The limits of downstep in Ágbò sentence prosody

IRCS Report **92−37**, edited by M. Liberman & C. Maclemore, 103−15. Institute for Research in Cognitive Science, University of Pennsylvania, Philadelphia.

The complete list of 81 examples transcribed in the Appendix (pp. 110−12) can be heard in the same order here. Here's a foto of the speaker, Julius Ògbú, and me.

Significant correction: Ex. (18a) as cited on p. 109 is observationally correct in some prominent Ìgbo varieties — e.g. it occurs as such in Ḿbàisén and adjacent areas — but *not* in Standard Ìgbo, moreover the form as given on p. 109 is seriously misleading with respect to considerations of clause−typing. In Standard Ìgbo, the verb root plus suffix in a subject question of this inflectional type bears L, and not downstepped H:

Ònyé hù−rụ Ézè? 'Who saw Ézè?' = [LH LL HL].

But Standard Ìgbo *does* maintain the downstepped H in subject relative clauses like (18a) = [H!H !HH H!H]. Accordingly, one might well claim that T−to−C (or Infl−to−C) *does* occur in (18a), just as indicated in the paper, but there is no prosodic evidence for parallel treatment of (18b), *contra* the little upward arrow to the left of −*rV* in the tree structure in (18b). Incidentally, the identification of Ìgbo finite −*rV* as a morphological instantiation of the Infl or Tense node of the clausal Middle Field, assumed in 1992 the paper, must be abandoned for independent reasons of temporal and aspectual quantification. Specifically, the longstanding controversy in the Ìgbo literature regarding the temporal content of −*rV* inflection dissolves, once −*rV* is recognized to have the distribution of an argument−type clitic.

Otherwise, the general point of the paper remains unaffected: so−called "upstep" is epiphenomenal, and is not an upside−down counterpart of "downstep" as pretended in taxonomic ("tagmemic") work by E. Pike and maintained by many Africanists with the help of enriched autosegmental−metrical notation. Rather, "upstep" is no more than the phonetic realization of antidownstep (downstep reset), a phenomenon itself constrained by syntactic phrasing. Several elementary and general observations support this conclusion, quite apart from the particular analysis of Ágbò presented in my paper. First, there is no antidownstep without a preceding downstep in the relevant prosodic domain. Secondly — and this point was admitted anecdotally during the roundtable discussion at the 1992 UPenn workshop by the two invited SIL Mayanists — Mayan languages do *not* show upstep cumulation, contra E. Pike's published descriptions that started the whole upstep goosechase. Naturally, upstep retains support as a strictly *phonetic* category, my only purpose here being to show that it plays no role in the statement of linguistically significant generalizations. In sum, *phonological* use of the term *upstep* is, on current knowledge, nothing more than a hypostasis or in other words a mystification. SIL/Wycliffe may possess excellent soteriological reasons to look "upward" as much as "downward", but natural languages including Ìgbo and apparently also the Mayan family are quite innocent of this skyward temptation, and should not be blamed for it.

[Update 6 December 2012] Another telling indication that syntax is not 'different' (in the sense of Bromberger & Halle 1989) is that not only prosodic footing, but also syntactic agreement, has now been enthusiastically offered as grist for an upward−looking parameter of structural variation across natural languages (Baker 2008). Automatic sacrifice of restrictiveness is always expedient in the short term, but always too a bad idea for constructing testable theory−space (Martin & Osherson 1998) and at least as far as Niger−Congo languages are concerned, always a recipe for exoticism.

Baker, M. [2008]. *The Syntax of Agreement & Concord*. Cambridge University Press.

Bromberger, S. & M. Halle. [1989]. Why phonology is different. *Linguistic Inquiry* **20**, 51−70.

Martin, E. & D. Osherson. [1998]. *Elements of Scientific Inquiry.* MIT Press, Cambridge Mass.

THE LIMITS OF DOWNSTEP IN ÁGBỌ̀ SENTENCE-PROSODY*

Victor Manfredi
Boston University African Studies Center
270 Bay State RD
Boston MA 02215

ABSTRACT

A recorded corpus[1] of some 80 nonspontaneous Ágbọ̀ [2]examples shows systematic resetting of downstepped pitch within the minimal sentence. As this phenomenon is not independent of a preceding downstep, and can never cumulate upward, it is precisely not 'upstep' (pace Meir *et al.* 1975; Snider 1990) but rather *antidownstep* or *downstep-reset*. Contra expectations of the reigning phonological model of downstep (e.g. Clements 1981), *downstep-reset* is limited neither to clausal boundaries (where trivially it does occur) nor to performance contexts of maintaining adequate pitch range. A first, impressionistic pass over the Ágbọ̀ corpus readily identifies two linguistic contexts for *downstep-reset*:

- After word final downstep before phrase boundary (tracks 2, 3, 13, 26, 28, 31, 33, 41, 48, 50, 52, 63, 70-72, 74, 79, 80). Most examples of this *edge effect* involve a PP or serial VP — neither type containing a pause.
- After a verb in which lexical H and L are neutralized (tracks 21, 22, 28, 32-35, 37, 39, 41, 43, 45-47, 68-70, 72, 76, 77). This *architone effect* regularly occurs, inter alia, before the negative/relative suffix -*ní*.

In a framework of tone-metrical licensing (Bamba 1992, Manfredi 1992), the two *downstep-reset* contexts share one property: a H tone in a weak position. The configurations which predict weak H are found in surface syntax. Weak H also accounts for *downstep-reset* in the Àbánkeléle dialect—previously claimed to have a so-called 'upstep' juncture—and in standard Ìgbo.

1. GARDEN-PATH TONEMARKING

The problem addressed in this paper was noticed nearly 40 years ago. Transcribing some sentences of ShiTswa (a Benue-Congo language of Mozambique) in 1953, Welmers noticed a failure of deterministic tonemarking. Having convincingly assigned ShiTswa to the 'terraced-level' type later codified by Stewart (1965), based on the cumulative pitch lowering which occurs automatically between successive H-tone domains, he was surprised to observe

> a clear contrast… after low, between a nonlow at the same level as the preceeding nonlow and a nonlow at a slightly lower level. (1973: 87)

Such a contrast creates a garden path for the application of a standard tone orthography comprising three rules:

- H- and L-bearing syllables are individually marked [´] and [`] respectively.
- Downdrift (Stewart's "automatic downstep") occurs between H-bearing syllables across L-bearing syllables.
- ("Nonautomatic") downstep between two adjacent H-bearing syllables is marked [!].

To demonstrate the breakdown of tonemarking, Welmers (1973: 91*f.*) cites the following paradigm:

1a.	Vámùwóná mùfánà.		'They see [the] child'
	3pl.see… child		
b.	Vámùwóná mùfánà wa mùbìkì.		'They see [the] cook's child'
	3pl.see… child of chief		
c.	Vámùwóná mùfánà wa !hósí.		'They see [the] chief's child'
	3pl.see… child of chief		

The imparsable syllable is *wa* 'of' in (1b) and (1c): no available tone diacritics fits that word's pitch. Consider the possibilities. *Wa* can't be marked L: it is pronounced higher than the flanking L-bearing syllables in (1b), and higher than the downstepped H in (1c). Neither can *wa* be marked H: it is pronounced on the same pitch as the middle syllable of *mùfánà*—rather than on a lower pitch which it would be expected to have as the bearer of a well-behaved H tone. Thus,

---

[1]Text given in full below, with four pitch tracks. The examples—elicited to test tone classes of monosyllabic verb roots—are either gnomic, quasi-proverbial sentences with no marked focus; or mini-discourses with controlled focus structure. A hifi recording of the corpus, spoken by one person (not in real time) on one occasion, has been deposited in the phonetics lab, Williams Hall, University of Pennsylvania. Track numbers refer to the file labelled "/home/myl/db/agbo".

[2]Ágbọ̀ is the westernmost form of Ìgbo in the historical sense. Colonial/federal governments and their missionary/ academic allies carved the periphery of the Ìgbo-speaking area into ethnic districts (e.g. "Ìkà", "Ìzîì", "Ìkwéré") on ideological grounds (kinship, kingship, confession, lexicostatistics). In reality, many of the claimed unique peripheral characteristics are actually found throughout the area; many others are just borrowings from non-Ìgbo-speaking neighbors; thus, neither sort of evidence proves anything about Ìgbo-internal relationships (cf. Ọ́nwụejíọgwụ̀ 1975).

