. The Third Assumption

As regards the third assumption, Cornyn, for example, distinguishes particles from free forms (nouns and verbs) in his grammatical analysis, but applies a single tonal analysis to both categories: in lâde for instance, he gives to the particle dê the same tonal classification (tone I) as to the verb lâ; in ?ashe? maâ?de mweîlê the particle dê has the same classification (tone III) as the verb si. In his example mahl Tâmî ‘not quite reaching’ the verb hmtî is analysed as tone-III, like, for example, the verb pyêi of pyêîde ‘is full’. Unlike the verb-and-particle pair lâ and dê both hmtî and pyêi are admittedly verb lexical items; but the grammatical function of hmtî in the phrase mahl Tâmî, which Cornyn terms a noun expression, is very different.

_JBR, XLVII, ii, Dec. 1964_
from that of, for example, pyë in pyëîdé, which Cornyn terms a verb expression (while it is true that the hmi of mahmít tahmi is the same in grammatical function as pyëi here in the noun expression mapyëi tabyëi ‘not quite full’, it nevertheless differs from pyëi here in pitch behaviour: falling versus level; see section III, ex (c)). Similarily McDavid’s noun examples /θû/ ‘his, her’ and /mın/ ‘your’ differ in grammatical function from his noun example /châ/ ‘termites’, /θû/ and /mın/ being qualifying in function, while /châ/ is non-qualifying; but all three are given the same tonal classification (tone III). By the same principle Armstrong and Pe Maung Tin mark the noun lexical item θûl ‘his’, for example, as toneme-I, the same toneme as, for example, for the verb lexical θî ‘know’, though the noun lexical item is here discharging a grammatical function (qualifying) that the verb is not. Bernot marks the interrogative-particle lexical item /lî as having the same tone (her tone 3) as the verb /tu, though, as the final syllable of interrogative sentences its characteristic, though not its only, pitch features in the material on which this article is based are low pitch and rising pitch, e.g. θî /u/ ω ω / θî /u/ ‘does he sit down’, /θû/ ‘is it enough’, /θû/ ‘the big tree to the east of the road’; but neither of these features is attributed to her tone 3.

II. Tone Change; Basic Forms

A. Tone Change

A result of making these three assumptions is that some of Cornyn’s, McDavid’s, Bernot’s, and Armstrong and Pe Maung Tin’s lexical items show an alternation in the tones attributed to them; e.g. ‘when the members of a doubled verb are a negated verb first member followed by a verb with prefixed ta–, — the first member, if tone I, changes to tone III: — — hmi’dé ‘reaches’: mahmít tahmi ‘not quite reaching’;‘when a noun expression formed with the enclitic –tè precedes a noun which it modifies (126), the enclitic changes to –tè (tone III): hmándé is correct’: hmándé apyèigóu lôunjíndé ‘(I) want the correct answer’;‘some personal nouns, and a few other noun forms, when indicating possession or followed by particles, may undergo tone-change; that is certain forms in tone-I or tone II are sometimes replaced by forms in tone III. For example, /θû/ ‘he’, ‘she’, /θû/ ‘his’, ‘her’; /mın/ ‘you’ (familiar), /mın/ ‘your’. Bernot does not specifically refer to tone change; but she symbolizes an alternation of her tone 1 with her archi-neme for the lexical item as as θi l– (her tone 1) in [θi ’u’] ‘racine’ as opposed to [θi ] ‘bois’ and, for example, θi k- and θi k-, as in [θi k’kain] ‘branch’ and [θi k’k] ‘fruit’ respectively.

Cornyn attributes the change of tone in verbs only to certain of his tone-I verbs; but there are Burmans for whom such verb lexical items as θoóेê: and θeê: (Cornyn’s tone-II) also alternate in voice quality, being characterized by the constricted voice quality in the first word of each of the two phrases θoóèê: θoóê: ‘fairly good’ and (θêê) ω ω: θeê: θoóê: ‘just about dawn’, and by the clear in the second word. The constricted voice quality is a criterion of their tone III for Cornyn and for McDavid, and would oblige them to analyse θoóê: and θeê: as tone-III in the first word of each phrase (just as it does in the case of

JBRs, XLVII, ii, Dec. 1964
Cornyn’s *hm* in the preceding paragraph) but as tone-II in the second word.

All such tonally alternating lexical items must needs have a double (or tonemic) classification, as tone-I/III, e.g., -tè and -tê', /θu/ and /θu/, *hm* and *hm*, or as tone-II/III, e.g., /mñ/ and /mñ/, and presumably *ihn* and *ihn*, and *kàun* and *kàun*, too (the alternatives being in each case grammatically determined).

This double classification would be a nuisance for the lexicographers; for it would add to the complexity of many of his dictionary entries. It would also be a nuisance for the comparatist, who would be faced with a choice between two tonally different phonemic forms for many lexical items. On what grounds are they to prefer Cornyn’s and McDavid’s tone-I or tone-II phonemic forms to their tone-III forms, or vice versa?

B. Basic Forms

It is clear from Cornyn’s and McDavid’s phraseology that in all such cases they prefer the tone-I or tone-II form to the tone-III: it is Cornyn’s tone I that is said to ‘change’, not the other way about; it is McDavid’s tone-I and tone-II forms that are ‘replaced’, not the tone-III; and it is Cornyn’s tone I that is indicated for the particles -tè and -mè when these are cited in isolation. That is to say, Cornyn and McDavid treat one of their alternative tonal classifications as basic for these lexical items, and subordinate the other classification to it.

The grounds for their choice are not stated; but a more serious objection is not to the absence of explicit criteria governing the choice but rather to the very concept of ‘basic form’. What makes this concept difficult to justify is the fact that it is just as un-Burmese, or, rather, anti-Burmese, to use the tone-I or the tone-II form of a lexical item in the grammatical conditions appropriate to the alternative tone-III form as it is to use the tone-III form in the grammatical conditions appropriate to the tone-I or the tone-II. It is just as un-Burmese to use the tone-II form *lin* and the tone-I forms -tè and /θu/ in the grammatical conditions appropriate to the tone-III forms *lin*, -tè, and /θu/, for example, as it would be if one used *lin*, -tè, and /θu/ where grammatical conditions required *lin* in *tè*, or /θu/. That is to say, each of the alternative tones is, as it were, basic in the grammatical or phonological conditions appropriate to that alternative; and this fact must necessarily give each alternative equal status with the other alternative. This means that the phonetic form appropriate to the conditions in which a particular lexical item is named or cited, the citation form of that lexical item, is not to be regarded as in any way superior to other phonetic forms of that item: the citation phonetic form has a monopoly of the citation context, but is inappropriate in any other context. To disregard the unique status of each alternative phonetic form in the environment appropriate to it by choosing one phonetic form in preference to the other, or to the others, and treating it as basic, whether or not it is so designated, cannot be other than arbitrary; and, furthermore, this disregard leads to the use of process terms such as ‘change’ and ‘replacement’, which suggest processes that do not, and cannot, take place. It is now recognized that the terms ‘replacement’ and ‘change’ do not refer to articulatory processes and the actual replacement of one phoneme by another, the superceding, in e.g. the
first word of the phrase *mahmi tahmi*, of tone I by tone III, or, in the case of /θu/, the abandoning of tone I and instantaneous adoption of tone III; for the 'replaced' tone I is unattested, and unattestable, in the environment in which it is said to have been 'replaced'. Rather, these quasi-process terms refer to a distributional relationship whereby the two phonemes are distributed complementarily in relation to grammatical or phonological environment for the lexical items concerned. In fact the general principle of treating one of alternative tones as basic raises such difficulties that it should be used only if such a concept is unavoidable.

