IGBO TONOLOGY

Wm. E. Welmers
Department of Linguistics
University of California, Los Angeles

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Igbo is a "terraced level" tone language. Its tonal system may be
described in terms of two tonemes, high and low, plus a phoneme "down-
step". In alternating high and low levels (each of which may continue
for one to several syllables), each high level is automatically a little
lower than the high level before the preceding low. The phoneme "down-
step" occurs only between two high tones, and has the same lowering
effect on the following high level that a low tone would have. (This
is not necessarily to be construed as equating downstep with a deleted
low tone. Such an identification is possible for some occurrences of
downstep, but there is no direct evidence for it in all cases.)

Thus the first high level in a sequence between pauses is the high-
est. After either low or downstep, the next high level is slightly
lower, and so on up to a pause. It is never possible to go from one
non-low level up to a higher non-low level. Hence the analogy of
terraces, but these terraces may sometimes be separated by a deep
ditch (low tone).

In the following, all high tones are marked /ˊ/ over a vowel or
syllabic nasal. All low tones are marked /ˋ/. Downstep is marked /ˈ/
before the first or only syllable to which it applies. This material,
a section of a volume in preparation on African language structures,
discusses problems arising from the fact that, while Igbo stems and
many affixes have lexical tone, their lexical tone often undergoes
alternation of some kind.

1.

When different tones accompany the consonants and vowels of a number
of morphemes in a language under different circumstances, it is not
always immediately apparent whether it is morphotonemic alternation
under definable conditions, or the presence of a tonally realized
morpheme, that is responsible for the variation. In some cases, both

may be present. Igbo provides some interesting complications in the iden-
tification and interlocking functions of morphotonemic alternations and
tonally realized morphemes; a few details restricted to relatively uncom-
mon constructions or to individual words with a unique structure are
omitted in this treatment, but all of the relevant principles of anal-
ysis and interpretation are amply illustrated. It is recognized that
there are dialect differences in some details, but the statements made
here represent patterns that are known to be widespread. For other
dialects, an occasional statement would have to be omitted, added, or
modified, or the order in which some statements are made would have to
be changed. A few conspicuous dialect differences are noted. This
section is confined to a few details of tonal identification and be-
havior which can then be assumed in the remainder of the discussion.

a. First, there is a set of independent pronoun forms which in most
respects function as nouns. Three of these are monosyllabic, and in
their underlying structure are interpreted as having initial downstep
followed by high tone. The initial downstep is, in all probability,
historically derived from a vowel with low tone. The six forms are:

(1)   m̀mʉ́   'I'   ànyɪ̀   'we'

       'gɪ̀   'you (sg.)'   únù   'you (pl.)'

       'yá   'he, she, it' 'há   'they'

Downstep with the monosyllabic forms is shown in the following:

(2)   ọ́ bʉ́rʉ́ 'yá byàrà
       'if it is he (who) came'

   These forms are also used as possessives. Downstep with the mono-
syllabic forms is again attested; after low tone, of course, downstep
is automatically deleted. E.g.

(3)   éwú 'yá   'his goat'   ʉ́lọ̀ yá   'his house'

b. As verbal objects, the same forms are used except for the first
person singular, which is a syllabic /m/. This and the other three
monosyllabic forms have downstep-high after high, but in the particular

dialect under consideration have the alternant tone low after low. E.g.:

(4) ọ̀ kpọ́ọ́ 'ḿ   ọ́ kpọ̀rọ̀ m̀
     'if he calls me'   'he called me'

c. As verbal subjects, the plural forms listed above are again used.
There are, however, special singular subject pronouns. The second per-
son form is /ʃ/ or /ʃ/ (the choice depending on vowel harmony). The
third person form is /ọ́/ or /ó/. In some constructions, the first
person form is /ḿ/. In other constructions, the first person form con-
sists of /ɛ́/ or /ɛ́/ before the verb plus a syllabic /m/ after the verb;
the tone of the latter is downstep-high after high, but low after low.
E.g.:

(5) ʃ́ mɛ́ɛ́ 'yá   'if you do it'
     ọ́ bụ̀ ʃ̀tɛ̀   'it's a pot'
     ḿ mɛ́ɛ́ 'yá   'if I do it'
     ɛ́ 'mɛ́ɛ́lá 'ḿ yá   'I have done it'
     ɛ́ hụ̀rụ̀ m̀ yà   'I saw him'

Perhaps to be identified with the vowel component of the first person
form above is an impersonal subject pronoun, /ɛ́/ or /ɛ́/.

d. In negative constructions, with subjects other than the above singu-
lar pronouns, the verb form has a vowel prefix. Before this prefix,
the plural subject pronouns listed above function as nouns and undergo
no alternation. With singular subject pronouns, however, the verb form
has no prefix, but the pronouns have low tone replacing their inherent
high tone. This is interpreted as a morpheme with the meaning 'unreal'.
E.g.:

(6) únừ ắ'byắghʃ   'you didn't come'
     ọ̀ byắ'ghʃ   'he didn't come'

    In affirmative verbal constructions, the same replacive is used
with both singular and plural subject pronouns. Such combinations are
usually translated as, and have generally been described as, questions.
After a noun subject, the third person form /ọ̀/ or /ò/ is required. E.g.