Welmers is constrained to leave *wa* without a tonemark, stipulating that this absence means 'same pitch level as nearest previous H'. The unmarked *wa* is not toneless; it implicitly bears its underlying H as expected, but is preceded by a special juncture which negates the downdrift (automatic downstep) which would ordinarily occur at that point.

As the anomalous, antidownstep juncture occurs only in possessive phrases, all of which are formed with the "associative" morpheme *wa*, Welmers (1973) conceives a morphological solution: a "phonemic upstep" is assigned to *wa* itself, as a kind of prosodic prefix whose bizarre nature is excused by its unique distribution. Though the mechanics of his 1973 proposal are certainly *ad hoc*, the intuition that the antidownstep juncture is construction-specific is consistent with a prosodic government approach—offering at least the prospect of an explanation based on principles of tone-syntax interaction. To explore this possibility, it is first necessary to review some of the elementary relationships of phonological government which pervade the languages of this great, transcontinental family.

2. TONAL PROSODY AS GOVERNMENT

Bamba (1989, 1992) shows that OCP-based, nonlocal pitch effects like downstep, as well as local pitch effects like raising and spreading, reflect the constituency of metrical domains. Bamba's framework is *prosodic* because the domains in question interact with surface syntax in predictable ways. The basis of this interaction is the core licensing principle which, by hypothesis, is shared by phonology and syntax: the government relation.[3] The overall goal of this section is to show that *downstep-reset* is an example of prosodic licensing in this sense. The first step in the demonstration is to survey some simple cases in the relevant languages.

2.1 Tone and locality

As extended to Benue-Kwa[4] languages by Manfredi (1988/1992), prosodic licensing in Bamba's sense is implied by cross-linguistic, and language-internal, distributions of (local) spreading and raising with respect to downstep.

| | local | | | | nonlocal | |
| | spreading | | raising | | H ! H interval | |
	H /_L	L /_H	H /_L	L /_H	partial	total5
Standard Yorùbá[6]	+	+	+			+
Ágbò	+				+	
Ònicha					+	
Mbàisén					+	(*Auslaut*)
Àbánkeléke[7]			+			+
Ɣɔmalá-Yamba[8]		+		+	+	+
Ɣekoyó[9]		+				+

Table 1. Distribution across Benue-Kwa of some local and nonlocal tone effects

The table shows *inter alia* that L-spreading and L-raising—both being local L tone effects—are in complementary distribution with partial downstep—which is a nonlocal effect, since it cumulates over the entire sentence. It is important to realize that this implication holds robustly even in Ɣɔmalá-Yamba, where only strong L tones spread or raise, and only weak L tones qualify as partial downstep triggers.

3If, on the other hand, "phonology is different" (Bromburger and Halle 1989), the licensing principles of metrical domains have nothing in common with those of phrasal syntax. As their pessimistic premise rules out prosodic results in advance, one should reject it provisionally and seek generalizations until they appear or until one tires of the search.

4Benue-Kwa, the largest branch of Niger-Congo, extends from central Côte d'Ivoire (or perhaps from eastern Liberia) to eastern and southern Africa. To date, no phonological (as opposed to lexical) evidence for an internal subgrouping of Benue-Kwa has been offered. A potential candidate for a syntactic isogloss is the movement of a main verb to the position of inflection ("V-to-I movement" cf. Emonds 1978); this occurs in Ìgbo and eastwards, and in Ànyî (or perhaps Akan) and westwards, but not in a central zone extending from Gbè to Yorùbá and Èdó (cf. Déchaine 1992).

5Total downstep lowers an H-tone to the pitch level of a non-H-tone in the same context; partial downstep doesn't.

6In Yorùbá, (nonautomatic) downstep occurs only after an elided L tone; it is a total downstep as defined in the preceding footnote, since a downstepped H is lowered at least to the level of M. According to Láníran (1992: 250), Yorùbá M is not downstepped, but the preceding H is raised; Yala-Ikom's 'downstepped M' (Armstrong 1975) may be similar.

7A.k.a. "Izi" or "Ìzîî", an ethnic label promoted in literacy materials, starting shortly before the Nigerian Civil War, by the Énugwú branch office of the Summer Institute of Linguistics (cf. Meir et al. 1975).

8A.k.a. "Dschang Bamileke"—studied (and, if I am not mistaken, spoken) by Tadadjeu (1974).

9A.k.a. "Kikuyu"—studied by Clements and Ford (1978).

The other complementarity in the table is between total and partial downstep. For nonfinal contexts, one can predict the occurrence of total downstep from L-spreading. In absolute final position (*Auslaut*), however, total downstep also occurs in Mbàisén (among several other southern dialects) which lacks L-spread. The multiple sources of total downstep suggest that it is a default which obtains wherever H tone is governed.

The distribution in Table 1 can be studied in terms of tone-metrical interaction. Consider the principles in (2).

2. *principles*[10]   A metrical governor is stronger than its governee (H>L>M).[11]
                  [s] immediately dominates a metrical governor.
                  [w] is strictly adjacent to a metrical governor.
                  Tonal government iff [s].

The idea in (2), adopted from Bamba (1989/1992), is that two different kinds of licensing relation—respectively tonal government and metrical government—are separately responsible for the local and nonlocal phenomena referred to in (2). The generalization of complementarity follows from the fourth assumption, namely that tonal government (e.g. spreading, raising) is possible only if the tonal governor occupies in a strong metrical position. Since H is the metrical governor in the partial downstep relation, partial downstep excludes L from a strong position, hence L cannot be a tonal governor.

To accommodate the variation observed in Table 1, this framework must be supplemented by the parameters in (3).

3. *parameters*   (i) The set of tonal governors is {H}, {L}, {H, L}.
                  (ii) Tonal government is expressed by {spread} {raise} {both} {neither}

The resort to parameters is, in general, problematic, unless (as suggested by Borer 1984, Fukui 1986) they can be reduced to learnable inventories of closed-class (i.e. 'functional') items. Minimally, one would hope that only tonal government needs to be parametrized, at least for the closely languages in question. The required parameter settings are listed in (4).

4. *settings*

	(i)	(ii)
Yorùbá	H, L	*both*[12]
Ágbò	H	*spread*
Ọ̀nịcha/Mbàisén	H	*neither*
Àbánkeléke	H	*raise*
ɣɔmalá-Yamba	*some* L	*both*
ɣekoyó	L	*spread*

For the present, I will set aside issues of parametric learnability or arbitrariness, and proceed to examine cases where syntactic government seems to affect the tonal and metrical relationships just outlined.

2.2 Prosodic government

The smallest assumption sufficient to explain downstep-reset is the failure of a licensing condition for downstep. Bamba defines downstep as a nonlocal government relation between tones, mediated by metrical constituency. If tonal government requires syntactic government, then downstep can't follow a tone which is not in a governing position.

5. *licensing*   Locally, an element is ungoverned iff governing.
                 Unlicensed elements incorporate under the local licensed node, e.g.:
                    (a) Domain-initial L incorporates under following [s].
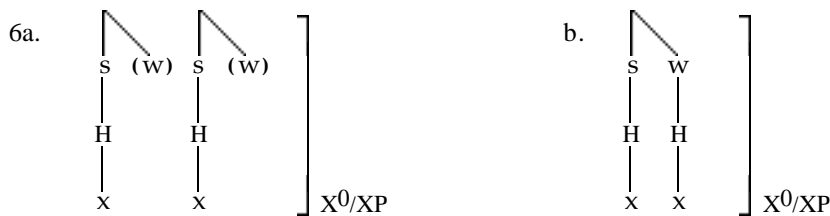   (b) Domain-final H incorporates under preceding [w].

(5a) accounts for initial L-raising (also in Ẹ̀dó, cf. Elugbe 1977). (5b) follows from the definitions in (2), and directly advances the goal of this paper to account for the possibility and distribution of weak H tones.

The consequence of (5b) is illustrated in (6a). The filled weak node is unlicensed: it doesn't govern anything because it is final, and it isn't governed since it is not weaker than the preceding strong node. Incorporation of stray H yields (6b).

10Most of these principles simply recap the definitions of Liberman and Prince (1977).

11This hierarchy couldn't be valid in a true 'upstep' language, if any exists. No such language has yet been documented.