The type of phonological analysis introduced by Professor J.R. Firth (prosodic analysis) provides a means of avoiding the awkward concepts of 'tone change' and 'basic form', and at the same time relieves the comparatist and the lexicographer of the necessity of choosing between variant forms of the same lexical item; for the sort of classification that it produces for lexical items bypasses these and other concepts inherent in phonemic analysis. It does this by taking into account grammatical differences wherever these can be shown to be significant for the phonological analysis, and by singling out for special attention syntagmatic associations of the phonetic features concerned.

III. Syntagmatically associated Pitch Features

In Burmese the pitch behaviour of the component syllables of polysyllabic words is frequently inter-related, and the pitch features of a syllable at one place in the word can be associated syntagmatically with the pitch features of a syllable at another place in it, sometimes quite far removed from the place of the first syllable. Thus, in such types of word as the following two (tone-1 word and tone-2 word) the monosyllabic particle lexical items (i) ꝏ, (ii) Ꝋ, (iii) Ꝋ, (iv) Ꝋ, and (v) Ꝋ can vary in pitch in association with differences in the pitch of, in this case, the verb syllable, which is commonly the first syllable of each word (two pitch levels, high and low, are distinguished).}

1. all right
   enough

2. it is good all right
   it is true all right
   the time that I met him
   the man that came

3. when I drew out
   when I return

4. please do not send it
   please do not come

*JBR* LXVII, ii, Dec. 1964
The way in which, in these examples, the pitch features of the verb syllable, which is the first syllable of the words in (i)-(iv) and the second syllable of the words in (v), are linked with the pitch features of the final syllable appears in the following table:

<table>
<thead>
<tr>
<th></th>
<th>verb syllable</th>
<th>last syllable</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>tone-1 word</td>
<td>level</td>
</tr>
<tr>
<td></td>
<td>əə́ə́</td>
<td>high</td>
</tr>
<tr>
<td></td>
<td>əə́</td>
<td>low</td>
</tr>
<tr>
<td>ii.</td>
<td>tone-1 word</td>
<td>level</td>
</tr>
<tr>
<td></td>
<td>əə́ə́</td>
<td>high</td>
</tr>
<tr>
<td></td>
<td>əə́</td>
<td>low</td>
</tr>
<tr>
<td>iii.</td>
<td>tone-1 word</td>
<td>low, level</td>
</tr>
<tr>
<td></td>
<td>əə́</td>
<td>high, falling</td>
</tr>
<tr>
<td></td>
<td>əə́</td>
<td>low, level</td>
</tr>
<tr>
<td>iv.</td>
<td>tone-1 word</td>
<td>high, falling</td>
</tr>
<tr>
<td></td>
<td>əə́</td>
<td>low, level</td>
</tr>
<tr>
<td>v.</td>
<td>tone-1 word</td>
<td>high, falling</td>
</tr>
<tr>
<td></td>
<td>əə́</td>
<td>low, level</td>
</tr>
</tbody>
</table>

The pitch features of the verb and of the final-particle syllables in these, and in certain other grammatically comparable (verb-dependence in pitch behaviour is most satisfactorily accounted for by treating pitch behaviour as a feature of the word as a whole, of tone-1 and tone-2 words, however many syllables they contain.

In other words, from the examples (i)-(v) one might say that əə́ə́, əə́ə́, əə́ə́, əə́ə́, and əə́ə́ have each two possible selections of pitch features, one selection appropriate to the tone-1 word, and one appropriate to the tone-2; and until the tone-class of the word is known, it is not possible in a given instance to say what pitch features appropriate to each of these particles.

The types of pitch behaviour shown at (i)-(v) above for the verb lexical items in the tone-1 word (əə́ə́, əə́, əə́, əə́), and in the tone-2 word (əə́ə́, əə́, əə́, əə́), and for the particle lexical items in either type of word, are not, however, the only possible pitch patterns for these and other comparable lexical items. The following is a representative series of examples of pitch patterns appropriate to tone-1 and to tone-2 verb-and-particle words in which the particle category is represented in (a), the sentence-final clause, by əə́ə́, in (b), the qualifying clause, by əə́ə́, and in (c), a noun phrase comprising two verb-and-particle words, by əə́ə́ and by əə: əə.

a. sentence-final clause (three-term intonation system)

<table>
<thead>
<tr>
<th></th>
<th>int. 1</th>
<th>int. 2</th>
<th>int. 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>tone-1 word</td>
<td>əə́ə́ə́ə́</td>
<td>əə́</td>
<td>əə́</td>
</tr>
<tr>
<td>tone-2 word</td>
<td>əə́</td>
<td>əə́</td>
<td>əə́</td>
</tr>
</tbody>
</table>

_JBRS, XLVII, ii, Dec. 1964_
b. qualifying clause

tone-1 word དེ་ཐོབ་མེན་པ་ནི་བོད་ མ་བསྒྲ་
tone-2 word འོོ་ཐོབ་མེན་པ་ནི་བོད་

c. negative reduplicated-verb noun phrase

tone-1 word དེ་ཐོབ་མེན་པ་ནི་བོད་
tone-2 word འོོ་ཐོབ་མེན་པ་ནི་བོད་

It should first be explained that the upper of the two pitch patterns shown at (a) under intonation 1 for the tone-2 word འོོ་ཐོབ་མེན་པ་ནི་བོད，in which འོོ་ཐོབ་མེན་པ་ནི་བོད is characterized by a low-and-falling pitch, appears to be possible only when all preceding words in the clause have low-and-level pitch; e.g.

གཟོ། འོོ་ཐོབ་མེན་ནི་བོད་ དེ་ཐོབ་མེན་པ་ནི་བོད：he come to the village; where, on the other hand, a high-and-falling pitch is a feature of one or more syllables of the preceding words in the intonation-1 clause, the appropriate pitch features for འོོ་ཐོབ་མེན་པ་ནི་བོད are low-and-level; e.g.

མོ། འོོ་ཐོབ་མེན་ནི་བོད་ དེ་ཐོབ་མེན་པ་ནི་བོད：he comes to the market. Thus， འོོ་ཐོབ་མེན་པ་ནི་བོད and other tone-2 words containing འོོ་ཐོབ་མེན་，e.g. འོོ་ཐོབ་， འོོ་ཐོབ་མེན་པ་ནི་བོད， have alternative pitch patterns for the intonation-1 clause; and which of the two patterns is appropriate depends on the tone classes of the words of which that clause is composed. That is， each of the alternative patterns is a function of the tonal composition of the clause.