(7) ọ̀ gàrà áhyá   'did he go to market?'
     ùnù èméélá 'yá   'have you (pl.) done it?'
     ńnà g[ọ̀ byàrà   'did your father come?'

The meaning 'unreal' is here more specifically 'hypothetical'. The iden-
tification of the replacive here with that in negatives is possible be-
cause there are no negative questions in Igbo, but there are common cir-
cumlocutions such as the equivalent of 'I think he didn't go', which
expects a response. By analogy, the above are interpreted as having
the more basic meaning 'I suppose he went to market' etc. As in
English, such hypothetical statements expect a response. (In English,
speakers of Igbo sometimes say, e.g., 'I think you are going to go to
Aba tomorrow', where a native speaker of English would invariably use
a question.)

e. A few monosyllabic morphemes are interpreted as being inherently
toneless. These include four suffixes which repeat the tone of the
preceding syllable, high or low: the negative imperative suffix /-|a/,
the negative suffix /-gh|/, the applicative verbal extension which con-
sists of /-ɾ/ plus a repetition of the preceding vowel, and the addi-
tive verbal extension /-kwa/. These all follow the pattern illustrated
in the following:

(8) ó'mélá yá   ázàlà yà
     'don't do it'   'don't sweep it'

A few other suffixes found in verb forms could also be considered
toneless, but they appear only after high or only after low tone, so
that their high or low tone can equally well be considered an inherent
part of the suffixes themselves.

     The remaining toneless morpheme is a sort of preposition, the under-
lying form of which is /na/. Before a consonant (which is extremely
rare) or a syllabic nasal, this morpheme takes the tone of the follow-
ing syllable. Before a vowel, its vowel is elided, as indicated by an
apostrophe in the transcription used here. E.g.:

(9) ná ńgbèdè   n'úlò

'in the evening'   'at home'

nà m̀bú   n'òbòdò

'in the beginning'   'in town'

Significantly, the presence of this morpheme, even when it consists of
a consonant only, inhibits in what follows the operation of any morpho-
ronemic alternation conditioned by what precedes.

f. One morphotonemic alternation must be included here, prior to the
three alternations described in the following section, which have a
different type of conditioning. Before any modifier except a monosylla-
abic form with the inherent tone downstep-high, in nouns which indepen-
dently have the tones high-downstep-high, the downstep is deleted. The
exception, though included in the illustrations below, is covered by
the first alternation stated in the following section; in many dialects,
as shown by the parenthesized alternant below, this exception does not
apply. That the crucial environment here is a modifier is shown by
the fact that this alternation does not take place before a verb. E.g.,
from /ó'gó/ 'money, shilling':

(10) á cò̩rò̩ m̀ é'gó   'I want money'

é'gó dì m̀'má   'money is fine'

égó únù   'your (pl.) money'

égó 'átó̩   'three shillings'

é'gó yá (égó 'yá)   'his money'

2.

It seems most convenient next to describe three morphotonemic al-
ternations which are largely conditioned by the preceding tonal environ-
ment. The derivations of the conditioning environments are assumed here,
but will be explicitly stated in the following section, after which a
number of apparent or real exceptions will be accounted for. The alter-
nations described in this section will be referred to as A1, A2, and A3.

a. A1: After one or more high tones preceded by a downstep, in forms
with an initial vowel or nasal whose first two tones are low-high,

initial low tone has the alternant high. In this environment, there-
fore, forms whose first two tones are independently low-high have the
same tones as forms whose first tow tones are independently high-high.
Both are illustrated in the following:

(11) Àbá   'Aba (town)':   ọ̀ gá'gh[Ábá
                                     'He didn't go to Aba'

      m̀máný   'oil':   ó cọ̀rọ̀ ['zý̀tá m̀máný
                                     'he wants to buy oil'

      áný   'meat':   ó cọ̀rọ̀ ['zý̀tá áný
                                     'he wants to buy meat'

A form of this alternation applies in monosyllabic forms with the in-
herent tone downstep-high; the alternation takes the form of deleting
the downstep (compare the end of the preceding section). E.g.:

(12) zù̀tá 'j['buy yams':   ọ̀ zý́'táɡh[j[
                                     'he didn't buy yams'

      mèé 'yá   'do it':   ó cọ̀rọ̀ ['mé yá
                                     'he wants to do it'

      áný 'ɡ['your meat':   é'ɡó ɡ[
                                     'your money'

b. __A2__: After high tone when no downstep precedes, also in forms whose
first two tones are independently low-high, initial low tone has the
alternant downstep-high. A modification of this alternation appears
only in forms with more than two syllables and an initial nasal; in
such forms, initial low tone has the alternant high and downstep precedes
the second syllable -- that is, an initial nasal delays the downstep
for one syllable. The fourth example in the following illustrates
this modification:

(13) àkwá   'egg'   wètá 'ákwá
                                     'bring eggs'

      ǹɡbá   'wrestling'   há̀ nà̀ àɡbá 'ńɡbá
                                     'they're wrestling'

      ỳfọ́dý   'some'   wètá 'ýfọ́dý
                                     'bring some'

m̀máný	'oil'	wètá m̂'máný
		'bring oil'
Àbá	'Aba (town)'	ónyé 'Ábá
		'a person from Aba'
àtǫ́	'three'	àkwá 'átǫ́
		'three eggs'
únù èmééló 'yá		àny['émééló 'yá
'you (pl.) have done it'		'we have done it'