12Lániran finds L-raising only concomitant with H-raising; her algorithm (1992: 237*f.*) involves a relation called "upstep", which actually applies right-to-left (n.b. backwards in time) across tonal feet. That this is indeed an example of raising is shown by her observation that the first H's extra height factor does not affect the level of an initial L.

6a.
```
      ┌─╲     ┌─╲              b.        ┌─╲
      s (w)   s (w)  ]                   s   w  ]
      |       |                          |   |
      H       H                          H   H
      |       |                          |   |
      x       x      ] X⁰/XP             x   x   ] X⁰/XP
```

Prosodic licensing has numerous empirical consequences in Ìgbo. For example, consider the well-known restriction of lexical downstep to the final syllable, cf. the Ònịcha forms in (7):[13]
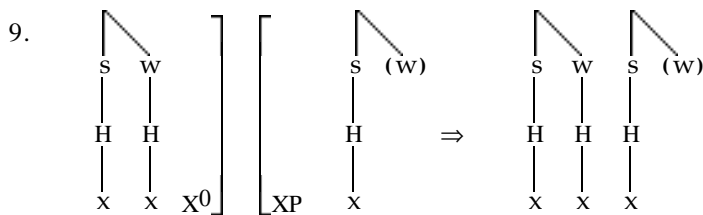
7. átụlú 'sheep'   ífẹlẹ́ 'shame'   *v́cv́cv
    ńkịtá 'dog'   ọ́bẹlẹ́ 'small creature'

If these forms are composed of three H-bearing morphemes, the third and final morpheme is evidently weak, hence its H tone is exempt from the OCP. As is well known and ill understood, however, the final downstep of nouns drops phrase-internally:[14]

8. ọ́nụ́ 'mouth'   ụ́zọ̀ 'path'   ọ́nụ ụzọ̀ 'door(way)'   *ọ́nụ́ ụzọ̀
    ágụ́ 'leopard'   áta 'grassland' ágụ atá 'savanna leopard'   *ágụ́ atá
    ọ́bẹlẹ́ 'small creature' nwá 'child'   ọ́bẹlẹ nwá 'dear little child' *ọ́bẹlẹ́ nwá
    ńkịtá 'dog'   ụ́nụ̀ '2pl'   ńkịta ụnụ̀ 'your dog'   *ńkịtá ụnụ̀
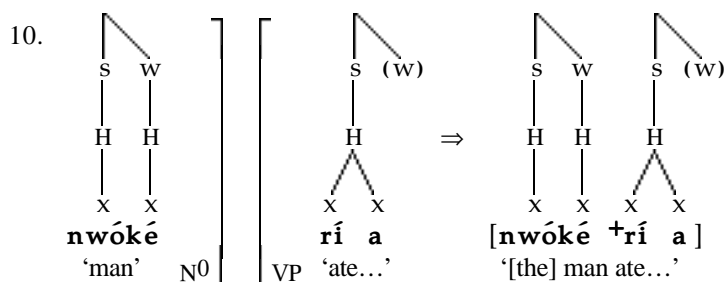
Whatever special licensing permits a word-final H to be weak in citation forms such as those in (7), (8) shows that this licensing is not available phrase-internally.

The Ágbọ̀ corpus, however, shows that a weak H is conserved in certain other contexts, which I have labeled architones. If (6b) is a negative verb plus its pronominal prefix, the corpus shows that in a larger verb phrase, the word-final weak H is equivalent to a weak L (the total downstep effect), and the initial H of the following word has higher pitch (the *downstep reset* effect).

9.
```
    ┌─╲           ┌─╲              ┌─╲     ┌─╲
    s   w  ]   [  s (w)           s   w   s (w)
    |   |         |                |   |   |
    H   H         H        ⇒       H   H   H
    |   |         |                |   |   |
    x   x  X⁰]  [XP x              x   x   x
```

What needs explaining in this framework, therefore, is the contextual difference between *downstep reset* in Ágbọ̀ and its absence (with corresponding loss of the word-internal downstep) in Ònịcha.

Some Àbánkeléke examples of (9) are given in (10) and (11).

10.
```
    ┌─╲            ┌─╲              ┌─╲      ┌─╲
    s   w  ]    [  s (w)           s   w    s (w)
    |   |          |                |   |    |
    H   H          H        ⇒       H   H    H
    |   |         /╲               |   |    /╲
    x   x        x   x             x   x   x   x
  nwóké  N⁰]   [VP rí  a        [nwóké ⁺rí  a ]
  'man'          'ate…'          '[the] man ate…'
```
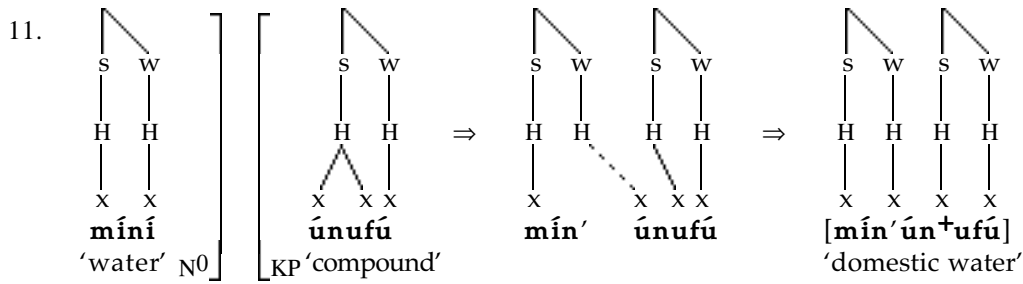
(The tone cliticization in (11) is driven by the elision of the last timing unit of *míní*.)

13The few exceptions in (i) are most likely exempted by internal structure.
    (i) óghẹ́(lẹ) 'opening' (Ònịcha)   ókóro 'young man' (Àbánkeléke), cf. óke 'male'
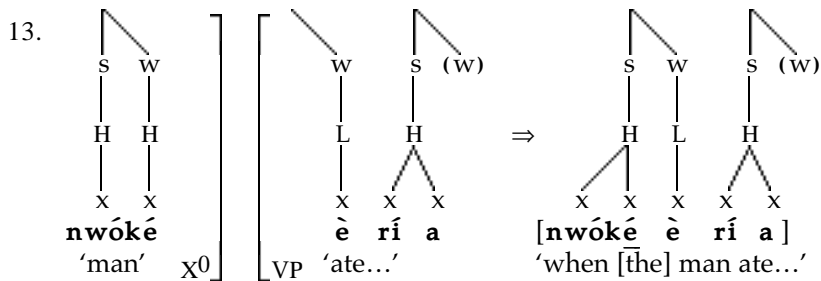14One exception may be exempted by internal structure, cf. dí 'master':
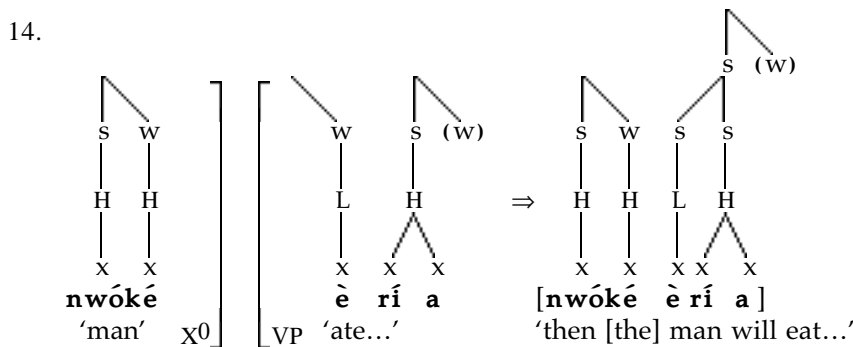   (i) ágadí 'elderliness' (Ònịcha)   ágadí nwaànyị 'old woman'   *ágadi nwaànyị

11.

```
        s   w          s   w           s   w  s   w          s   w  s   w
        H   H          H   H    ⇒      H   H  H   H   ⇒     H   H  H   H
        |   |          |  /\          |    ·.  \          |   |  |   |
        x   x          x  x x         x    x x x          x   x  x   x
       míní          únufú          mín'  únufú          [mín'ún⁺ufú]
      'water' N0│  │KP'compound'                         'domestic water'
```

If the following phrase begins with L, another difference emerges, cf. (12).