From examples (a)-(c) it will be seen that the approximate pitch behaviour of the verb lexical items འོོ་ཐོབ་，and འོོ་ཐོབ་ in the tone-1 word and འོོ་， and འོོ་ཐོབ་ in the tone-2 word can be summarized as follows:

The relevant examples are: (i) tone-1 word high and falling: example (a) in intonations 1 and 2， example (b) and the second word of example (c)； high and level: example (a) in intonation 3， and the first word of example (c)； (ii) tone-2 word， low and level: examples (a) and (b)， and the second word of example (c)； high and falling: the first word of example (c)．

It is important to note the following two points: (i) that the tone-2-word lexical item，e.g. འོོ་， and འོོ་ཐོབ་， can be characterized by a high pitch as well as by a low pitch， as in the first word of examples of type (c)； and (ii) that it therefore resembles the tone-1-word verb lexical item as regards height of pitch but differs from it in being characterized by a fall in pitch as opposed to the level pitch， in corresponding circumstances (type (c)）， of the tone-1-word lexical item. In fact， as far as the examples so far given are concerned (i-v and a-c）， the verb lexical item of the tone-1 word is always distinguished from the verb lexical item of the tone-2 word by one or other of its pitch features， if not by height of pitch then by.
level versus falling pitch; but there are grounds for believing that pitch differences between the tone-1 and the tone-2 words are not as clear-cut as they appear to be in the examples given so far.

The examples just given include some tone-2 words in which, against the usual run of their pitch behaviour, the verb lexical item is characterized by a high pitch (in, and only in, the negative reduplicated-verb noun phrase as at (c) above); but no examples have yet been given of tone-1 words in which, against the usual run of their pitch behaviour, the verb lexical item is characterized by a low pitch. There is, however, enough evidence in the material obtained from U Tin Maung to suggest that there is a type of clause in which the verb syllable of a tone-1 verb-and-particle word is regularly characterized by low pitch, in which case tone-1 word and tone-2 word share an identical pitch pattern. Indeed, the use of the term ‘representative’, rather than ‘comprehensive’, for the examples of the tone-1 word thus far given, (i)–(v) and (a)–(c), was deliberate; for a comprehensive statement would need to take account of such tone-1-word verb-and-particle examples as the following, in which the verb category is represented by (1) မြန်; (2) ကြောင်; (3) ကူး; and the particle by အား:

1. မြန် မည် [နေ့] he is busy
2. မြန် အပြင် [နေ့] there are a million
3. ကူး မည် [နေ့] it is နောက်ကိုး: that they plant

The pitch pattern of each of these three tone-1 words is identical with that of intonationally comparable tone-2 words; e.g. (the verb is represented by ကူး, ကူး, and ကူး, and the particle by အား and ကြောင်):

Nevertheless, the pitch pattern in the following examples is sufficient to establish the words containing ကူး, ကူး, and ကူး in examples (1)–(3) as tone-1 words; for this pattern is not shared with the tone-2 word (cf. the examples at (a) above), and is therefore a criterion of the tone-1 word:

မြန်း [နေ့] there being much work to do
မြန်း [နေ့] there are a million
ကူး ကူး ကူး [နေ့] they plant နောက်ကိုး

It should be mentioned, in passing, that the low pitches of the verb syllables in examples (1)–(3) would presumably oblige Corryn, McDavid, and Bernton (but not Armstrong and Pe Maung Tin), for whom low pitch is a tone-1 (Bernton’s tone-2) criterion, to treat these examples as showing change of tone from their tone II, tone III, and tone IV respectively (Bernton’s tone 3, tone 1, and archi-toneme) to their tone I (Bernton’s tone 2); but such a statement would encounter two difficulties: (i) there seem to be no environmental or grammatical conditions to which the tone change could be attributed; indeed ကူး is characterized by both [နေ့] and [နေ့] under, what appear to be identical environmental and grammatical conditions; and (ii) in the case of ကူး the tone-I (Bernton’s tone 2) criterion, low pitch, would conflict with the tone-III (Bernton’s tone-1) criterion slow glottal closure, while, in the case of ကူး, the tone-I criterion would conflict with the tone-IV (Bernton’s archi-toneme) criterion sharp glottal closure assimilated.
In certain types of juncture, to the following consonant, with the result that the tonal classification of .mods and .mod, and corresponding examples, would be in doubt.60

While it is conceded that the alternation of high with low pitch for .mod, .mod, .mod, and other such verb lexical items requires a more detailed study than is possible from the relatively few examples in the available material, yet the solution that a prosodic analysis suggests is clear.

noun (-o, -mo, -j) verb (mod, mod, mod) particle (mod)
falling low, level rising-falling

A specimen exponent of the non-emphatic term, on the other hand, drawn from the three tone-1-word examples in the paragraph following that of the emphatic-clause examples, would include such contrasting features as:

noun (-mo, -m, -mo) verb (mod, mod) particle (mod, mod)
level high, falling level

The low pitch of the tone-1-word verb syllable in the emphatic clause, in contrast with its alternative high pitch, combined with the falling pitch of the preceding noun syllable, in contrast with its alternative level pitch, bring the emphasized noun word into prominence.

The high and low pitches characterizing the verb syllable of the verb-and-particle words .mod, .mod, .mod, etc., in conjunction with the matching features characterizing the particle syllables, are to be treated as alternative, and equal, tone-1-word features, the low pitch being appropriate to the tone-1 word in an emphatic clause in which a preceding word (mod, mod, mod) is emphasized, and the high pitch being appropriate to all other circumstances.

If it is treated in this way, there is no need to attribute the low pitch that characterizes the verb syllable in the tone-1 word in examples (1)-(3) to a change of tone but merely to an alternative exponential feature, drawn from the exponent of the emphatic clause in which the emphasized word precedes the word in question. Thus, mod, mod, and mod in the examples (1)-(3), with the pitch pattern [\_\_\_], are just as much examples of the tone-1 word as are mod, mod, and mod in the following paragraph, in which they are characterized by the pitch pattern [\_\_\_]; the difference in pitch pattern is a function of the difference in clause intonation (emphatic versus non-emphatic).

It is of course true that one of these tone-1-word pitch patterns, the one in
which the verb syllable has a low pitch ([...]; examples (1)–(3)), is thereby identical with the pitch pattern of the tone-2 words ကြယ်, ကြယ်, and ကြယ် in the paragraph following those examples; but there is in a prosodic analysis no objection to the sharing of features by two or more terms of the same system, provided that there is at least one context in which those terms are phonetically distinguished.

4. ကြယ်ကြယ်ကြယ် အိုးမြှင်စောင်လုံး (....) it is in the bed of the creek hidden by bushes\(^{51}\)
5. ကြယ်ကြယ်ကြယ် အိုးမြှင်စောင်လုံး (....) I am looking out for Teacher\(^{51}\)
6. ကြယ်ကြယ်ကြယ် အိုးမြှင်စောင်လုံး (....) he is searching for the cattle

This feature also appears to be appropriate to emphatic clauses, but emphatic clauses in which it is the verb–and–particle word, and not one of the words preceding it, that is emphasized.

The two emphatic-clause features, the low pitch characterizing the verb syllable of the tone-1 word and the rising-falling pitch characterizing the verb syllable of the tone-2 word, complete the list of features that can characterize verb syllables in these two types of word.

high, falling exx. (i)–(v), (a) int. 1–2, (b), (c) second word
  ,, , level (a) int. 3, (c) first word
low, ,, (1)–(3),\(^{32}\)

All three sets of features, the total pitch potentiality of the tone-1-word verb lexical item, are summarized by the classification ‘I’.