In the last of these, the downstep of /'yá/ cannot be deleted by the A1
rule, since the downstep of the preceding word is derived by A2 after
A1 has ceased to apply.

c. <u>A3</u>: With the syntactic restrictions stated below, also after high
tone when no downstep precedes, in nouns with two syllables only and
the tones high-high, the second high tone has the alternant downstep-
high. This alternation applies to a noun used by itself (i.e., without
a modifier after it) immediately after a verb, and to the second noun
in a noun-noun phrase. It does not apply, although A2 does, in the
second of two nouns after a verb if the nouns do not belong to the
same phrase; the conditioning for A2 is phonologic, while the condition-
ing for A3 is in part syntactic. Examples of this alternation and its
restriction to two-syllable nouns are:

(14)	áný	'meat'	:	wètá á'ný
				'bring meat'
	éwú	'goat'		áný é'wú
				'goat meat'
	ósísí	'plant'		ŋ́kpýrý ósísí
				'fruit, nut, seed'

This alternation applies only in nouns; in the following, /ǫ́cá/ 'light-
colored' is an adjective, which indicates the category or class to which
a preceding noun belongs [Welmers and Welmers 1969]:

(15)   ónyé ǫ́cá

       'a Caucasian'

Nor does A3 apply if a noun is followed by a modifier, as /éwú/ in the first two of the following; by contrast, in the third, /éwú/ is the second noun in a noun-noun phrase, and the demonstrative modifies the entire phrase, not /éwú/ alone:

(16) kpʊ̀tá éwú 'átọ́   'bring three goats'

      ʃʃ éwú áhʊ̀   'the head of that goat'

      ʃʃ é'wú áhʊ̀   'that goat head'

Finally, A3 does not apply in the second of two nouns, not in the same phrase, after a verb. As shown in the third and the last of the following, however, A2 does apply in this environment:

(17) écʃ   'yesterday, tomorrow'
                            :   kpʊ̀tá éwú écʃ
                                'bring a goat tomorrow'
                            (cf.: gàá é'cʃ 'go tomorrow')

      ánʊ́   'meat'   :   ó sììrì ànyʃ ánʊ́
                                'she cooked meat for us'

      àkwá   'eggs'   :   ó sììrì ànyʃ 'ákwá
                                'she cooked eggs for us'

      ʃró   'hatred'   há hʊ̀rʊ̀ ànyʃ ʃró
                                'they hate us'
                                (lit. 'they see us hatred')

      àhʊ́   'body'   há mèrʊ̀rʊ̀ ànyʃ 'áhʊ́
                                'they hurt us'
                                (lit. 'they spoiled us body')

d. An instance was cited earlier in which A1 cannot apply if the phonologic environment which otherwise conditions it is derived by the application of A2. In the environment just discussed, however -- in the second of two nouns, not in the same phrase, after a verb -- A1 applies after itself, after A2, or after A3. The rationale of this appears to be that the verb and the first noun are treated as a unit; any downstep followed by high tones in the tonal unit, whether it is in the verb before the first noun, or in the first noun as a result of A2 or A3, conditions A1 in the second noun. This is confirmed by the

first of the following examples, in which Al also applies after a high tone which is not the result of any alternation; the conditioning factor is the downstep in the preceding verb:

(18a) éwú   'goat',   àhý   'body',   no alternation and Al:
      há é'mérýgh∫ éwú áhý   'they didn't hurt a goat'

(18b) àny∫   (1 pl),   àhý   'body',   Al and Al:
      há é'mérýgh∫ ány áhý   'they didn't hurt us'

(18c) àny∫   (1 pl),   àhý   'body',   A2 and Al:
      há nà èmérý 'ány áhý   'they're hurting us'

(18d) éwú   'goat',   àhý   'body',   A3 and Al:
      há nà èmérý é'wú áhý   'they're hurting a goat'

e. In other environments than the above, A2 applies after itself and after A3. This recursive application of A2 is illustrated by the following, in which the alternation with the second word must precede the alternation with the third:

(19a) àtǫ   'three',   àny∫   (1 pl),   A2 and A2:
      éwú 'átǫ 'ány∫   'our three goats'

(19b) éwú   'goat',   àny∫   (1 pl),   A3 and A2:
      ány é'wú 'ány∫   'our goat meat'

The following example shows the same surface realization of tonal alternations, but is derived differently; the alternation with the third word precedes, and is then unaffected by, the alternation with the second:

(20) ìkó   'cup',   àny∫   (1 pl):
     wètá 'ìkó 'ány∫   'bring our cups'

In the following, A2 appears four times; the order of the four applications is 3-4-2-1:

(21) àny∫ 'éwétálá 'ìkó 'átǫ 'ány∫
     'we have brought our three cups'

   A contrast between the sequence of A3-Al and A3-A2 is shown in the following. A3 appears in /m̀mányá ŋ́'kwý/ 'nut palm wine'; /m̀bý/ is a

noun meaning 'the first time', here (n)ever':

(22a) àny[á'ŋʉ̀bègh] m̀mányá ŋ́'kwʉ́ m̀bʉ́

'we've never drunk nut palm wine'

(22b) àny[á'ŋʉ̀bègh] m̀mányá ŋ́'kwʉ́ 'ány[

'we haven't drunk our nut palm wine'

f. For some speakers, peculiarly, in a monosyllabic modifier after a
noun (but not in a verbal object), Al reapplies after A2; further, A3
applies in a noun before a monosyllabic modifier, and then A1 reapplies.
(As one might guess from this and other statements, these pronoun forms
are perhaps the prime nuisance in Igbo when working with a number of
speakers.) E.g.:

(23a) ìkó 'yá   'his cup'   wètá 'íkó yá
                                     'bring his cup'

        (cf.: àny['éwétálá 'yá 'we have brought it')

(23b) ánʉ́ 'yá   'his meat'   :   wètá á'nʉ́ yá
                                       'bring his meat'

3.