12.

```
        s   w          w    s  (w)
        H   H          L    H
        |   |          |    |
        x   x  X0│  │XP x    x
```
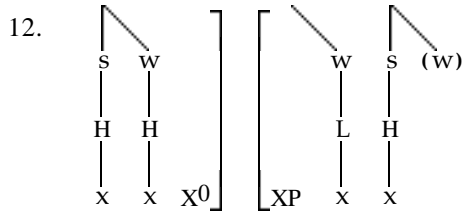
By stipulation in (4), tonal government takes the form of H spreading onto following L in Ágbò, and H raising before L in Àbánkeléke. But by definition in (2), tonal government entails a strong position, so we might not expect a tonal government effect in either dialect. H spread doesn't occur in relevant Ágbò contexts, e.g. (24b), but H raising (notated by underlining) is reported by Meir *et al.* in corresponding Àbánkeléke examples, forcing a derivation like (13) which violates structure preservation.

13.

```
     s   w         w    s  (w)               s   w   s  (w)
     H   H         L    H                     H   L   H
     |   |         |   /\       ⇒           /\   |   /\
     x   x         x  x  x                 x  x  x  x  x
    nwóké          è  rí a                 [nwóké  è  rí  a ]
    'man'  X0│  │VP 'ate…'                 'when [the] man ate…'
```

Fortunately, an alternative analysis is available; indeed it is required by the grammar. Meir *et al.* report an example minimally contrasting with (13):

14.

```
                                                      s  (w)

     s   w         w    s  (w)           s   w   s   s
     H   H         L    H                 H   H   L   H
     |   |         |   /\       ⇒       |   |   /\   /\
     x   x         x  x  x             x  x  x x  x
    nwóké          è  rí a             [nwóké  è rí  a ]
    'man'  X0│  │VP 'ate…'             'then [the] man will eat…'
```

Within a principle-based framework, (13) and (14) cannot have the same syntax. Minimally, the conditional clause in (13) must include an additional head, plausibly a determiner, for compositional semantics. Independently, from the so-called associative construction, it is clear that the null Comp in Ìgbo relative clauses is spelled out on the surface with a H tone (see Excursus). It is unnecesssary to stipulate this, so long as the null Comp is metrically strong. This gives the conditional the s-structure in (15):

15.
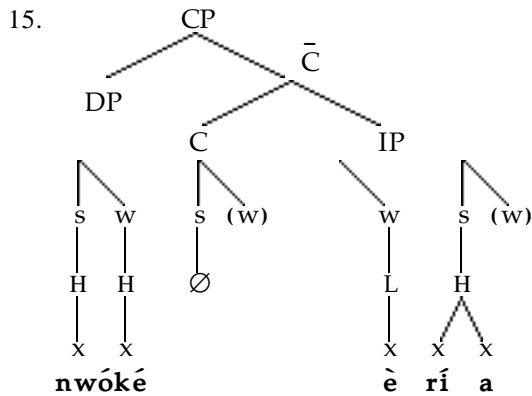
How does (15) satisfy prosodic well-formedness? Examples of the genitive construction like (16) been argued to exemplify the principle in (17), cf. Manfredi (1992: 159).

16.

àkpa
'bag'

àkụ
'wealth'[15]

àkpá àkụ
'bag of riches'
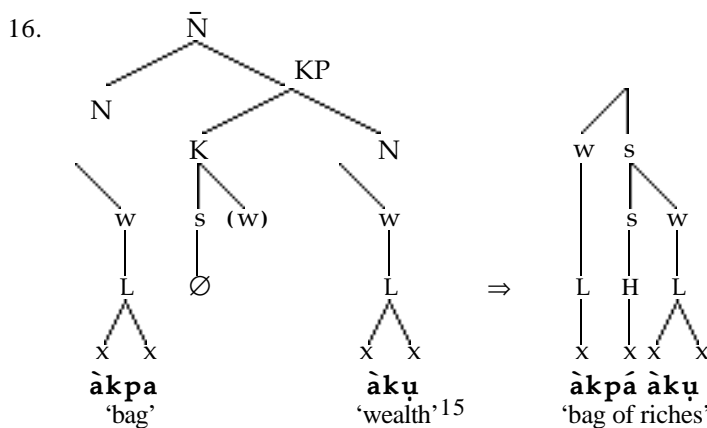
17.   *prosodic*   An unassociated element acquires as its association
        cliticization   domain the adjacent timing unit of its governing category.

In (15), cliticization of the null Comp creates the context for the observed raising. If this goes through, then tonal government in Àbánkeléke is structure-preserving.

A final question is why downstep reset occurs in Ágbọ̀ before the negative morpheme *ní*, which bears H tone, but not for example before the toneless *-ghị* of Standard Ìgbo (to which it is cognate). *Ní* is either a suffix or a left-branching phrasal head. We might suppose that *ní* as a phrasal head with inherent H is metrically strong. Then after a downstepped verb it will have the exactly the downstep reset configuration in (9). A related effect is seen in the Excursus, where a lexically unmotivated H tone appears in Ìgbo relatives as the content of null, strong Comp and Kase nodes.
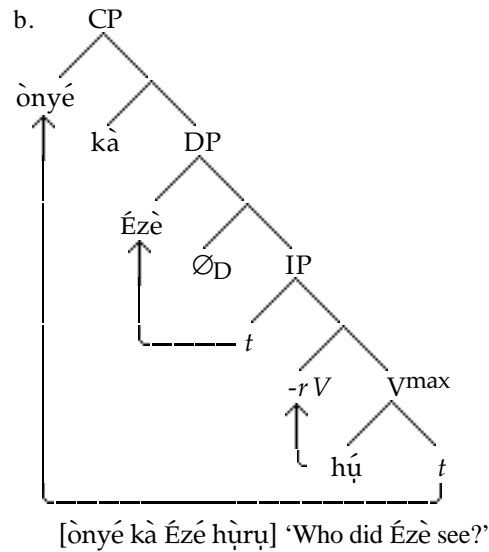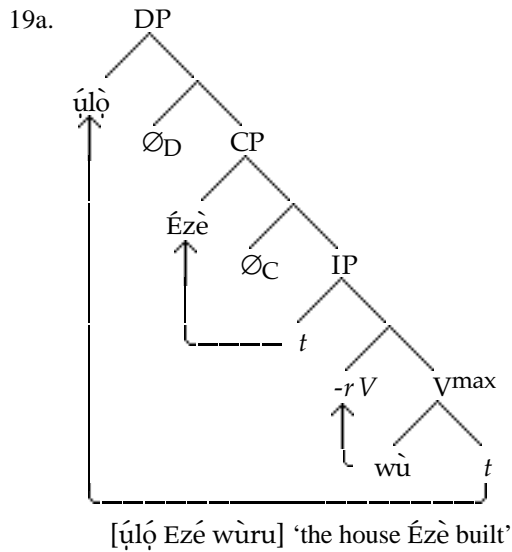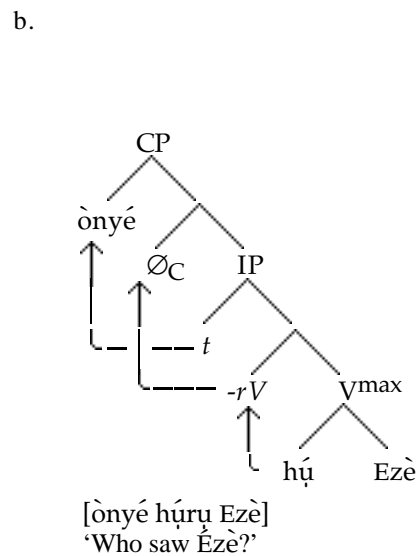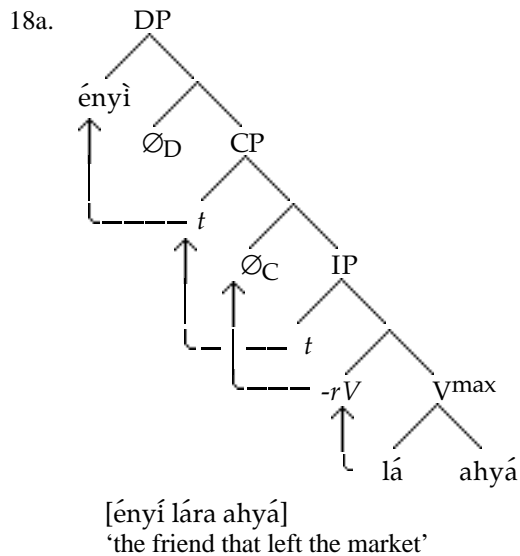
3. CONCLUSION

The above, preliminary analysis of prosodic licensing in Benue-Kwa languages takes off from the concrete and learnable disjunction between local and nonlocal tone effects, to posit quasi-syntactic relationships of constituency and government among tone elements, in the tradition pioneered by Bamba for Mandekan languages. Because government also forms an indispensable part of syntactic licensing, such an analysis offers the hope of explaining a wide range of phenomena which have heretofore inspired only bizarre diacritics of 'upstep' juncture. Equally importantly, it brings a rich array of phonological evidence, especially small parametric differences among closely-related languages to bear on issues of syntactic representation.

