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Intonation and Focus: A Reanalysis of Downdrift and Downstep in Igbo*

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Introduction

The processes of downdrift and downstep are often discussed in linguistic literature on tonal languages like Igbo, Akan and some other African languages (Welmers 1973, Schachter & Fromkin 1968, Armstrong 1968, Clements 1979, Connell & Ladd 1990, Liberman et al. 1992). The downdrift is said to affect successive high tones when there are intervening low tones. For a sequence of HLH therefore, the second H is on a lower pitch level than the first, and this pattern spans the length of the utterance. Downdrift is often assumed to be automatic.

Downstep, on the other hand, does not have the type of 'definitive' characterisation (at least in the literature) as downdrift. It is, however, generally agreed to also involve a lowering of Fo values within an utterance. Opinions vary with regards to the conditions that trigger the downstep. It is often said to occur for "no apparent reason" (Connell & Ladd 1990). Diachronically, the downstep is said to arise from the loss of an intervening low tone between two high tones through the process of downdrift (Schachter & Fromkin 1968, Hyman 1975). Sometimes in Igbo and even in Akan it is difficult to reconstruct these lost low tones.

Downstep has also been attributed to the results of morpho-syntactic rules (Nespor & Vogel 1986). While it is a fact that some grammatical motivation may be implicit in the occurrence of downstep, this does not appear from the investigation of Igbo here to be the compelling reason for its occurrence. In Igbo it is possible to have one out of two similar syntactic structures depicting downstep.

*This work was carried out at the University of Lund Phonetics Laboratory.

Another aspect of the downstep that has generated interest is the possible representation of the downstepped high tone as a toneme (see Anderson 1978, Johnson 1972). This issue is not addressed here. In this paper it is argued, judging from data on Igbo, that downdrift be seen simply as an aspect of declination which occurs in varying degrees in different tonal combinations and not just in HLH sequences.[1] Evidence is provided to show that downdrift is not automatic, though it occurs in many tonal sequences. Downdrift may be cancelled in some utterances. Hombert 1974, citing examples from Hausa, notes the suspension of downdrift if its occurrence would obscure a tonal contrast. Lindau 1986, again using examples from Hausa, remarks on the raising of the last high tone in a question. Our example from Igbo shows a greater scope for the cancellation of downdrift in yes/no questions.

We reanalyse the downstep as an intonation feature arising as a result of the need for focus or emphasis on particular syllables within what we describe here as a Tonal Intonation Group (TIG). The TIG would generally correspond to an intonational phrase or sentence. The term 'tonal intonation' is used to reflect the sometimes close relation between the tones of the lexical items and the intonation for the utterance in question. Part of the data is presented in the Standard Igbo orthography. The phonetic values of the vowels are as follows: i = /i/; ị = /ɪ/; u = /u/; ụ = /ʊ/; e = /e/; o = /o/; ọ = /ɔ/; a = /a/. The tones are indicated as follows: ´ = high (H), ` = low (L), ꜜ = downstep.

Downdrift

In a recent study by the author (Ikekeonwu 1992), a number of Igbo utterances having different initial tonal sequences were analyzed. The utterances involved initial tonal sequences HLH, LHL, LLL, HHH. The intention had been to establish the extent to which downdrift occurred in Igbo utterances, bearing in mind the general emphasis often laid on HLH sequences in the discussion of this phenomenon in tonology. Some of the utterances studied are:

Aha ya bụ Nna	H L H L H L	'His name is father'
Ọ na anya igwe	H L H L H L	'He is riding a bicycle'
Ada na ada	L H L L L	'Ada and the baby's waste food'

[1]Liberman et al. 1992 have reported the effect of downdrift both on the Hs and Ls of HLH sequences. The present work was already advanced before the author became aware of the said work.

Wara na ya	L H L H	'Split off part of it'
Ala na ala	L L L L L	'A piece of land each'
Aga dara	L L L L	'The barren fell'
Efere ele ọma	H H H H H H H	'Plate for the pretty antelope'
Emume ihe ọma	H H H H H H H	'Doing good...'