The conditioning environments for the alternations stated in the
preceding section may appear in nouns, numerals, verbs, and very occa-
sionally other words. For all forms other than verbs, these are lexi-
cal tones or tones derived by the alternations themselves. For verbs,
it is necessary, before applying the above alternations, to derive the
tones of bases and constructions. Such derivations, in so far as they
present no problems in the application of the alternations stated, are
outlined in this section.

a. It is first necessary to make statements deriving the tones of verb
bases.[1] Verb stems are monosyllabic, and may have high or low tone;
a single verb stem may constitute a verb base. In a base of more than
one syllable, the first syllable must be a verb stem; one or occasionally

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[1]This supplements Welmers [1970] in which the derivation of tones
is not discussed.

two stems may follow, and morphemes of a different class, base form-
atives, may also be included. The inherent tones of base formatives
are identified by comparing their tonal behavior with that of stems
which may be used independently. Bases of two and three syllables
are common, and some longer bases are recorded. The tones of a verb
base are determined by the independent (lexical) tones of the first
two syllables. If the tones of the first two syllables are both in-
dependently high, the base has high tone throughout. If their tones
are independently low and high, in that order, the first syllable of
the base has low tone, and all following syllables have high. If
thier tones are independently high and low, or low and low, the base
has high tone with the first syllable, low with the second, and high
with all syllables following. Examples of these derivations are:

(24a) mɔ́   'do, make',   cɪ́ 'be stopped up'   : mécɪ́   'close'

(24b) mécɪ́ (from above),   sɪ́ (indicating action done to completion
                             or to a stopping place): mécɪ́sɪ́ 'tie up, fasten up
                             completely'

(24c) kwà   'push',   cɪ́ 'be stopped up'   : kwàcɪ́ 'push shut'

(24d) gá   'go',   fè 'cross, pass over': gáfè   'go across'

(24e) wè   'take, pick up', pʊ̀ 'exit'   : wépʊ̀   'remove'

(24f) wépʊ̀ (from above),   tá (indicating action toward or for the
                             speaker or subject)   : wépʊ̀tá 'bring out'

b.   Statements may now be made deriving certain verbal constructions.
There is no construction in which the verb base is used by itself; some
other morpheme is always present, though in some cases with a zero allo-
morph. The following numbered statements also establish a number of
tonally realized morphemes in verbal constructions.

     (1) A morpheme consisting of low replacing stem tone occurs with
a limited number of verb stems, marking a "stative" construction. Two
stems which may be used for illustrative purposes are /dɪ́/ 'be described
as; be located at (of inanimates, sometimes non-human animates)' and
/nɔ̰́/ 'sit, be located at (of humans, usually non-human animates)'. E.g.:

(25a) ɔ́ dĩ̀ n'ébé à   'it is here'

(25b) ɔ́ nɔ̀ n'ébé à   'he/she is here'

    (2) A "factative" construction includes a replacive which can
be identified with that of the stative. For all bases except those
which begin with high-low (see above), low replaces stem tone through-
out the base; for bases with initial high-low, the replacive has the
alternant downstep-high with the first syllable and low with all follow-
ing syllables; the downstep is, of course, overt only after a high tone.
In addition to the tonal replacive, the factative has a suffix consis-
ting of /r/ plus a repetition of the preceding vowel, also with low
tone. E.g., from some of the bases cited above:

(26a) ɔ́ gàrà áhyá   'he went to market'

(26b) ó wèrè ósísí   'he took a stick'

(26c) ó mècìrì ýzɔ̀   'he shut the door'

(26d) ɔ́ kwàcìrì ýzɔ̀   'he pushed the door shut'

(26e) ó 'wépừtàrà m̀mà   'he brought out a knife'

    (3) An infinitive is formed by a prefix, with a morphotonemic
alternation in one type of base. The prefix includes a downstep,
which is of course deleted before low tone; it is /í'-/ or /í'-/.
After a low tone in the base, all following tones have the alternant
low. Examples of infinitive derivation are:

(27a)   rí   : í'rí

(27b)   zà   : ʃzà

(27c)   mécí : í'mécí

(27d)   kwàcí : ʃkwàcì

(27e)   wépừtá : í'wépừtà

    (4) A negative imperative has a prefix /á'-/ or /á'-/, the same
morphotonemic alternation in the base, and a toneless suffix /-la/. For
the bases used above, negative imperatives are as follows; Al applies
in the object in the first and third:

(28a) ó'rílá yá   'don't eat it'

(28b) ázàlà yà   'don't sweep it'

(28c) ó'méchílá yá   'don't close it'

(28d) ákwàchìlà yà   'don't push it shut'