The verb lexical items ကြယ်, ကြယ်, ကြယ်, ကြယ်, ကြယ်, ကြယ်, and ကြယ် (examples (i)–(v), (a)–(c), (4)–(6)), on the other hand, are, as far as verb–and–particle words are concerned confined to the tone-2 word, and share in the tone-2-word pitch patterns. They, and all lexical items of similar behaviour, are accordingly classified as tone-2-word; and the pitch features that characterize them as components of the tone-2 word are:

low, level exx. (i)–(v), (a)–(b), (c) second word
  ,, , rising-falling (a)–(b), (c) second word
These three sets of features, the total pitch potentiality of the tone-2-word verb lexical item, are summarized by the classification ‘2’.

Before a verb lexical item can be pronounced with the appropriate set of pitch features, in a verb-and-particle word, it is essential to know: (i) its tone classification, that is, whether it is ‘1’ or ‘2’; (ii) whether the clause containing it is emphatic or non-emphatic, and, if emphatic, whether it is the word containing this lexical item that is emphasized or a preceding word; (iii) if the clause should be sentence-final, whether its intonation is type-1, type-2, or type-3 (examples (a)); and (iv) whether the phrase containing it is or is not a negative reduplicated-verb noun phrase (examples (c)). The actual pitch features in a given instance depend on these four conditions.

If one compares the three sets of features that characterize the tone-1-word verb lexical item with the three that characterize the tone-2-word verb lexical item, two sets of pitch features, the low-and-level and the high-and-falling, will be found to be common to both. The low-and-level set is common to both in the same conditions, in the emphatic clause in which a preceding word is emphasized; but this set can of course characterize the tone-2-word lexical item in other conditions besides this. The high-and-falling sets, on the other hand, never characterizes both classes of lexical items under the same conditions, and is therefore a criterion by which each class can be identified, provided, of course, that these different conditions are carefully distinguished. The two remaining sets are exclusive to one or the other class of lexical item, the high-and-level to the tone-1-word, and the low-and-rising-falling to the tone-2-word; these sets are therefore criteria in all conditions.

In other words, where the verb lexical item has high-and-level pitch, it can be immediately identified as class-1, and where it has low-and-rising-falling pitch, as class-2. Where it is characterized by high-and-falling pitch, it can be identified as class-2 if contained in the first word of a negative reduplicated-verb noun phrase, e.g. ဝန္ ဝန္ ဝန္, but otherwise as class-1. Where it is characterized by low-and-level pitch, it can be identified as class-2, except in the emphatic clause. In the emphatic clause these pitch features provide no clue to identification, though other features may do so: the constricted voice quality characterizing the verb syllable in example (2) above is sufficient to establish မြေ မြေ မြေ as a tone-1 word in spite of the low pitch that accompanies it; and the same is true for the short vowel duration and the final occlusion characterizing the syllable in မြေ မြေ မြေ (example (3)).

Expressed in terms of the orthography tone-1-word and tone-2-word verb lexical items are indicated by one or other of the following symbols:

**Tone-1-word verb (‘1’)**

i. မြေ မြေ  e.g. မြေ, မြေ, မြေ, မြေ

ii. ချင် ချင်  ချင်, ချင်

iii. မြေ မြေ မြေ  မြေ, မြေ, မြေ, မြေ

iv. မြေ မြေ  မြေ, မြေ, မြေ, မြေ

v. မြေ မြေ, မြေ မြေ, မြေ မြေ မြေ, မြေ မြေ

vi. absence of any of the vowel and final-consonant symbols မ, ချင်

vii. မြေ, မြေ, မြေ, မြေ  မြေ, မြေ, မြေ, မြေ
Tone-2-word verb (‘2’)

i. əəəə əə: əə əə: e.g. əə, əə

ii. əə əə: əə

iii. absence of əə or əə əə, combined with: əə, əə əə,

.iv. absence of əə əə

combined with:

əə əə əə əə, əə əə,

əə əə əə: əə

Although the two symbols əə and əə are orthographically part of the first (verb) syllable, of əə and əə, their influence extends to the second (particle) syllable, əə; and, in reading, the correct pitch features cannot be given to əə without first examining the verb syllable in order to find out the tone of the word as a whole.

The same principle applies to the other examples at (i)-(v) above. In əə əə əə and əə əə əə əə əə (examples (i)-(i)) əə əə of the first syllable (verb) indicates that these three-syllable and four-syllable words are tone-1, that the pitch of the verb syllable, the first syllable, is therefore high (except, possibly, in an emphatic clause), and that the pitch of the final syllable, the particles əə and əə, can be low-and-level, high-and-level, or low-and-rising-falling, but cannot be low-and-falling; in əə əə əə əə əə, on the other hand, the əə əə əə əə in the verb syllable of the first word, and the absence of əə əə əə əə əə from the verb syllable of the second word indicate that these words are tone-2, that the pitch of the verb syllable is therefore low and level, and that the pitch of the final (particle) syllables əə and əə can be low and falling, as one of several possibilities, which also include low and level, high and level, and low and rising-falling. Similarly, in əə əə əə and in əə əə əə (examples (iii) and (v)) the əə əə of the verb syllable indicates that these words are tone-1, that the verb syllable in each therefore has a high pitch, and that the final (particle) syllable has a low and level pitch; but the əə unaccompanied by əə əə of əə əə and əə əə əə əə.
indicates that these words are tone-2, that the pitch of the verb syllable is therefore low, and that the pitch of the final (particle) syllable is high and falling.

The same sort of statement can be made for words containing a monosyllabic noun and a particle. In the following examples the tone of the word is indicated in the noun syllable by (i) in the tone-1

tone-1 word [ ' - ]  əɔɪɛ

tone-2 word [ _ - ]  əʊɔɛ

(tone-1: with a knife, from the town, with a stick; tone-2: by water, with him).

The noun-and-particle and the verb-and-particle examples thus far given are enough to show, as far as pitch behaviour is concerned (the pitch not only of the noun syllable but also the syntagmatically associated pitch behaviour of, for example, the verb particles əɔɛ/əɑɛ and əɔɔ, and the noun particle əɔ), that such verb lexical items and noun lexical items as əɔɔɛ: and əɔɔ (Cornyn’s and McDavid’s tone-II, Bernot’s tone-3, Armstrong and Tin’s toneme-III), əɔɛ and əɔ (Cornyn’s and McDavid’s tone-III, Bernot’s tone-1, Armstrong and Tin’s toneme-I), and əə and əɔ (Cornyn’s and McDavid’s tone-IV, Bernot’s architonyme, Armstrong and Tin’s toneme-I) cannot be distinguished, and should be classed together. The pitch-behaviour of the words containing them can in all cases be accounted for as tone-1; hence əɔɔɛ, əɔɔ, and əə can all alike be classified as tone-1-word verb lexical items, and əɔɔ, əə, and əɔ (Cornyn’s and McDavid’s tone-I) as tone-1-word noun lexical items.

The same principle can be applied to words containing disyllabic verbs and to words containing disyllabic or trisyllabic nouns.

Thus, although the various prosodic symbols of Burmese orthography are associated with individual syllables, those which are contained in verb-lexical-item and noun-lexical-item syllables have a function extending beyond the (orthographic) syllable containing them. In other words, they have a syntagmatic function, and this function extends to the whole word. When reading, Burmans do indeed apply them to the word as a whole unit, allowing them to determine the pitch features of those particle lexical items which alternate in pitch (under the same intonational conditions). That is to say, Burmese orthography has word tone marks, located in verb and in noun lexical items; and these tone marks each imply a permitted range of pitch features for the particle lexical items that can be associated with them.