Figures 1-8 show the Fo contours of these utterances and it is obvious that downdrift is reflected in all the utterances. We have shown the pitch values. There are, of course, differences with regards to segment type and voice quality which have predictable influence on pitch values (see Hombert 1978). These, however, do not obscure the fact that there is downdrift in all the sequence types discussed. We note that in all utterances ending in low tones there is usually a drop. This is not the case with utterances ending in high tones. Connell & Ladd 1990 have reported downdrift in similar utterances in Yoruba. They also note the "hogback ridge effect", that is a high tone before a low being raised to the level of a preceding high. The hogback ridge effect is absent in Igbo. In Igbo we see rather a progressive lowering of the high and low tones. In Igbo yes/no questions, as shown in Figures 9-11, the downdrift is cancelled. There is a pitch rise in the question and this is not restricted to the end of the utterance. Thorsen 1980 has shown in Danish interrogative utterances a pitch which is not restricted to the end of the utterance.

The cancellation of the downdrift in Igbo yes/no questions is significant in two respects. It shows that downdrift may not be automatic after all – that such a prevalent phenomenon in Igbo and many African languages is overruled by a more general intonation pattern confirms, to some extent, the existence of universal intonation patterns or what is described as "global intonation" in Gårding 1985 and Bruce 1990. The local or language specific tone/intonation patterns are largely subordinate to global intonation. Productive language specific tonal rules are overruled when they conflict with global intonation. Inkelas & Leben 1990 show from Hausa the overriding effect of "Global Raising" on downdrift in the language. While it is obvious from the Igbo examples here that there is a cancellation of downdrift in the face of global intonation, we do not suggest a phonology of intonation distinct or rather largely distanced from phonetics as is implied in Inkelas & Leben. Later in this paper, when downstep is discussed, it will be seen that more often than not there is an interesting relation between pitch realization and the resulting intonation, a relation that cannot be completely accounted for in phonological terms alone.