(28e) ó'wópùtàlà yà   'don't bring it out'

    (5) Next to be considered is a relative construction in which
the antecedent noun is the subject of the relative (as in 'the man
who came', not 'the man I saw'). Many speakers of Igbo form affirma-
tive relatives only from the stative and factative constructions,
and these are the only types considered here. Two tonal replacives
must be recognized in such relatives. First, downstep-high replaces
a final low tone in the antecedent. Second, in statives and in those
factatives which have only low tones, there is an initial downstep,
and high tone replaces low throughout the form; in factatives which
begin with downstep-high-low (all of which have at least three sylla-
bles), there is no alternation in the first two syllables, but high
replaces low in all following syllables. (Such high tones appear
also in the base, but here they are the product of two successive
replacives: low replaces high in the base to form the factative, and
then high replaces low in the factative to form the relative.) Exam-
ples of relative derivation are:

(29a) ŋwátàk[r[byàrà.   ŋwátàk[r['byárá
   'A child came.'   'the child who came'

(29b) ŋwáàny[màcìrì ụ́zọ̀.   ŋwáàny['méchrí ụ́zọ̀
   'A woman shut the door.'   'the woman who shut the door'

(29c) únù wópùtàrà yà.   ú'nú 'wópùtárá 'yá
   'You (pl.) brought it out.'   'you (pl.) who brought it out'

    Relatives are strikingly similar to, and in all probability his-
torically related to, an associative construction which is discussed
later. Because of the ways in which tonal alternations are conditioned,
however, it is necessary to separate them.

    (6) In a number of constructions, there is a suffix which, after

most monosyllabic bases, longer bases ending with /i/ or /u/, and a few
other bases which must be individually listed, is a vowel with high tone;
the identity of the vowel need not concern us here. After some monosyl-
labic bases, there is an allomorph consisting of /r/ plus a repetition
of the preceding vowel, also with high tone. After some monosyllabic
bases, and after most longer bases ending with vowels other than /i/
or /u/, there is a zero allomorph of this suffix. Before this suffix,
including its zero allomorph, bases have their inherent tones as des-
cribed above in all constructions but one. E.g.:

(30a) ó byàrà rǐé 'yá   'he came and ate it'

(30b) ó byàrà zǎá 'yá   'she came and swept it'

(30c) ó mécíé 'yá, ó dì m̀'má   'if he closes it, fine'

(30d) kà ó kwàcíé 'yá   'he should push it shut'

(30e) kà ànyí wépʊ̀tá 'yá   'let's bring it out'

   (7)   The imperative uses this suffix, but also includes a morpheme
of tonal replacement. Except in bases which begin with high-low, low
replaces stem tone with the first (or only) syllable of the base. For
bases beginning with high-low, it is entirely reasonable to suppose
that the replacive inherently has the alternant downstep before the
base; this is not recoverable, however, since nothing can precede an
imperative in the same clause. E.g.:

(31a)   rǐ   :   rǐé 'yá   'eat it'

(31b)   zà   :   zǎá 'yá   'sweep it'

(31c)   mécǐ :   mècíé 'yá   'close it'

(31d)   kwàcǐ : kwàcíé 'yá   'push it shut'

(31e)   wépʊ̀tá : wépʊ̀tá 'yá   'bring it out'

A special morphotonemic alternation involving an imperative from a base
with two syllables and the tones high-low will be noted in the follow-
ing section.

   What the foregoing statements have done is to establish particular
instances, other than lexical, of the conditioning environments for the
alternations stated in the preceding section. Low tone in some verbal

constructions has been shown to be a morpheme of tonal replacement (1, 2, 7 above); this is irrelevant to the morphotonemic alternations, but, in (1) and (2), prerequisite to the derivation of relatives. With the appropriate types of bases, downstep followed by all high tones in infinitives, negative imperatives, and relatives conditions A1 (3, 4, 5 above). The final high tone of a suffix in a number of verbal constructions conditions A2 and A3.

4.

    The statements concerning morphotonemic alternations in 2. above were intentionally somewhat oversimplified in the interests of clarity. Special exceptions to them remain to be stated, and a few statements of more restricted alternations must be added.

a. (1) Apart from the negative imperative described above, there is only one negative construction in Igbo. Downstep is a characteristic of this negative construction, but with a unique morphotonemic alternation. After subjects other than singular pronouns, there is a prefix /á'-/ or /é'-/ —— with automatic deletion of downstep before low, of course. After low tone in the base, all following tones have the alternant low. There is also a suffix, /-ghị̀/, which is toneless. Examples of this negative construction are:

(32a)	ànyị́ é'ríghị̀ ńrí	'we didn't eat (food)'
(32b)	há ázàghị̀ ụ́lọ̀	'they didn't sweep the house'
(32c)	Òkóyè é'mécíghị̀ ụ́zọ̀	'Okoye didn't shut the door'
(32d)	há ákwàcíghị̀ ụ́zọ̀	'they didn't push the door shut'
(32e)	únù é'wépụ̀tàghị̀ yà	'you (pl.) didn't bring it out'

After a singular pronoun subject, which has low tone in the negative, the prefix has an allomorph with no vowel, but with its high tone and downstep replacing the first tone of the verb base; if that tone was low, all following syllables in the form have low tone —— in the second and fourth of the following examples, the second syllable of the verb form had already acquired its low tone by the rule above, before the preceding low was replaced by high according to this rule. Counterparts

of the above with singular subject pronouns are:

(33a)	ǒ rɪ́'gh[ɦrɪ́	'he didn't eat'
(33b)	ǫ̀ zághì ɡ́lǫ̀	'she didn't sweep the house'
(33c)	è mɛ́'cɪ́gh[m̀ ɡ́zǫ̀	'I didn't shut the door'
(33d)	à kwácìgh[m̀ ɡ́zǫ̀	'I didn't push the door shut'
(33e)	ì wɛ́pɡ̀tàghì yà	'you didn't bring it out'

    Downstep followed by one or more high tones in the negative con-
ditions A1, as expected, except in one type of form. Before stating
the exception, it is necessary to describe a "verbal noun". A verbal
noun, which in most respects functions like other nouns, has a prefix
which is segmentally /a-/ or /e-/, with low tone before high in the
first syllable of the base, and high tone before low. The verbal noun
is used after the stative of a verb /ná/ (which is not independently
used, but to which a meaning may be assigned something like 'be at,
be with') to form an "incompletive", and after the stative of /gá/
'go' to form a "future". E.g.:

(34a)	ǫ́ nà èrɪ́ ɦ'rɪ́	'he is eating'
(34b)	ǫ́ gà ázà ɡ́lǫ̀	'she's going to sweep the house'
(34c)	á gà m̀ èmɛ́cɪ́ ɡ́zǫ̀	'I'm going to shut the door'
(34d)	á gà m̀ ákwàcɪ́ 'yá	'I'm going to push it shut'
(34e)	á nà m̀ èwɛ́pɡ̀tá 'yá	'I'm bringing it out'

    In the negative of the incompletive and future, the formation
described above applies to /ná/ and /gá/. This yields forms which have
a downstep followed by one or two high tones. According to A1, it would
have the alternant high. An exception must be added to the statement for
A1: it does not apply in a verbal noun after a negative. E.g.:

(35a)	há á'gághɪ́ èrɪ́ ɦ'rɪ́	'they're not going to eat'
(35b)	ǫ̀ ná'ghɪ́ èwɛ́pɡ̀tá 'yá	'he's not bringing it out'

b. (2) A similar exception must be incorporated into the statement
of A2. A verbal noun may occur after a "consecutive" construction
with /ná/, in which /ná/ has the zero allomorph of the previously

described suffix with high tone. According to A2, it would be expected
that low tone in the verbal noun prefix would have the alternant down-
step-high; in this environment, however, the alternation does not apply.
E.g., in the next-to-last word of the following:

(36) há nà èrí ń'rí, ná àŋý ḿ'ményá
      'they're eating (food) and drinking (booze)'

    In spite of the above, it cannot be said that the verbal noun pre-
fix before a high tone is an invariable low tone; Al applies regularly
after a relative:

(37) ónyé 'ná érí ń'rí
      'the person who is eating'

c. (3) In a "completive" construction, after a subject other than a
singular pronoun, there is also a prefix /à-/ or /è-/. After high tone,
the tone of this prefix has the alternant downstep-high according to A2.
After a singular pronoun subject, the vowel of the prefix does not ap-
pear; the allomorph of the prefix is downstep alone. With appropriate
verbal bases, these statements yield forms which have a downstep followed
by all high tones, which is otherwise the conditioning environment for
Al. However, this allomorphic downstep is itself the product of A2,
with a statement added here deleting the vowel after singular pronouns,
so that Al can no longer apply. After such completive forms, A2 and A3
apply. E.g., with objects /àkwá/ 'egg' and /ńrí/ 'food':

(38a) únù èríélá ń'rí   'you (pl.) have eaten'
(38b) àŋý 'éríélá 'ákwá   'we have eaten eggs'
(38c) ó 'ríélá ń'rí   'he has eaten'

d. (4) A morpheme with the meaning "associative" is recognized as
present in phrases such as /ý'lý 'ány[/ 'our house', which is /ýlý/
'house' associated with /àny[/ 'us'. The tones of this and certain
other types of phrases are not accounted for by the morphotonemic alter-
nations stated so far. Nor can they be directly accounted for by
other alternations, because the same independent tones do not have
alternants in a sequence of noun plus numeral, as /ýlý àtý/ 'three houses'.

It might, of course, be suggested that morphologic conditioning is present; the alternation takes place if the second word in the phrase is a noun, but not if it is a numeral. However, a numeral may also participate in the associative construction. There is a minimal and morphemic contrast between /ýÌ̀ọ̀ àtọ́/ 'three houses' and /ọ́'Ìọ́ 'átọ́/ 'the third house'. The alternations in question can be accounted for if the associative morpheme is interpreted as having the underlying form of a high tone between two nouns, or between a noun and another word used nominally. (Historically, the high tone undoubtedly originally accompanied a vowel.)