In light of these results, Welmers' tonemarking puzzle (with which the paper began) counts as a monument to the keen linguistic intuition of that eccentric missionary, but also to the complacency of Africanist phonologists and syntacticians who have managed to preserve their respective specializations in pristine, obtuse segregation for too many decades.

----

15 *Àkụ* is, specifically, inert or non-reproducing wealth, as opposed to *ụ̀bá* which includes seed stocks and livestock.

EXCURSUS: PROSODIC MINIMALITY IN ÌGBO

In Standard Ìgbo, an otherwise empty functional head is nevertheless strong in order to govern the head of an embedded constituent.[16]

18a.

DP

ényì

∅_D   CP

t

∅_C   IP

t

-rV   V^max

lá   ahyá

[ényí lára ahyá]
'the friend that left the market'

b.

CP

ònyé

∅_C   IP

t

-rV   V^max

hú   Ezè

[ònyé húrụ Ezè]
'Who saw Ézè?'

19a.

DP

úlò

∅_D   CP

Ézè

∅_C   IP

t

-rV   V^max

wù   t

[úlọ́ Ezé wùru] 'the house Ézè built'

b.

CP

ònyé

kà   DP

Ézè

∅_D   IP

t

-rV   V^max

hú   t

[ònyé kà Ézé hùrụ] 'Who did Ézé see?'

EXCURSUS II: YORÙBÁ

Both L and H are necessarily strong in a surface three-tone system. That H also raises before L (Láníran 1992: 240), sentence-initial L does not downstep the following H (1992: 219), and spreading cannot cross M (1992: 199*fn.*), all follow from the presence of LH feet (1992: 251). Láníran (1992: 270) refutes Pierrehumbert and Beckman's (1988) claim—repeated e.g. by McCarthy (1988)—that declination is not computed over phonological tones.

EXCURSUS III: AGAINST REGISTER TONES

The register tone framework (Snider 1990) has no account for prosodic domains. Contour tones are overgenerated, unless markedness between 'modal' and 'register' tones is invoked to exclude possible but unattested contours. A "left-to-right implementation rule" (like Schachter and Fromkin's numerical algorithm) is also needed. The (non-arboreal) register formalism does not represent cumulation explicitly. The lack of symmetry between upstep and downstep is accidental.

16In Ágbò, the empty head of a relative clause is spelled out with the copula *hụ́n*.

CORPUS

Speaker
Julius Ògbú
Ìdumu Ụ́ku, Ágbọ̀
June, 1977

Tone orthography

[´, `] = surface tones;
no mark = same as preceding tone;
[´] after [´] = downstep;
[+] = antidownstep

Track no.

1. Ǹ jné afya. Ó wí m ogné kịrị.
    'I went to market; it took me a brief time'

2. Ń jné áfyá + ọnọbé tanì.   [a copy of pitch track 2 follows below]
    'I'll go to market after a little while today'

3. Nị́ ḿ jne afyá + éki ílẹ.   [a copy of pitch track 3 follows below]
    'Let me go to market tomorrow'

4. Ányụ àtụ́ nkọ́, ì kebe gí ẹ́ be nknụ́.
    'An axe is usually sharp before you use it to cut wood'

5. Àŋání ọ nọ̀? Ọ̀ tụ́ nkọ.
    'How is it?' 'It's sharp'

6. Ọ̀pya atụ́ átụ, ì kebe gí é betụ́fụ́ ùknuésù.
    'A machete is usually sharp before you use it to cut open [a bundle of] yam pegs'

7. Àŋání ọ nọ̀? Ọ̀ tụ atụ́.
    'How is it?' 'It's sharp'

8. M̀gbadna enwóke ákọ, ò kebe náhi ohúkpagha.
    'An antelope is usually very clever, before it can escape a hunter'

9. Àŋání ọ dnọ̀ náhi? Ò nwo akọ́.
    'How did it manage to escape?' 'It's clever'

    [transcription/translation of tracks 10-12 is missing]

13. Ékụ́ ugbó wẹ gí eŋeré + kwá àkọ́ ụ́kọ.
    'A farm coat sewn with hide itches'

14. Àŋání ọ mé i? Á á kọ m ụ́kọ.
    'How does it affect you?' 'It doesn't itch me'

15. Kí ọ mé ẹ? Ọ̀ kọ́ á ụkọ.
    'What does it do to him?' 'It itches him'

16. Kí i wẹtnafụ́nị a? Ọ̀ kọ akọ́.
    'Why did you take it off?' 'It itches'

17. Ẹ́gẹdí aàja ánụ àja nị́ ọ márnị ọ̀sụ́ọ ọ̀bẹlẹzẹ́ẹ̀.
    'An elder dices up meat so that s/he can know the sweet taste of "ọ̀bẹlẹzẹ́ẹ̀"'

18. Àŋání ọ dnọ̀ kwádeme ẹ́? Ọ́ já anụ́; ò méyị ofigmọ̀.
    'How did s/he manage to prepare it? S/he diced meat; s/he added palm oil'

19. Àŋání ọ kwadèmé ẹ? Ò já anụ àja.
    'How does s/he prepare it?' 'S/he dices up meat'

20. Ńmúndụ̀ abụ́ ẹbụ̀ ógné ilẹ́ ifnọ́ gì etí.
    'Small children sing whenever the moon shines'

21. Kí wẹ́ me è wẹ́ gìlẹ + ní rahni?   [a copy of pitch track 21 follows below]
    'What did they do that they did not sleep?'

22. Ábụ́ wẹ̀ ẹbụ̀, étnè + ní wẹ̀ égú.   [a copy of pitch track 22 follows below]
    'They sang, they didn't dance'

23. Ógù́ ọ́mụmụ nwa ẹ̀nyí nà éré.
    'The birth medicine we received was effective'

24. Àŋání ọ rnụnị́ i? Òre ere.
    'How then did it work for you?' 'It was effective'

25. [incomplete transcription] Òré ère.
    […] 'It will be effective'

26. Òríri Nni Ugbó + ápụ́ ò-hú-mma.
    'The Feast of Farm Food turned out well'

27. Ó pú kè wẹ́ dnọ̀ kúu? Ọ̀ pụ apụ.
    'Did it turn out as they said?' 'It turned out [well]'

28. Ǹké í ⁺ hnú lála ⁺ níì? Ọ̀ pú àpụ.
   'Yours which is coming up?' 'It will turn out [well]'

28. Ǹké í ⁺ hnú lála ⁺ níì? Ọ̀ pú àpụ.
    'Yours which is coming up?' 'It will turn out [well]'

29. Mírni ezúe òsuó òhú. (possibly: Mírní ⁺ ézúe…)
    'Rain fell [in] one area'

30. Nị́ mirní èzúe ugbó ò rúe m̀gbé ènyasị̀.
    'Rain must fall on the farm by evening'

31. Mírní ⁺ nị́ o zué ebe ndị ọhụ̀ụ̀.
    'Rain will fall someplace'

32. Ányụ atnụ́ ⁺ ní nkọ́.
    'The axe isn't sharp'

33. Éyìlẹ́ m⁺ ányụ tnụ́ lẹ ⁺ ní nkọ́!
    'Don't give me an axe that's not sharp!'

34. Ọ̀pya átnụ́ ⁺ ní àtnụ́ụ̀.
    'The machete isn't sharp'

35. Ánìlẹ m gí ọ̀pya átnụ́ lẹ ⁺ ní àtnụ́ụ̀!
    'Don't have me use a machete that's not sharp!'