IV. The Third Assumption and the Grammatical Classification of Lexical Items

The range of pitch features that characterizes particle lexical items does not correspond at all closely to the range that is appropriate to verb and to noun lexical
items. The particle lexical item \( \text{形} / \text{格} \), for example, has a multiplicity of possible pitch behaviour far outstripping that of either the tone-1-word or the tone-2-word verb lexical item; these particle features, and the prosodic conditions appropriate to each, are (the references are to section III, examples (a)-(c)):

<table>
<thead>
<tr>
<th>Low, level</th>
<th>(a) int. 1, tone-1 word</th>
<th>(a) int. 1, tone-2 word, lower alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(b) tone-1 word</td>
<td></td>
</tr>
<tr>
<td>Rising</td>
<td>(a) int. 1, tone-2 word</td>
<td>(a) int. 2, tone-1 word</td>
</tr>
<tr>
<td>Rising-falling</td>
<td>(a) int. 3, tone-2 word</td>
<td>(a) int. 2, tone-2 word</td>
</tr>
<tr>
<td>High, level</td>
<td>(a) int. 2, tone-2 word</td>
<td>(b) tone-2 word</td>
</tr>
<tr>
<td></td>
<td>(b) tone-1 word</td>
<td></td>
</tr>
</tbody>
</table>

(associated differences in voice quality, clear versus constricted, are considered in section V).

When these seven sets of pitch features are compared with the three stated in section III for the tone-1-word verb lexical item (high - and - falling, high-and-level, low-and-level) and the three stated for the tone-2-word verb lexical item (low-and-level, low-and-rising-falling, high - and - falling), it will be seen that in aggregate the pitch behaviour of this particle lexical item differs considerably from that of either the tone-1-word or the tone-2-word verb lexical item: in one context or another all three potential features of each of the two classes of verb lexical item are shared with the particle \( \text{形} / \text{格} \).

It is not, therefore, possible to follow Cornyn and McDavid here, and give it the same tone classification as a verb lexical item (Cornyn classifies it as tone-I, like the verbs \( \text{末} \) and \( \text{减} \), and as tone-III, like the verbs \( \text{背} \) and \( \text{合} \), with tone I as basic).\(^{54}\) Neither of the figures '1' and '2', by which the verb lexical items were classified in section III, will serve for the much greater range of pitch variation of this particle lexical item; and furthermore \( \text{形} / \text{格} \), and indeed all particle lexical items, are not restricted to the tone-1 word or the tone-2, or to words of any tone. As far as the verb and the verb-and-particle type of word is concerned, the verb lexical items \( \text{形} \), \( \text{格} \), and \( \text{和} \) are restricted to the tone-1 word, while \( \text{形} \), \( \text{格} \), and \( \text{和} \) are restricted to the tone-2; but \( \text{形} / \text{格} \), \( \text{形} \), and \( \text{和} \) can be exemplified in words of either tone (III, i-iv, a-b), with of course appropriate differences in pitch features accordingly. In short the particle lexical items cannot be given a tone classification.

Furthermore, the alternation in pitch of those particle lexical items which do alternate, e.g. \( \text{和} \), \( \text{形} / \text{格} \), \( \text{形} \), \( \text{和} \), is a function of word tone; the alternation in pitch of verb and of noun lexical items is not.

The phonological distinction between tonally classifiable and tonally non-classifiable lexical items runs parallel to the grammatical distinction of verb and noun from particle, and illustrates Firth's contention that phonological analysis should...
be congruent with grammatical analysis: the difference in the pitch behaviour of particle lexical items from verb and from noun lexical items supports his insistence on making provision for the separate phonological analysis of different grammatical categories. The pitch potentiality of əə/əə, for example, would have to be formulated in terms of its grammatical designation: it belongs to a small sub-category of verbal particle whose two members, əə/əə and əə/əə can occur not only in sentence-final clauses but also in non-sentence-final clauses that precede, and qualify, a noun (III, b). In order, therefore, to distinguish it from other sub-categories of verbal particle this sub-category could be named, from its distinctive qualifying function, the qualifying sub-category. In a given instance the actual pitch features (and voice quality) of these two qualifying particles have to be considered in relation to grammatical function (qualifying clause versus non-qualifying clause), word tone (tone 1 versus tone 2), and, in the sentence-final clause, intonation (intonation 1 versus 2 versus 3) (examples (a)-(b) of section III).

V. The Second Assumption and the Classification of Lexical Items by Features other than those of pitch.

A. Particle Lexical Items: Voice-quality Classification

The two qualifying particles əə/əə and əə/əə are characterized not only by the considerable diversity of pitch behaviour already illustrated but also, unlike most other particles, by an alternation in voice quality between constricted (‘creaky’ or glottal-trill), on the one hand, and clear (or breathy), on the other.

For the remaining sub-categories of verbal particle (and of noun particle too), except for ə/ə, there is no such alternation of voice quality; and the voice quality difference is exploited for purely lexical differentiation: lexical items belonging to them are constantly characterized by one type of voice quality or the other, and by that type only. For these latter particle lexical items, therefore, a voice-quality system, storable for the syllable, can be established, comprising the two terms g and ə (non-g), the letter g, the initial letter of glottal trill, being adopted for this purpose as a mnemonic. Each particle lexical item can then be classified as g or as ə by reference to the two terms of this system according as they are characterized always by constricted voice quality, e.g. the verbal-particle lexical items əə and əə, as in əə əə ‘they will probably go’, and the nominal-particle lexical items əə and əə, as in əə əə ‘as for that time’, or always by clear voice quality, e.g. the verbal-particle lexical items əə and əə, as in əə əə ‘he did not in fact go’, and the nominal-particle lexical items əə and əə, as in əə əə ‘inside there’.

For the two qualifying-particle lexical items əə/əə and əə/əə, on the other hand, the alternation in voice quality has a strictly grammatical significance: the constricted voice quality characterizes them in the qualifying clause (non-sentence-final; examples III (b)), and the clear voice quality in all other circumstances (examples III (a)). Precisely the same alternation of features characterizes certain monosyllabic-noun lexical items and the final syllable of the final lexical item of certain polysyllabic nouns, according
as they too are or are not qualifying a following noun; e.g. Ժ ‘I’ versus Ժ/Ժ ‘my’; Լև ‘you’ versus Լև/Լև ‘your’; Տբե ‘king’ versus Տբե ‘king’s’. In fact the final syllable of the qualifier, whether word or clause, can be characterized by constricted voice quality unless it is characterized by final occlusion (symbolized in the orthography by Ժ, Ժ, Ժ, Ժ). The alternation in voice quality is therefore best accounted for by classifying ԼԵ /ԼԵ and ԼԵ /ԼԵ as Ո, which classification, taken in conjunction with their grammatical classification as members of the qualifying sub-category of verbal particle, deals with their alternation in voice quality: clear, but constricted when qualifying a noun.