One morphotonemic alternation conditioned by this underlying high tone is here derived after A1 but before A2 and A3; an alternative possibility is to derive it after A3, but the required statements would be more complicated and less reasonable. If the associative morpheme is followed by a low tone (before the application of A2 if a high tone follows that), final low tone in the preceding noun has the alternant downstep-high; i.e., it is assimilated to the level of the associative high tone. This, with deletion of downstep after low, accounts for the tone of the final syllable of the first word in each of the following; the last two of these include the later application of A2, and all of them show the still later deletion of the associative high tone:

(39a) áhà   'name'   : á'há òbòdò áhỳ   'the name of that town'

(39b) òbòdò 'town',   à   'this' : òbòdó à   'this town'

(39c) ýÌ̀ọ̀   'house', ànyʃ   (1 pl) : ý'Ìọ́ 'ányʃ 'our house'

(39d) Ìtè   'pot',   ànyʃ   (1 pl) : Ìté 'ányʃ 'our pot'

The underlying high tone of the associative morpheme is deleted only after the application of A3. It is only this that can account for A3 applying after low tone in the surface manifestation in phrases like the following:

(40) ýÌ̀ọ̀   'house, building',   áhyá   'market, merchandize':
              ýÌ̀ọ̀ á'hyá 'store, shop'

It now becomes apparent that, in many of the examples previously

cited for A2 and A3, though by no means all of them, the alternation is
actually conditioned, in the deeper structure, by the high tone of the
associative morpheme rather than by the final high tone of the preced-
ing noun. These include cases like the following:

(41a) ɔ́'gɔ́ 'money',   ànyɾ   (1 pl):   ɛ́gɔ́ 'ányɾ   'our money'

(41b) ìkɔ́ 'cup',   m̀máný   'oil' :   ìkɔ́ ḿ'máný   'a cup of oil'

(41c) áný 'meat',   ɛ́wú   'goat':   áný ɛ́'wú   'goat meat'

Implicit in the foregoing is an interesting ambiguity. As noted
above, in /ý̀lɔ̀ àtɔ́/ 'three houses' the associative morpheme is not
present, but in /ý̀'lɔ́ 'átɔ́/ 'the third house' it is present and con-
ditions two morphotonemic alternations. In a phrase such as /ɛ́wú 'átɔ́/,
however, there are two possibilities: the application of A2 in the
second word could be conditioned directly by the final high tone of
the preceding noun, in which case the phrase would mean 'three goats';
or it could be conditioned by the underlying and later deleted high
tone of the associative morpheme, in which case the phrase would mean
'the third goat'. This ambiguity is normally avoided by using, for
the ordinal, the noun /ŋ̀kɛ̀/ 'thing, the one' in association with the
numeral, yielding /ŋ̀kɛ́ 'átɔ́/ 'the third'. The noun is then used in
association with this phrase, yielding /ɛ́wú 'ŋ̀kɛ́ 'átɔ́/. In the rel-
atively careful speech characteristic of linguistic analysis and
language teaching, /ɛ́wú ŋ̀kɛ́ 'átɔ́/ is often heard, without the normal
manifestation of the associative morpheme after the first word. This
is presumably appositional: 'a goat, the third one'. The techni-
cally ambiguous /ɛ́wú 'átɔ́/ is assumed to refer to 'three goats'.

By analogy with the use of /ŋ̀kɛ̀/ to avoid ambiguity in ordinal
phrases after a high tone, it is commonly used also after a noun with
inherent final low tone, where there would be no ambiguity in any case.
Thus 'the third house' is often, if not usually, expressed as /ý̀'lɔ́
'ŋ̀kɛ́ 'átɔ́/. On the other hand, in some combinations where the ordinal
is the only reasonable semantic possibility, /ŋ̀kɛ̀/ is not used; e.g.,
/n̄ɔ́lɛ́kɛ́rɛ́ 'átɔ́/ 'at the third bell, at three o'clock'. All numerals
('two' through 'ten' and derived phrases) are included in these state-

ments; they all begin with low-high. (The words for 'one', 'twenty', and 'four hundred' are grammatically nouns, not numerals.)

The foregoing discussion of the associative construction is, of course, in the context of a treatment of tonology. It may not be out of place, however, to add that it is presented with a full conscious-ness of the striking grammatical parallelism with associatives in Bantu and other languages [Welmers 1963]. There are also some differences in grammatical detail, as will be seen in connection with possessive pronouns.

e. (6) After nouns other than verbal nouns, the combination of a noun with a monosyllabic modifier (a pronoun) does not include the associative morpheme. This is attested by the fact that final low tone in such a noun does not have the alternant downstep-high as required before the associative. E.g.:

(42a)   ɥ́lɔ̀ yá

     'his house'

(42b)   ĺtè gí

     'your pot'

For some speakers, the same is true regularly after verbal nouns; thus, from a verb stem /bè/ 'cut':

(43)   ɔ́ nà óbè yá

     'he's cutting it'

For many other speakers, however, the combination of verbal noun with pronoun must be interpreted as including the associative morpheme; thus, probably more commonly:

(44)   ɔ́ nà ó'bé 'yá

     'he's cutting it'

A verbal noun with a following noun ("object"), however, always uses the associative construction:

(45a)   ɔ́ nà ó'bé ὺdɔ̀   'he's cutting a rope'

(45b)   ɔ́ nà á'zá 'ézí   'she's sweeping the compound'

The grammar of these may be reflected by 'he is-at rope-cutting' and
'she is-at compound-sweeping'.