36. M̀gbadna áánwo áko.
    'Antelopes aren't clever'

37. Ń sèka hú ùté m̀gbadná nwò lẹ ⁺ ní áko.
    'I can see the track of an antelope that's not clever'

38. Èbulúku aáko akọ́.
    '[The ritual coat of an Ólokún priest] doesn't itch'

39. Nị́ ẹ yimẹ ẹkwà ko lẹ ⁺ ní ụkọ́. (speaker hesitates)
    'Let him put on a cloth that doesn't itch'

40. Ńdị kikenì áája anú ǹkẹ́ ọ̀belezéè̀.
    'People nowadays don't dice meat for "ọ̀belezéè̀"'

41. Ánílẹ onye ghàlẹ⁺ ní àja ánụ́ ⁺ lẹ́ ḿ! (strong effect)
    'Don't let someone who omits dicing meat host me!'

42. Ńmú ndụ̀ áábụ ẹbụ̀ íme isi àbalị.
    'Children don't sing [on] moonless nights'

43. Ńdị ghàlẹ⁺ ní àbụ ẹbụ̀ ásekà tné egú.
    'Those who omit singing cannot dance'

44. Ógụ̀ áâre ere.
    '[The] medicine is totally ineffective'

45. Á nì lẹ m ⁺ gí ogụ̀ ẹlẹ⁺ ní ère ere.
    'I won't use medicine that is totally ineffective'

46. Òríri apú ⁺ ní àpúụ̀.
    'The feast flopped dismally' [did not turn out at all]

47. Hnú pù lẹ ⁺ ní àpúụ̀ joko anwozị́.
    'What flops is going to have another [chance]'

48. Élẹ́ ⁺ ógné wẹ gì gú gí ⁺ hnú aka ahnù kè wẹ gì gú ⁺ ahyuá nì.
    'It is not when they dug yams last year that they're digging yams this year'

49. Ógné wẹ gì gú gí ⁺ wnụ ogné mirní gì lúa gu.
    'The time they harvest yam is the time when rain has finished tapering off'

50. Ógné wẹ égi ⁺ gú gí wnụ̀ ógné ọ-wnù-lẹ gha ekí ⁺ jnémẹ.
    'The time they will harvest yam is any time after tomorrow and thereafter'

51. Ébe o wu ụzọ̀ chọ́ ewù wnụ epeté è̀pete.
    'Where he stood seeking shade is muddy'

52. Ùbé o wu ụzọ̀ rú elú ⁺ ákpági.
    'The ladder he stood upright broke'

53. Ébe o wu ụzọ̀ ché nmụ́ a wnù ahamáhà ụwáyà.
    'Where he stood waiting for his children is in the middle of the road'

54. Ébe i ewu ụzọ̀ chéri wẹ́ wnù̀ ébe ụzọ̀ nọ́hìmé.
    'Where you will stand waiting for them is where the path makes a bend'

55. Émù aknụ́ ìhian aknụ́.
    'Sickness troubles people'

111

56. Òbanije esú ìhian esú.
    'Sweat affects people greatly'

57. Òbanije éèsú ìhian esúù.
    'Sweat doesn't affect people at all'

58. Èzizá nkụ kà alị azáà. (why not: Èzizá nkú…)
    'A broom of mature palm [branches] is best for sweeping the ground'

59. Èzizá òkịtị áàka alị azáà kárị èzizá nkú.
    'A broom of baby palm [branches] doesn't sweep better than one of mature palm'

60. Wẹ́ amarị nwa èmé nwá.
    'They know [how] the child will make itself'

61. Wẹ́ ámarị nwa èmé nwá.
    'They don't know [how] the child will make itself'

62. Nwátá márị ihie èmé nwá.
    'A child that knows something will mature'

63. Nwátá àmá ihié ⁺ á èmé nwá.
    'A child that doesn't know something won't mature'

64. Ónye ehyù ẹkwá ọ̀hụhụ amárị ọnụ a.
    'Someone who shops for hen's eggs knows their price'

65. Ónye eéhyù ẹkwá ọ̀hụhụ ámárị ọnụ a.
    'Someone who doesn't…, doesn't…'

66. Éru eèpú ugbo wnụ́ ekurù.
    'The mushroom that appears on the farm is "ékurù"'

67. Éru aàfọdú nkú wnụ ekurù.
    'The mushroom that grows on palm trees is "ékurù"'

68. Éru aàfọdú ọfya, ónobè nị́ ẹnyị́ húe ⁺ nị́ ẹ, ò réhi.
    'The mushroom that grows in the woods, soon after we don't pick it'

69. Ékurù áàfọdú nkú onobé, ómeni ẹnyị́ húe ⁺ nị́ ẹ, ò réhi m̀gbé ènyasi.
    'The "ékurù" that will grow on palm trees soon, if we don't pick it, it rots by evening'

70. Éru eépu ọfyá ⁺ ónobè; nị́ ẹnyị́ húe ⁺ nị́ ẹ, ò réhi.
    'A [type of] mushroom will come out in the woods in a little while, if we don't pick it, it rots by evening'

71. Éru eèfie ẹnyị́ ugbó ⁺ wnụ́ ekurù.
    'The mushroom that eludes us in the farm is "ékurù"'

72. Éru eéfie ẹnyi ⁺ọfya ekị́ ⁺wnụ́ ugu éni. Nẹ́dị ẹnyi aghọ́si ⁺nị́ ẹnyi kẹ̀ wẹ́ àchọ́ á.
    'The mushroom that will elude us in tomorrow's woods "úgu éni"'
    'Our father didn't show us how to look for it'

73. Mánya aàsụ́ọ ìkpohó wnụ̀ ọgọrọ.
    'The wine that women like is "ọgọrọ"'

74. Mírní ezúe ⁺ íme àbalị. Mánya aàsụ́ọ ⁺ tanì wnụ́ nkụ elú.
    'Rain fell during the night. The wine that will be sweet today is "ńkụ elú"'

75. Ánụ mẹ éke ẹsi rọ.
    'The meat I [usually] share out is horse'

76. Ánụ mẹ éke wnụ̀ ẹsị ma ọ wnụ éfni, ẹ́lẹ́ ⁺ hnú ká ntì.
    'The meat I [usually] share is horse or cow, it is not that which is smaller'

77. Ánụ mẹ éke ⁺ rị́ ndụ̀ kíkẹnì.
    'The meat I will share out is alive now'

78. Mánya mẹ ára wnụ òzu nị́ nkụ elú, ẹ́lẹ́ ògọrọ.
    'The wine I usually drink is "òzu" and "ńkụ elú", it is not "ọ̀gọrọ"'

79. Mánya mẹ ára, è gị́ m̀ ⁺ dọ́nọ ò sụ́ọ. (syntax unclear)
    'The wine I will drink is claimed to be going to be sweet'

80. Ògwá o zùzú ẹnyi ⁺ nị́ ìyá, èrú ụka a rị́ká.
    'The meeting that includes us and her/him, it usually comes to a big argument'

81. Ògwá oó zuzu ẹnyi, yá ebufùlẹ á.
    'The meeting that will include us, let her/him not cancel it'