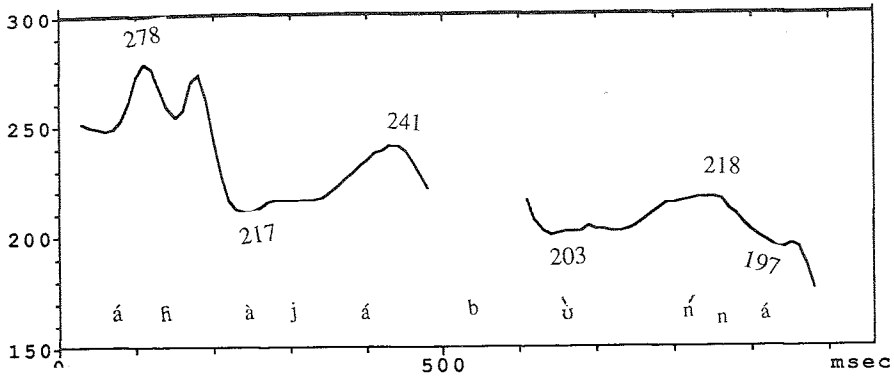

Figure 1. Fo contour for *Áhà yá bụ Ńnà*

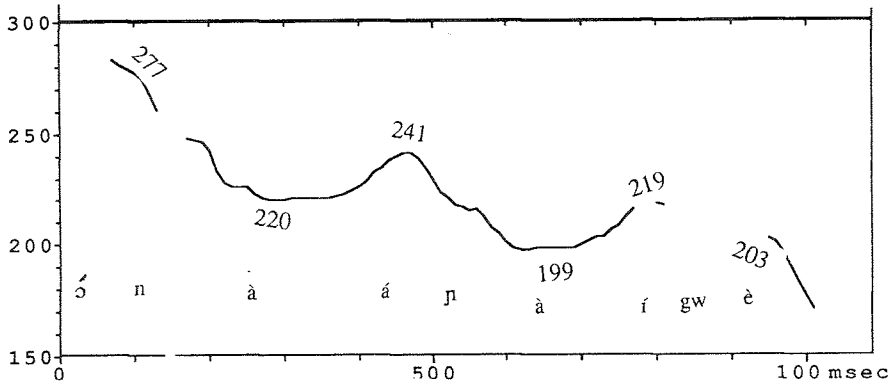

Figure 2. Fo contour for *Ọ́ nà ányà ígwè*

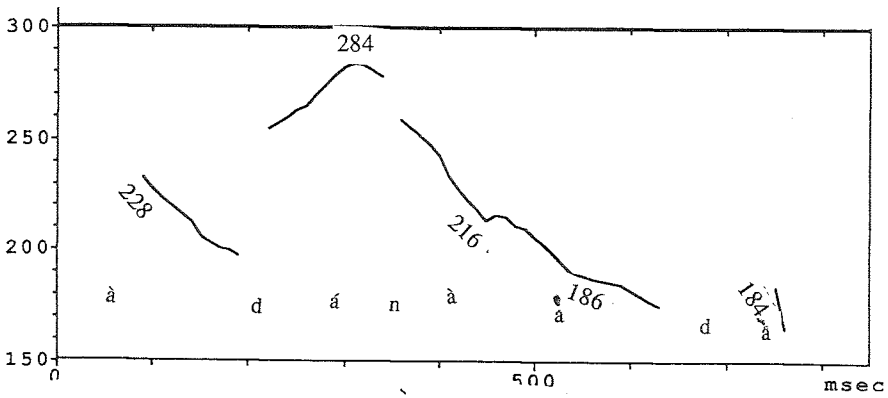

Figure 3. Fo contour for *Àdá nà àdà*

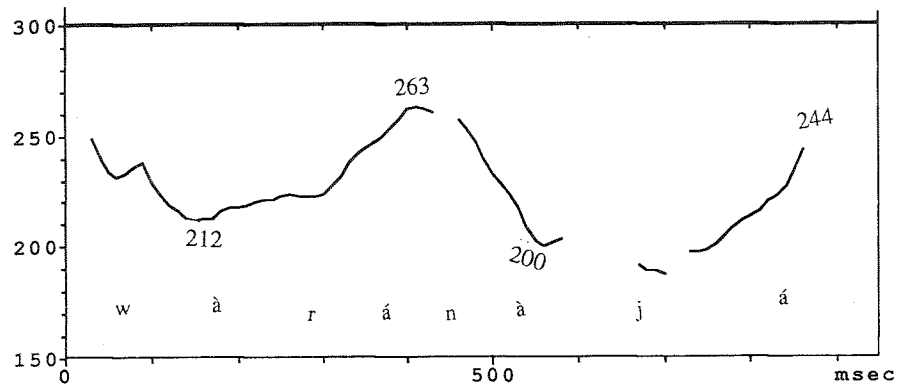

Figure 4. Fo contour for *Wàrá nà yá*

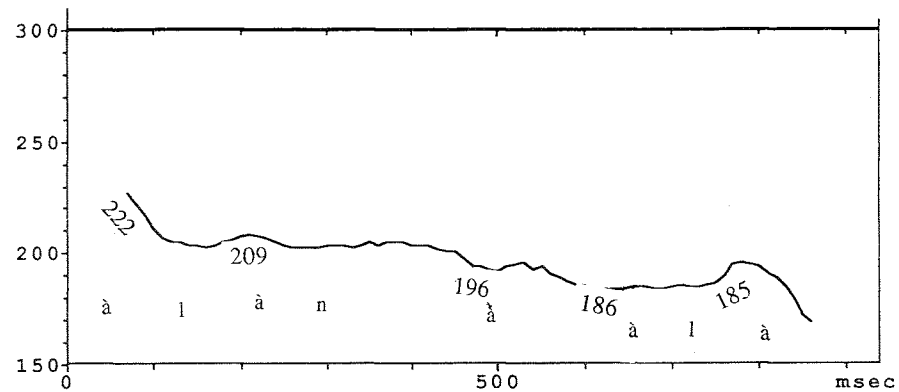

Figure 5. Fo contour for *Àlà nà àlà*

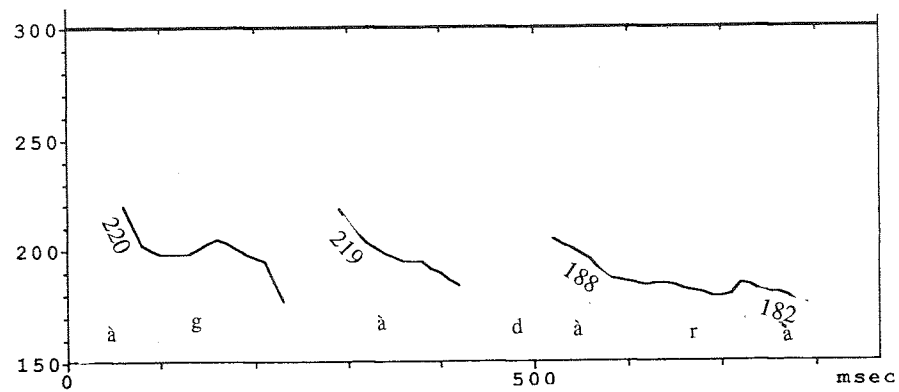

Figure 6. Fo contour for *Àgà dàrà*

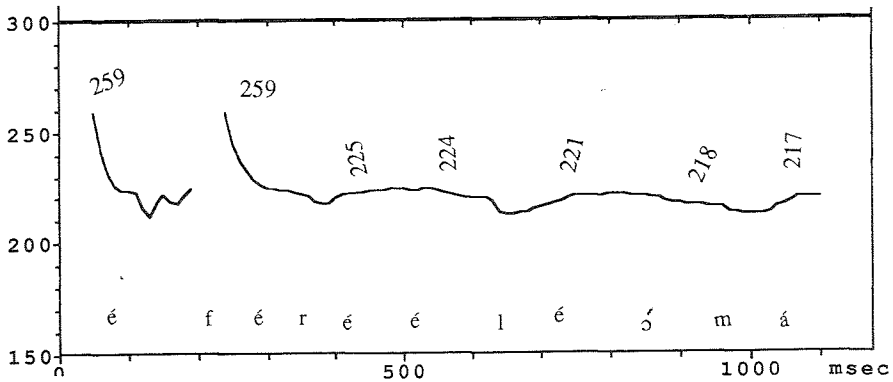

Figure 7. Fo contour for *Éféré élé ọ́má*

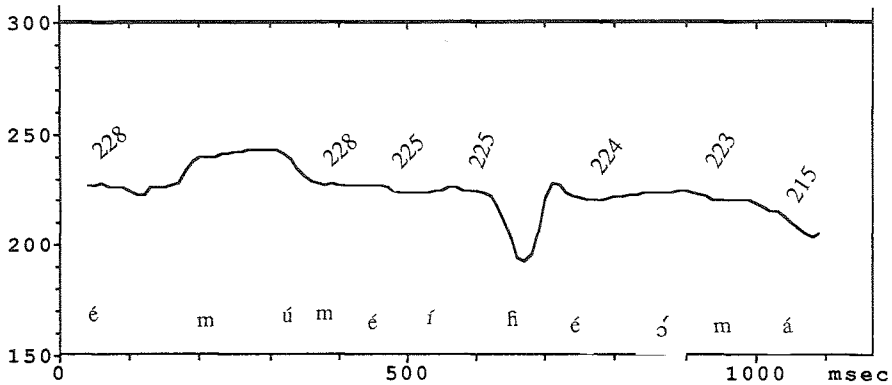

Figure 8. Fo contour for *Émúmé íhé ọ́má*

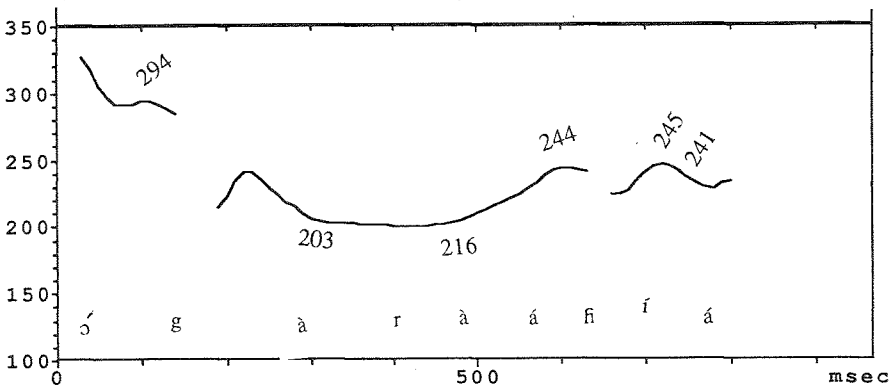