This will mean that the classification Ո will have a different significance for the qualifying verbal–particle lexical items ԼԵ /ԼԵ and ԼԵ /ԼԵ from all the other (non-qualifying) Ո lexical items (e.g. the verbal–particle lexical items Ո, Ո, Ո, Ո) save only Ո/Ո; for these latter do not alternate in voice quality:

Verbal-particle lexical items

<table>
<thead>
<tr>
<th>Qualifying</th>
<th>Not qualifying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constricted</td>
<td>Clear</td>
</tr>
<tr>
<td>Clear</td>
<td></td>
</tr>
</tbody>
</table>

For the honorific particle Ժ/Ժ the classification Ո also signifies, as for ԼԵ /ԼԵ and ԼԵ /ԼԵ, alternative voice qualities, constricted and clear; but the

Honourific-particle lexical item Ժ/Ժ

<table>
<thead>
<tr>
<th>Non-emphatic clause: clear</th>
<th>E.g. ՈԻՈԻ  I will come</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphatic clause: constricted</td>
<td>ՈԻՈԻ  I will certainly come</td>
</tr>
</tbody>
</table>

For verbal–particle lexical items there is therefore this difference between the classification Ո and the classification Ո: Ո means that the lexical item so classified, e.g. Ո, Ո, Ո, Ո, can be characterized by constricted voice quality in all circumstances; Ո means that the item so classified is characterized by clear voice quality in all circumstances, unless that lexical item is ԼԵ /ԼԵ, ԼԵ /ԼԵ, or Ժ/Ժ, in which case Ո means clear voice quality or constricted voice quality in accordance with the grammatical or the phonological conditions stated above.

B. Verb Lexical Items: Voice-quality Classification

For verb lexical items too the voice-quality difference, constricted versus clear, has an almost exclusively lexical significance: monosyllabic-verb lexical items are regularly characterized either by one type of voice quality or by the other; and these can be classified accordingly as Ո, e.g. Ո ‘find’, Ո ‘dance’, Ո ‘treat medically’, or as Ո, e.g. Ո ‘good’, Ո ‘sufficient’, Ո ‘correct’, Ո ‘help’, Ո ‘draw out’.
For monosyllabic-verb lexical items in general, then, the classification $g$ is indicated in the orthography by:

i. ကြာ နိုး  e.g. ကြက်, ကြက်က
ii. နိုးသော ချောင်း, စိုးသော ကျ  ဗ, မ
iii. absence of any of the vowel and final-consonant symbols
   the corresponding $g$ lexical items are indicated by:
   i. ကြက်က  e.g. ကြက်, ကြက်က
   ii. absence of ကြက် ကျ  combined with:
        ကြက်က, ကြက် ကောင် ကောင် ကျ  ဗ, ကြက်
   iii. ကြက်, ကြက် ကောင် ကောင်, ကြက် ကောင်
        ကျ  ဗ, ကြက်
   iv. ကြက် ကောင် ကောင် ကောင် ကျ  ကြက်, ကြက်က
   v. ကြက် ကျ  ဗ, ကြက်
   vi. absence of ကြက် ကျ  or ကြက် ကျ  combined with:
        ကြက်, ကြက် ကောင် ကောင်, ကြက် ကောင်
        ကျ  ဗ, ကြက်
        ကြက် ကျ  ဗ, ကြက်
   vii. ကြက် ကျ  ဗ, ကြက်

Unlike the tone marks, which apply to the word as a whole and have syntagmatic implications for syllables in addition to the syllable containing the tone mark (section III), the voice-quality symbols of the orthography apply only to the syllable containing them.\textsuperscript{55} Thus, for example, ကြက် and စိုး are $g$-syllable verb lexical items, ကြက် and ကြက်က are $g$-syllable nominal–particle lexical items, and စိုး ‘town’ $g$-syllable noun lexical items, while ကြက် and ကြက်က are $g$-syllable verb lexical items, ကြက်က and ကြက်က are $g$-syllable nominal–particle lexical items, စိုး and စိုး ‘hand’ and စိုး ‘water’ $g$-syllable noun lexical items.

From this it follows that each of the symbols contained in an orthographic syllable symbolizing a verb or noun lexical item has two functions, a tonal function, in relation to the word as a whole, indicating a tone–1 or a tone–2 word, and a voice–quality function, in relation to the individual syllable, indicating a $g$ or a $g$ syllable; e.g.

<table>
<thead>
<tr>
<th>word tone</th>
<th>syllable voice quality</th>
<th>examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ကြက် ကျ  1</td>
<td>$g$</td>
<td>ကြက်, ကြက်က</td>
</tr>
<tr>
<td>b. ကြက် ကျ, စိုး ကျ  absence of any of the vowel and the final consonant symbols</td>
<td>$\bar{g}$, $\bar{g}$</td>
<td>ကြက်, ကြက်က</td>
</tr>
<tr>
<td>c. စိုး ကျ</td>
<td>$\bar{g}$</td>
<td>ကြက်, ကြက်က</td>
</tr>
</tbody>
</table>
d. absence of ကက်ကွန် ကျေး
combined with ကရကုံ
ကျေး, ကဝါ ကံ ခါ ကံ က် ကီ ခါ ကံ ကီ ကာ - - - 1

c. ကက်ကွန်, ကက်ကွန်, etc. - - - "

f. ကက်ကွန် ကံ ခါ ကံ ကံ ကီ ခါ ကံ ကီ ကာ - - - 2

g ကက်ကွန် - - - - - "

h. absence of ကက်ကွန် or
ကက်ကွန် ကျေး combined
with ကက်ကွန်, ကက်ကွန်, etc.,
ကက်ကွန်ကက်ကွန် ကဝါ ကံ ကီ ကာ - "

Each of the symbols that indicates a g syllable (a-b) also indicates that the word containing it is tone-1; each of the symbols that indicates a tone-2 word (f-h) also indicates that the syllable containing it is ကက်ကွန်. Thus the symbolization of ကက်ကွန် correlates with the symbolization of tone 1 (the reverse is not true); and the symbolization of tone 2 correlates with symbolization of ကက်ကွန် (the reverse is not true).

Some of the ကက်ကွန် symbols (c-e) indicate tone 1; others (f-h) indicate tone 2. Some of the tone-1 symbols (a-b) indicate ကက်ကွန်; others (c-e) indicate ကက်ကွန်.

To summarize, pitch features and voice-quality features are altogether different in their syntagmatic implications, and therefore in their relations with the word and the syllable; they should therefore be kept distinct, even though Burmese orthography uses a single symbol to perform both a tonal and a voice-quality function, and achieves a notable and praiseworthy economy in so doing.

C. Pitch Features of g and ကက်ကွန် Lexical Items (Particle, Verb, Noun)

The impossibility of making general statements associating constricted voice quality with high pitch can be shown by contrasting the pitch features of g-syllable verb and noun lexical items with the pitch features of g-syllable particle lexical items. Though Cornyn’s, McDavid’s, and Bernot’s descriptions of Cornyn’s and McDavid’s tone-III syllable and of Bernot’s tone-1 syllable, as having slow glottal closure at least in some types of juncture, and as beginning high or as being high, is in the main justified when made for verb and for noun lexical items (but see section III, ex. 2), the part of the description that concerns pitch cannot, in the material on which this analysis is based, stand for particle lexical items: their pitch is a function of word tone; and is either high or low accordingly; e.g.