f. (7) In the sequence of an imperative from a two-syllable base with
the tones high-low and a noun or pronoun object with initial low (or
downstep), a complex of alternations identical with those conditioned
by the associative morpheme (but not identifiable with it) is found.
The conditioning factor in this case can be identified in the under-
lying structure as the high tone of the verbal suffix; in the surface
structure, the suffix has a zero allomorph with most verbs of this
type. E.g.:

(46a) há'pý 'ányɪ́   'leave us alone'
(46b) há'pý 'yá   'leave him alone'
                   (cf.: hápỳ éwú à 'leave this goat alone')

g. (8) Two special alternations apply in the subject of a verb if
something precedes it in the same clause. The first of these is Al
after high tone in this additional environment: initial low followed
by high in the subject has the alternant high. The second is identi-
cal with the alternation before the associative morpheme, though the
presence of that morpheme is out of the question: before low tone,
final low in the subject has the alternant downstep-high. Both of
these alternations are attested in relative clauses (of the type
'the man I saw', not 'the man who came', in which the antecedent is
the subject). Only the second is attested anywhere else. The reason
for this is that anything other than the antecedent of a relative,
before the subject of a verb in the same clause, must be followed by
the morpheme /kà/, which does not have the conditioning high tone.
In the relative clauses among the following examples, the antecedents
are nouns meaning, respectively, 'thing, matter' and 'place'; the al-
ternation illustrated in each is shown by a numeral:

(47)   (1) : ànyɪ́   : ɪ́hé ányɪ́ mèrè   'what we did'
       (2) : únù   : ɪ́hé ú'nú mèrè   'what you (pl.) did'
       (1, 2): Òkóyè : ɪ́hé Òkó'yé mèrè   'what Okoye did'

(1, 2):	ìkó únù:	ébé ìkó ú'nú dì	'where your cups are'
(2) :	únù :	ébé 'óìé kà ú'nú nò̩	'where are you?'
(2) :	únù :	ó̩ bù̩ yá kà ú'nú hù̩rù̩	'it's he that you saw'

It has been assumed that the third person plural pronoun form, which
among other things may be used as a verbal subject, has an initial down-
step: /'há̩/. For the singular subject pronouns, there is no evidence
that there is or is not inherently an initial downstep. If there is,
they are also included in a minor extension of the first of these al-
ternations: after high, initial downstep in the subject is deleted.
E.g.:

| (48a) | ébé há̩ nò̩ | 'where they are' |
| (48b) | ìhé ó̩ nà èmé | 'what he is doing' |

h. (9) Two expressions in adverbial usage are exempted from A1 and
A2; their initial low tone does not undergo alternation. These are
/ò̩zó̩/ 'again, any more', and /ùgbú à/ 'now'. The latter of these is
apparently a noun meaning 'time' and the demonstrative 'this', but
the noun is not attested in any other combination. Instances of these
in the conditioning environments for A1 and A2 are:

(49a)	ó̩ cò̩rò̩ ì'byá ò̩zó̩	'he wants to come again'
(49b)	kà ó̩ byá ò̩zó̩	'he should come again'
(49c)	mèé 'yá ùgbú à	'do it right now'

    The first of these also appears without alternation in what other-
wise seems to be an associative construction after the words /ìzù/ 'week',
/ó̩ŋwá/ 'month', and /áfò̩/ 'year', with the meaning 'next'. The
three expressions are:

(50a)	ì'zú ò̩zó̩
(50b)	óŋwá ò̩zó̩
(50c)	á'fó̩ ò̩zó̩

    It cannot be said, however, that initial low tone is simply invar-
iable in these expressions. A completely regular associative construc-
tion using /ò̩zó̩/ is also found, similar to the ordinal expressions pre-
viously noted. E.g.:

(51) ọ́ˈlọ̀ ˈńké ˈọ̀zọ́   'the other house'

Nor does it seem feasible to assign the instances of non-alternation
in these expressions to adverbial use in general. There are some con-
structions in which a noun /m̀bụ́/ 'the beginning, the first time' ap-
pears in comparable adverbial usage, but with regular alternations;
note the contrast in the following:

(52a) ọ́ gàrà Àbá ọ̀zọ́   'he went to Aba again'
(52b) ọ́ gàrà Àbá ˈm̀bụ́   'he went to Aba first'

A rigidly formal presentation of all that has been said about
Igbo tone would inevitably be more difficult to follow, or more lengthy,
but it is of course possible. It would follow this order, by way of
rough outline:

    (1) Identify lexical tones, including the high tone of the
        associative morpheme.

    (2) Derive the tones of verb bases.

    (3) Derive the tones of verbal constructions, including the tones
        of subject pronouns.

    (4) Make statements concerning monosyllabic nouns, including the
        pronominal types.

    (5) State the alternation illustrated by /égó .../ from
        /éˈgó/.

    (6) State A1, A2, A3 with the exceptions noted.

    (7) State the alternations in (4.f.) and (4.g.) above.

Thus far Igbo tonology. <u>Requiescat in pace</u>.

REFERENCES

Welmers, Wm. E. 1963. "Associative a and ka in Niger-Congo."
    <u>Language</u> 39:432-37.

Welmers, Wm. E. 1970. "The derivation of Igbo verb bases." <u>Studies
    in African Linguistics</u> 1:49-59.

Welmers, Wm. E., and Beatrice F. Welmers. 1969. "Noun modifiers in
    Igbo." <u>International Journal of American Linguistics</u> 35:315-22.