Figure 9. Fo contour for *Ọ́ gàrà áhíá*

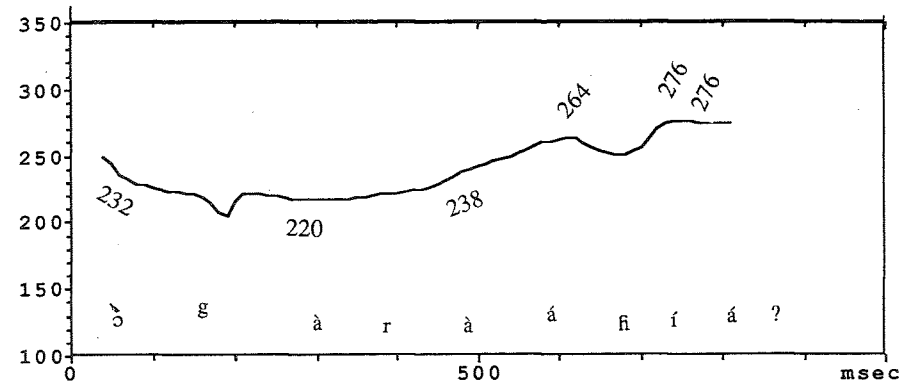

Figure 10. Fo contour for *Ọ̀ gàrà áhíá?*

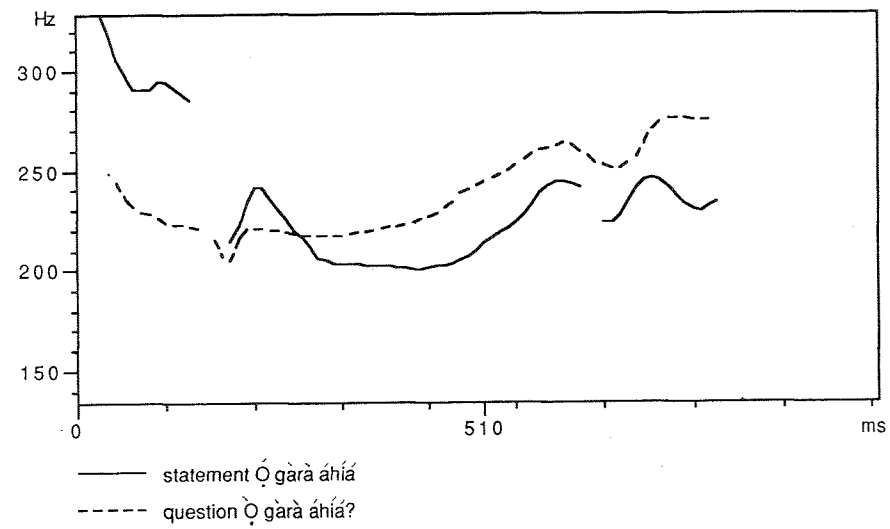

Figure 11. Superimposed Fo contours of 9 and 10.

Downstep

In our analysis of the downstep as an intonational feature meant to reflect emphasis or focus we will examine five categories of utterances where downstep occurs in Igbo. They are:

the associative construction
short utterances, e.g. the infinitive or the imperative
the narrative construction
the negative construction
the lexical item

The basic element for the reflection of emphasis or focus in Igbo is the high pitch. This is reflected on one of the syllables of the TIG. It is generally on one of the syllables of the lexical item being focused on, or on the syllable immediately to the right if this syllable has a high tone. Phonetically, the syllable with the focal high pitch (FHP) is higher than all the other syllables in the TIG, as can be seen in Figures 12-16 where some utterances with downstep are illustrated. It is clear here again that downdrift does not occur in relation to the FHP. By this we mean that the syllable with the FHP is higher than a preceding high tone(s) as seen in Figures 13 and 14. After the FHP any high toned syllable of other lexical item(s) within the TIG is downstepped. Below we discuss further instances of the categories of utterances with downstep.