112
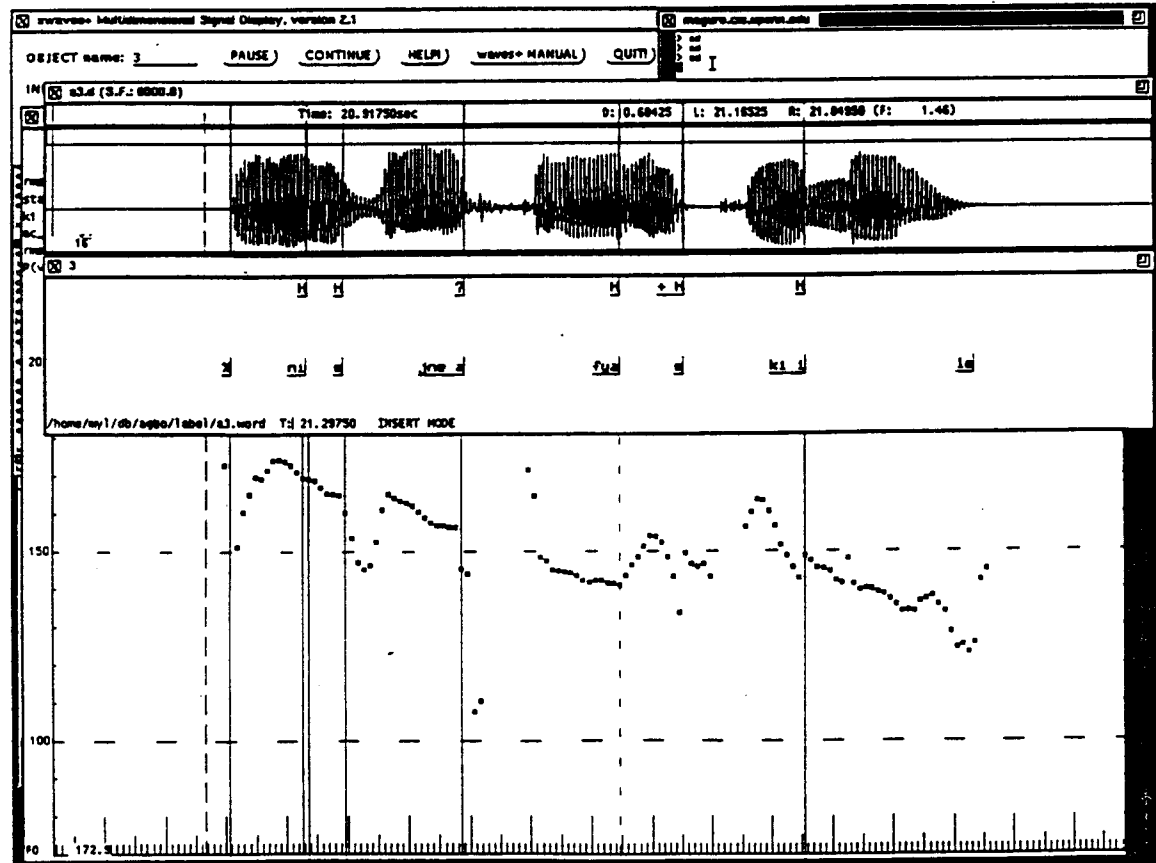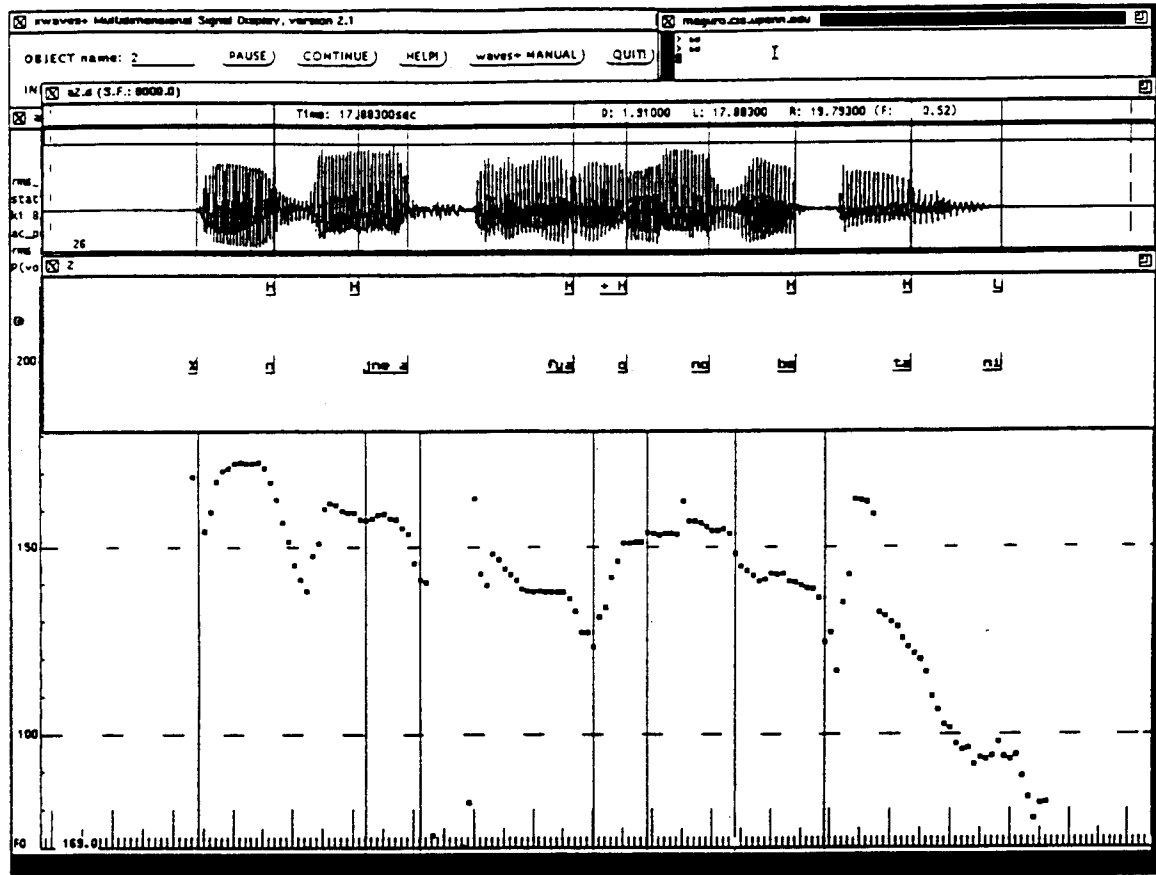
PITCH TRACKS 2-3
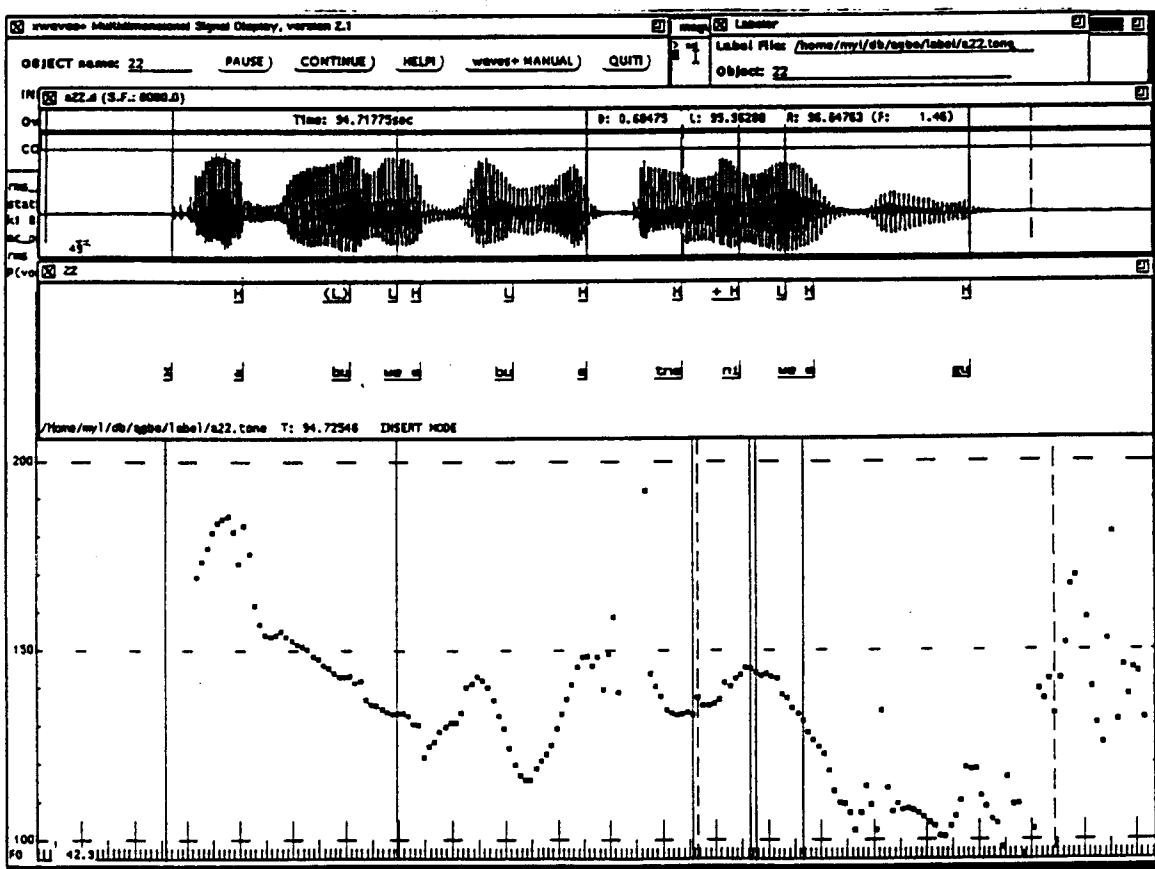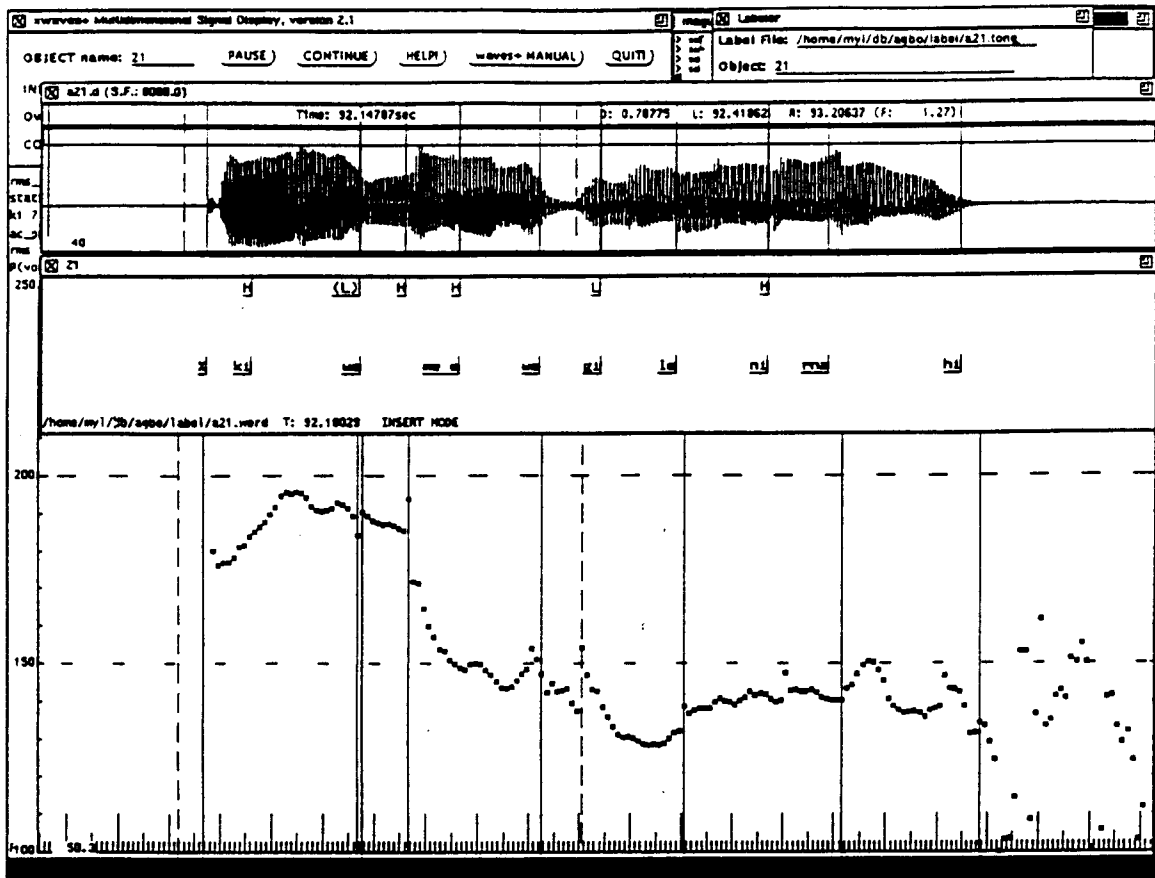
REFERENCES