<table>
<thead>
<tr>
<th>verb</th>
<th>particle</th>
<th>tone-1 word</th>
<th>tone-2 word</th>
</tr>
</thead>
<tbody>
<tr>
<td>ကက်ကွန်</td>
<td>ကက်ကွန်</td>
<td>ကက်ကွန် [- - -]</td>
<td>ကက်ကွန် [- - -]</td>
</tr>
<tr>
<td>ကက်ကွန်</td>
<td>ကက်ကွန်</td>
<td>ကက်ကွန် [- - -]</td>
<td>ကက်ကွန် [- - -]</td>
</tr>
</tbody>
</table>

*JBR*, XLVII, ii, Dec. 1964
In these examples, (i) the constricted voice quality of the verb lexical item ᶪ is accompanied by high pitch, (ii) the constricted voice quality of the particle lexical items əəə and əəə differs from that of ᶪ in that the accompanying pitch alternates, from low in the tone-1 word to high in the tone-2 (cf. also section III, examples (iii)-(v)), and (iii) the g-syllable particle lexical item əə has same (low) pitch in əəəə əə as ə, which is Cornyn's and McDavid's tone 1 and Bernot's toneme 2.

For particle lexical items, therefore,

<table>
<thead>
<tr>
<th>tone-1 word</th>
<th>tone-2 word</th>
</tr>
</thead>
<tbody>
<tr>
<td>əəə əəə vbl. part. əəəə əə</td>
<td>əəə əəəə əə</td>
</tr>
<tr>
<td>əəəə &quot; noml. part. əəə əə</td>
<td>əəə əə əə</td>
</tr>
<tr>
<td>ə əə vbl. part. əəə əə</td>
<td>əəə əə əə</td>
</tr>
<tr>
<td>ə əə &quot; noml. part. əəə əə</td>
<td>əəə əə əə</td>
</tr>
</tbody>
</table>

(the translation of the g examples is as in section III; the ə examples translate as: if you spread, if you say; at school, in the field).

D. Alternation of Voice Quality in Verb Lexical Items

It was stated at (B) above that for verb lexical items the function of the voice-quality difference, constricted versus clear, is, in general, lexical: it distinguishes one class of lexical items from another. There are however a number of verb lexical items, mainly, and perhaps exclusively, intransitive verb lexical items, that are characterized by an alternation of voice quality. In this respect they resemble the particle lexical items əəə and əəə and the noun lexical items referred to in section (A) above, but of course without their associated difference in grammatical function (qualifying versus non-qualifying). These verb lexical items are those which can occur in the negative reduplicated-verb noun phrase. They comprise both tone-1-word and tone-2-word lexical items, but excluding tone-1-word lexical items that have the potentiality of syllable-final occlusion (these excluded tone-1-word lexical items, which do not alternate in voice quality, are indicated in the orthography by the symbols əə, ə, əə, and ə).

The type of noun phrase in question comprises two words, in the first of which these lexical items are characterized by constricted voice quality, but in the second, and indeed in all other circumstances, by clear voice quality (alternative orthographic forms are possible in the first word); e.g.
At the grammatical level of analysis it will in any case be necessary to group together in a sub-category all verbs that can be exemplified in the negative reduplicated-verb noun phrase; and for all lexical items classified in this way g formularizes clear voice quality, save only in the first word of the negative reduplicated-verb phrase, while the classification g formularizes constricted voice quality in all circumstances, and, in particular, in both words of the negative reduplicated-verb phrase; e.g.

constricted constricted

not quite full

not quite touching.

In other words, the constricted voice quality that characterizes the g syllable, e.g. ꟮ꆋضعف, ꟮ꆌضعف, ꟮ꆍضعف, ꟮ꆎضعف, in the first word of the phrase is to be analysed differently from the constricted voice quality that regularly characterizes the g syllable; and the question of change of tone, on the lines of Cornyn's tone change of ꟮متاز (tone III) to ꟮متاز (tone III), does not arise.

In any case the difference in the pitch behaviour of ꟮ضعف and ꟮ضعف when characterized by constricted voice quality from that of, for example, ꟮ضعف and ꟮ضعف in the first word of the phrase, would present something of a problem for the tone-change concept:

\[
\begin{align*}
\text{voice quality} & \quad \text{pitch} \\
\text{constricted} & \quad \text{high, level} \\
\text{constricted} & \quad \text{falling}
\end{align*}
\]

Since ꟮ضعف has constricted voice quality here, Cornyn analyses it as an example of his tone III (متاز); and yet it differs in pitch behaviour (falling versus level) from ꟮ضعف and ꟮ضعف, which Cornyn also analyses as tone-III (pye, thi), even though all three are in the same type of juncture (‘open’). If ꟮ضعف and ꟮ضعف are to be analysed as having changed into tone III here, one would expect them to be identical in pitch features with all other examples of tone III. In other words, constricted voice quality is not to be regarded as a criterion of g in all circumstances: one must also take into account pitch features (falling versus level, as here), and, at the grammatical level, the special conditions appropriate to the negative reduplicated-verb noun phrase.

The constricted voice quality characterizing the ꟮ضعف-syllable lexical items ꟮ضعف, ꟮ضعف, ꟮ضعف, etc. in the first word of the negative reduplicated-verb phrase is sufficiently
indicated by the symbols Ɂ and Ɂ, and by the reduplication of the verb lexical item; and it is not surprising that Burmese orthography commonly dispenses with any indication of this voice quality apart from these. If more specific symbolization were thought necessary, it would be preferable to add ˲Ɂ and Ɂ, to form ˲ɁɁ, ɁɁ, ɁɁ, ɁɁ, and ɁɁ; the Ɂ ɁɁ Ɂ, and the Ɂ ɁɁ Ɂ would then preserve the voice-quality classification of the lexical item as Ɂ, while the Ɂ ɁɁ would have the purely phonetic, and non-lexical, function of indicating the constricted voice quality peculiar to this grammatical environment. In the case of ɁɁ and similar lexical items in Ɂ, ɁɁ, ɁɁ, ɁɁ, and Ɂ ɁɁ Ɂ the function of the Ɂ ɁɁ would unfortunately be ambiguous; for Ɂ, ɁɁ, ɁɁ, etc. without Ɂ ɁɁ or Ɂ ɁɁ Ɂ plus the phonetic Ɂ ɁɁ cannot be distinguished from the lexically classifying Ɂ ɁɁ Ɂ; but adding the Ɂ ɁɁ Ɂ would in any case be an over-phonetic and superfluous device for anyone with some knowledge of Burmese.

E. Alternation of Voice Quality in Noun Lexical Items

Taken in conjunction with the grammatical analysis the tone classifications '1' and '2', and the voice-quality classifications Ɂ and Ɂ, dispose of any need to introduce the concept of tone change or tonal replacement for verb lexical items; and from the way in which the alternation in voice quality of e.g. the verb lexical items ɁɁɁ and ɁɁɁ, and the alternation in both voice quality and pitch of e.g. the verb lexical items ɁɁ and ɁɁ, and, a fortiori, the particle lexical items ɁɁɁ and ɁɁɁ, have been so analysed as to exclude the tone-change concept, the reader will probably have guessed that the same treatment is to be given to the well-known alternation in the voice-quality and the pitch features of certain noun lexical items. This alternation, and the grammatical categories qualifying and non-qualifying of which the constricted and the clear voice quality are, respectively, exponents, have indeed already been mentioned in the course of dealing with ɁɁɁ/ɁɁɁ and ɁɁɁ/ɁɁɁ (at A). The tone-change concept has been used to account for it: 'certain noun expression attributes, which consist of a syllable in tone I or II, change to tone III before a head noun: – – – khĩnbyã ɁɁɁ Ɂ ɁɁ Ɂ Ɂ ‘who are you?’ : khĩnbyã ɁɁɁ Ɂ ɁɁ Ɂ ‘who (is) your friend’; 38 ‘some personal nouns, and a few other noun-forms, when indicating possession or followed by particles, may undergo tone-change; that is, certain forms in Tone I or Tone II are sometimes replaced by forms in Tone III. For examples, /Ɂû/ ‘he, she’, /Ɂû/ ‘his, her’, /mûn/ ‘you’ (famil.), /mûn/ ‘your’. 39 A like change is implied by Armstrong and Pe Maung Tin’s phonemic form /Ɂû/: (toneme II) ‘he’ as compared with /Ɂû/: (toneme I) ‘his’; and by Bernot’s phonemic form Ɂ ’je’ (toneme 2) as compared with Ɂ ‘de moi, mon’ (toneme 1). Cornyn’s and Mcdavid’s tone-III form, and Armstrong and Pe Maung Tin’s and Bernot’s tone-I, thus have the effect of identifying their forms /Ɂû/ ‘his’, /mûn/ ‘your’, and Ɂ ‘my’ tonally with such forms as Ɂ ‘reward’, Ɂ ‘rhinoceros’, and the second syllable of Ɂ ‘today’, though the first three examples are qualifying, and the last three are not, and though the first three are each one of a pair of phonemic forms of the same lexical item, while the last three are constant. 40