Associative construction

1.	ísí + òké	→	ísí ꜜóké	'rat's head'
2.	ányá + éwú	→	ányá éꜜwú	'goat's eye'
3.	áká + íké	→	áká íꜜké	'high handedness'
4.	ụ́lọ̀ + àlà	→	ụ́ꜜlọ́ àlà	'a bungalow'
5.	àgbà + ènwè	→	àgbá ènwè	'monkey's jaw'
6.	àkpà + ósè	→	àkpà ósè	'bag of pepper'
7.	mgbájí + ọ́chá	→	mgbájí ọ́chá	'white waist bead'

In the associative construction the emphasis is on the first of the usually two words. In (1) the emphasis is already amply reflected by the inherent high tones of the word *ísí*. The low tone of the second word has become a contour pattern ˆ (HL). The downstep then occurs. The tonal changes here are as follows:

Assimilation Rule: H H L H → H H H L̂ H
Downstep: H H H L̂ H → H H ꜜH H

The tonal pattern H-H-ꜜH via H-H L̂-H has been reported for some dialects of Igbo by Hyman 1978. Leben 1978 reports the pattern:

Downstep: H → ꜜH / L __
Assimilation: LꜜH → ꜜH H

for Mande. This pattern is not confirmed by our Igbo examples.

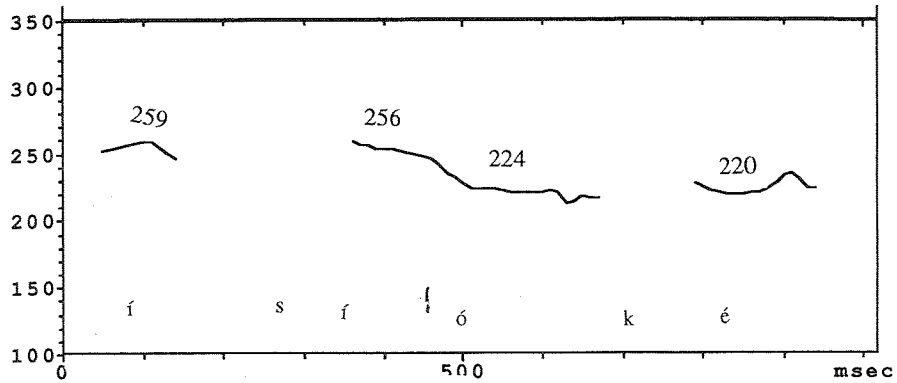

Figure 12. Fo contour for *ísí ꜜóké*

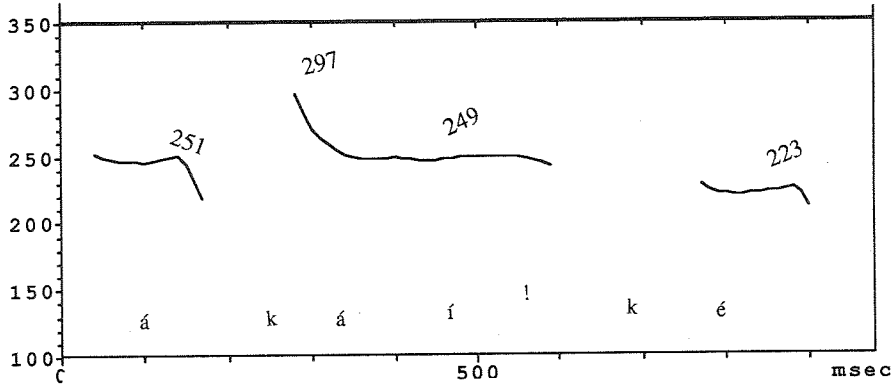

Figure 13. Fo contour for *áká íꜜké*

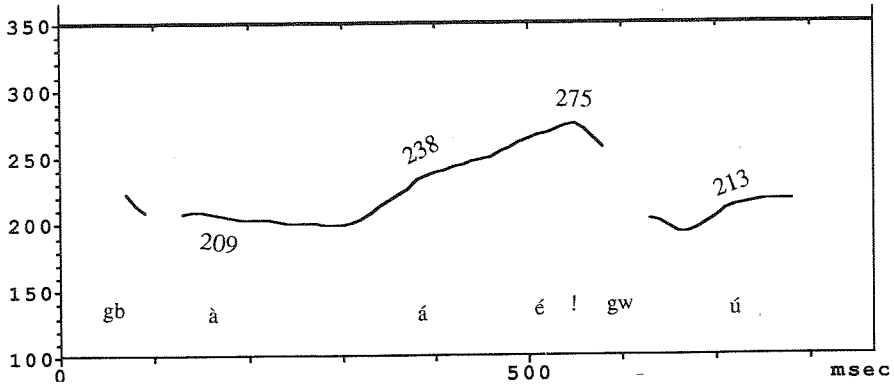

Figure 14. Fo contour for *gbàá éꜜgwú*

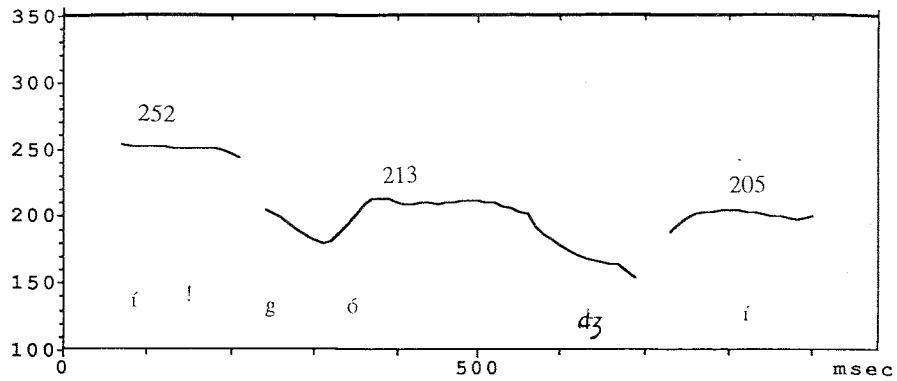

Figure 15. Fo contour for *í!gó !jí*

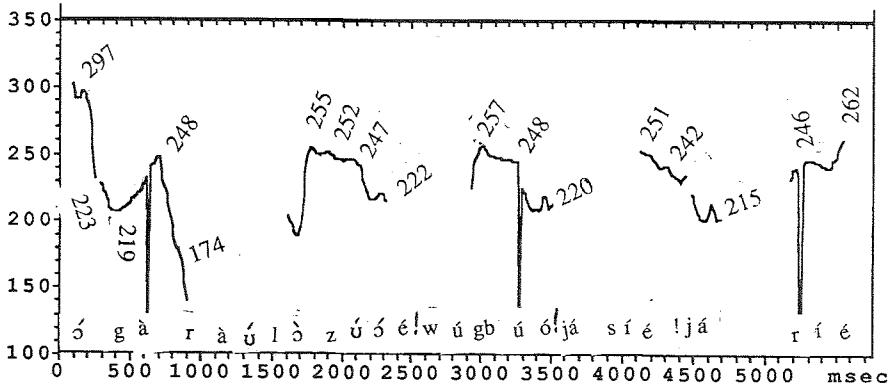

Figure 16. Fo contour for *ọ́ gàrà ụ́lọ̀, zụ́ọ́ é!wú, gbúó !yá, síé !yá, ríé*