Akinlabí, A. M. 1985 *Tonal underspecification and Yorùbá tone*. University of Ìbàdàn dissertation.

Armstrong, R. G. 1968 Yala (Ikom): a 'terraced level' language with three tones, *Journal of West African Languages* 5: 49-58.

Bamba, M. 1990 On downstep in the tonal system of Ojene Jula, in Hutchison and Manfredi (eds.) 1990: 1-14.

_____ 1992 Sur la rélation entre ton et accent, Université du Québec à Montréal dissertation.

Bendor-Samuel, J. T. (ed.) 1989 *The Niger-Congo Languages.* Lanham, Maryland: American Universities Press for Wycliffe Bible Translators, Inc.

Bromburger, S. and M. Halle 1989 Why phonology is different, *Linguistic Inquiry* 20: 51-70.

Clements, G. N. 1981/83 The hierarchical representation of tone features, *Harvard Studies in Phonology* 2: 50-108, also in Dihoff (ed.) 1983: 145-76.

Clements, G. N. and K. C. Ford 1978 On the phonological status of downstep in Kikuyu, in Goyvaerts (ed.) 1981: 309-57.

Collins, C. and V. Manfredi (eds.) 1992 *Proceedings of the Kwa Comparative Syntax Workshop. M . I . T . Working Papers in Linguistics* 17.

Déchaine, R.-M. 1992 Inflection in Ìgbo and Yorùbá, in C. Collins and V. Manfredi (eds.) 1992: 95-119.

Dihoff, I. (ed.) 1983 *Current Approaches to African Linguistics* 1. Dordrecht: Foris.

Elugbe, B. O. 1977 Some implications of low tone raising in southwestern Ẹ̀dó, *Studies in African Linguistics* Supplement 7: 53-62.

Emonds, J. E. 1978 The verbal complex V′-V in French, *Linguistic Inquiry* 9: 151-75.

Goyvaerts, D. L. (ed.) 1981 *Phonology in the 1980`s.* Ghent: Story-Scientia.

Huang, C. T. J. 1980 The metrical structure of terraced-level tones, *NELS* 10: 257-70.

Hulst, H. van der and K. Snider (eds.) 1992 *The Representation of Tonal Register.* Berlin: Mouton de Gruyter.

Hutchison, J. and V. Manfredi (eds.) 1990 *Current Approaches to African Linguistics* 7. Dordrecht: Foris.

Kaye, J. D., J. Lowenstamm and J.-R. Vergnaud 1988 Constituent structure and government in phonology, *Linguistische Berichte.*

Lániran, Y. Ọ. 1988 Modeling intonation in a tone language: the Yorùbá example, paper presented at the workshop "Tone, Accent and Locality in Niger-Congo", University of Massachusetts, Amherst, 14 November.

_____ 1992 Intonation in tone languages: the phonetic implementation of tones in Yorùbá, Cornell University dissertation.

Liberman, M. and A. Prince 1977 On stress and linguistic rhythm, *Linguistic Inquiry* 8: 249-336.

Liberman, M. and V. Manfredi *in preparation* A formal and instrumental study of 'missing' downsteps in standard Ìgbo.

Mádùká, O. N. 1984 Ìgbo ideophones and the lexicon, *Journal of the Linguistic Association of Nigeria* 2: 23-29.

Manfredi, V. 1988/1992 Spreading and downstep: prosodic government in tone languages, paper presented at the workshop "Tone, accent & locality: towards a typology of Niger-Congo languages", Dept. of Linguistics, University of Massachusetts, Amherst, 14 November. Revised version in van der Hulst and Snider (eds.) 1992: 139-89.

McCarthy, J. J. 1988 discussant's commentary on Lániran 1988.

Meier, P., I. Meier and J. Bendor-Samuel 1975 *A Grammar of Ìzíì.* Norman, Okla.: Wycliffe Bible Translators, Inc.

Nwáchukwu, P. A. 1987 Questions, relative clauses and related phenomena in Ìgbo, *ms, Lexicon Project,* M. I. T. Center for Cognitive Science.

Ọ̀nwụejíọgwụ̀ [Onwuejeogwu], M. A. 1975/1977 Some fundamental problems in the application of lexicostatistics in the study of African languages, *Paideuma* 21: 6-17 and *Òdụmá* 3.2: 29-36.

Pierrehumbert, J. B. and M. E. Beckman 1988 *Japanese Tone Structure.* Cambridge, Mass.: M. I. T. Press.

Snider, K. 1990 Tonal upstep in Krachi: evidence for a register tier, *Lg.* 66: 453-74.

Stewart, J. M. 1965 The typology of the Twi tone system, preprint from the *Bulletin of the Institute of African Studies* (Legon), 1: 1-27.

Tadadjeu, M. 1974 Floating tones, shifting rules and downstep in Dschang Bamiléké, *Studies in African Linguistics* Suppl. 5: 283-90.

Welmers, Wm. E. 1959 Tonemics, morphotonemics and tonal morphemes, *General Linguistics* 4: 1-9.

_____ 1973 *African Language Structures.* Berkeley: University of California Press.

Williamson, K. R. M. 1989 Niger-Congo overview, in Bendor-Samuel 1989: 3-45.