In a phonological analysis of the type proposed by Firth there is no obstacle to analysing the noun forms Ɂ (or Ɂ) ‘his’, Ɂ – – –

JBRs, XLVII, ii, Dec., 1964.
phy, which sometimes distinguishes the g lexical item and the final g syllable of a disyllabic lexical item by combining  with one of the g symbols listed in section (B) above (though stated there for verb lexical items they are equally valid for noun lexical items). Thus, g‘his’, w‘yours’, and c‘my’ can also be symbolized as g, w, c, in which the g indicates the grammatical or emphatic function of these forms, and therefore, at the phonetic level, the constricted voice quality appropriate to that function, while the g, the g, and the g indicate that their lexical classification is g, and associate them with g, w, and c (the final syllable of g‘king’s’ is ambiguous: it is not possible in Burmese orthography to make a distinction between (i) absence of both g and lexical g plus grammatical and phonetic g, as in g, ‘king’s’ and (ii) lexical g, as in g‘stage’).

If interpreted in the way suggested in this article g g, g, g, g, and the other Burmese orthographic symbols considered here are opposed to the three assumptions challenged at the beginning of the article, and appear as an economical set of symbols in some cases discharging more than one prosodic function simultaneously (word tone, syllable voice quality), within certain grammatical limitations, and with at least the capability of distinguishing the grammatical and emphatic functions of constricted voice quality from the lexical, and thereby facilitating the classification of lexical items.

Such an analysis can claim the occasional support of Burmese orthography, and gives some promise of understanding the phonological and prosodic phenomena. Further research is necessary to establish with greater accuracy the relationship between the phonological and grammatical rules.
'Burmese Orthography'—Notes

1. These examples are taken from J. A. Stewart, *An Introduction to Colloquial Burmese*, Rangoon, 1936, 68-9.

2. Referred to below by the single terms ‘clear’ and ‘constricted’.


8. op. cit., 7-10.


10. op. cit., 222.

11. op. cit., 21-6.

12. op. cit., 9 (27), 29 (i54.1).

13. op. cit., 31-2 (163) (170); 12 (36).

14. op. cit., 17 (note 4), 8 (6.3).

15. op. cit., 28.

16. I owe this material to U Tin Maung, an Upper-Burman from Sagaing, and, in section V (D), to my colleague Dr. Hla Pe, a Lower-Burman from Moulmein.


19. McDavid, op. cit. 17 (4a); see also Cornyn, op. cit., 23 (125), and cf. Armstrong and Tin, op. cit., 28 (/θu/ ‘his’, /θu/ ‘he’).

20. My own material suggests that the vowel quality characterizing ə in əə would be the same as in əə, əə, and əə; but Bernot’s əə would require the same vowel quality, in fact, as in əə ‘know’.

21. cf. Stewart, *An Introduction*, 84; for the pronunciation of these examples I am indebted to Dr. Hla Pe.

22. cf. also, on a similar problem in Karen, Henderson, op. cit., 61 (ia).

23. op. cit., 12 (36).


The reference to phonological environment, as distinct from grammatical environment, is intended to cover the sort of phonetic variation that characterizes the final syllable of, for
example, ကျင်/ကျင်, in ကျင် (က) ကျင်ကျင် ။ I am looking out for Teacher', cf. ကျင်(က) ကျင်ကျင်ကျင် 'I am looking round for a teacher' (Stewart, An Introduction, 26-7), and that characterizes စိုး/စိုး in စိုး စိုး 'householder', cf. also စိုး စိုး. Such variations as these are attributable to differences of emphasis.


27. Phonetic criteria for the delimitation of the word, based on junction features, are stated in 'Junction in Spoken Burmese'. On the basis of these phonetic criteria, supported by grammatical criteria, ဝန်ဝင်ချင်း, for example, is a single six-syllable word. The first five syllables can be shown to be in intra-verbal junction with each other by such features as central vowel quality (o, o) initial voicing (o, co), and final nasality homorganic with the following initial (ဆီဖူ). The syllable ဒါ is the only one that is not linked by junction to the preceding syllable; but it is, in some utterances, linked, by its low pitch, to the verb syllable (here ကျင်; cf. III, example (v), ဝန်ဝင်ချင်း), and is also to be linked with it on grammatical grounds: verb and particle regularly form part of the same word.

The term word as used in this article corresponds equally to the 'high


28. See also 'Junction in Spoken Burmese', 126-7. For words containing disyllabic verbs a four-term tone system is stable ('Junction', 128).

29. Certain verbal–particle lexical items, e.g. ကို 'ever', ဒါ 'still', စိုး 'still', do not, perhaps, have two selections of features; if not, they lie outside the statement made in this paragraph.

30. From the features listed at (IB) above it will be seen that Armstrong and Tin do not invariably associate a high pitch with their tonemes I and III or a low pitch with their tonemes II, but that the former two tonemes can.


32. This article does not deal with the pitch features characterizing verb lexical items contained in polysyllabic noun words and noun–and–particle words; e.g. ကျင် and ဒါ in the trisyllabic noun word ကျင်ကျင်ကျင် 'benefactor', ဒါ in the trisyllabic noun word ကျင် ကျင် 'wise man', ကျင် and ဒါ in the trisyllabic noun word ကျင် ကျင် 'very early'.

33. cf. Sprigg, 'Junction', 128, where ကျင် can be characterized by a low and falling pitch in the tone-I disyllabic-verb-and-particle word, but not in the tone-II, tone-III, or tone-IV.

34. op. cit., 29 (154).

35. There is however a possibility that interverbal junction presence or absence of constricted voice quality may be linked to presence or absence of
Tonal Classification of Burmese Lexical Items

37. Certain verbal particles, however, e.g. ခံ: 'still', အမ 'ever', မူ 'still', seem to be regularly characterized by high pitch.

38. Cornyn, op. cit., 23 (125).


40. It is not only in their qualifying function that these noun lexical items of variable voice quality are characterized by their constricted alternative: this alternative also characterizes them in other circumstances; e.g. ခံ(၂) ၊ ၊ ခံ(၂) မူ: 'I do not speak to you', မူ (၂) မူ: 'show to him' (Stewart, An Introduction, 27). In these examples the function of the constricted voice quality is taken to be emphatic.