In (2) and (3) the downstep occurs after the first three syllables. If the first lexical item is low toned but the syllable immediately after bears a high tone the FHP is realized on it and this is taken for emphasis on the first word and if a high tone follows it is downstepped. This pattern tends to confirm the treatment of the intial syllable of nouns as prefixes (see Clark 1979). In (4) the FHP is on the only high tone of the TIG. Through assimilation a falling contour tone (i.e. HL) is realized on *ọ* and downstep occurs. We have the pattern:

Assimilation: H L → H HL
Downstep: H HL → H !H

For example (5) the second syllable in the TIG attracts the FHP. Downstep does not occur as the subsequent syllables are already low. For (6) the high tone on the first syllable of the second word effects the desired focus on the preceeding word. Again the downstep is not necessary.

In the typical associative construction the meaning is interwoven between the component elements with emphasis on the first of the two words, as noted earlier. A transposition will alter the meaning of the entire construction or may indeed render it meaningless:

*òké í!sí	'rat of the head'
*éwú á!nyá	'goat of the eye'
ó!sé àkpà	'pepper stored in a bag'

We see that emphasis is again reflected through attraction of FHP and subsequent downstepping of high tones. The emergent constructions are not meaningful for the first two. For the example *ó!sé àkpà* there is a change in emphasis and in meaning. These examples depict two basic types of associative constructions in Igbo.

In type A, N_1 is an integral part of N_2, i.e. $N_1 \leftrightarrow N_2$.
In type B, N_1 may be contained in or reflected by N_2 or vice versa, i.e. N_1 <---> N_2. (N = noun)

For both types focal-non focal relation is present, but while it is possible in type B to shift elements A and B around it is not in type A. For type A, shifting around of the elements would result in semantically deviant constructions. There are other constructions that may appear like associative ones but unlike them do not constitute TIGs. For the latter each component lexical item retains its inherent tone.

mgbaji	ọ́chá	'white waistbead'
	ójí!í	'black waistbead'
	ọ́má	'beautiful waistbead'

The downstep would not occur in such constructions unless the lexical item, as in *ójí!í* already has a downstep. Example (7) is not an associative construction. If however these adjectives come after a downstepped H, they are downstepped:

nkwé !ké !ọ́má 'good stick missile'

Short Utterances

Another area where downstep is used in the language for the reflection of emphasis or focus is in short utterances like the imperative and the infinitive.

8. wèré !yá 'take it!'
9. gbàá é!gwú 'dance!'
10. zụ̀tárá !m !yá 'buy it for me!'

Each of these constitutes a TIG. One of the syllables attracts the FHP. In the infinitive the high tone of the prefix bears the FHP and downstep follows. The emphasis is on the prefix which brings about the change in the grammatical meaning of the verb.

11. gó 'buy'
12. í!gó 'to buy'
13. í!gó !jí 'to buy yam'
14. í !gó !jí !ọ́má / ndị́ !Abá 'to buy the good yam of Aba people'

In (14) there are two TIGs, one involving an infinitive and the other an associative construction. In the infinitive, when the inherent tone of the verb root is low, the downstep understandably does not occur.

15. dà 'fall'
16. ịdà 'to fall'

Some African tonal languages have particular tonal sequences for the reflection of tense and aspect (see Edmondson & Bendor-Samuel 1966, McCawley 1970). Igbo has this characteristic. An examination of these tonal sequences reveals a significant use of the downstep in identical circumstances as we have seen in both the associative constructions and the shorter utterances. The verb complex, sometimes with the items in the object slot constitute a TIG.[2] The FHP is on one of the syllables of the verb complex. Subsequently all high tones are downstepped.

Narrative construction

In this construction there is usually an initial focus free declarative sentence, followed by a serialization of the key verbs and their objects or complements.[3] In the narrative it is interesting to note that the verbs are

[2]Verb complexes refer to the verb root and affixes (prefixes and suffixes).
[3]By focus free we mean that the whole utterance is seen as new information.

treated like the focused items of associative constructions.The FHP is on one of the syllables of the verb complex and there downstep on the object or complement as the case may be.

17. ọ́ gàrà ụ́lọ̀ / zụ́ọ́ é!wú / gbúó !yá / síé !yá / ríé /
'He went home, bought goat, killed it, cooked it, ate'

In (17), a typical example of the narrative construction in Igbo, five TIGs are identified. The first which is co-extensive with the declarative sentence is focus free and simply upholds the tonal intonation pattern of such utterances in the language, that is obligatory low tone(s) on the verb complex. All the verb roots involved in (17) are inherently high. In (18) we look at the pattern when inherently low verbs are involved.

18. ọ́ bàrà / gụ̀rụ́ !yá / dàá á !dá / 'He entered, embraced him, fell'

In (18) we see that downstep still occurs and the FHP is still within the verb complex but this time on the second syllable since the first syllable is low. It is, perhaps, important to point out that when the declarative statement has the perfective suffix *-la/-le* the downstep occurs if the verb root is inherently high.

19. ọ́ !gáálá 'He has gone'

Here the assumption of emphasis on the verb root is queried as it appears the FHP is on the high tone of the pronominal subject. We have seen in the infinitive construction that the high tone of the prefix attracts the FHP. The suggestion we are left with, is that the pronominal subject is actually treated as a prefix and that the TIG in this case is /ó!gáálá/. The analysis seems to find support in some other verb complexes where the FHP comes on the participial prefix e.g. in the progressive aspect when the verb root is inherently low. It is also significant that in this perfective construction the item(s) in the object slot constitutes a different TIG.

20. ọ́ !gáálá / á !hịá /

A detailed study of the division of Igbo utterances into TIGs will throw more light on the affiliation of the various components. This issue draws attention to the need for an examination of prosodic phrasing in tonal languages.

The negative construction

In the negative construction the downstep occurs on the negative suffix. There is an obligatory high tone on the verb root in this construction. If the inherent tone of the verb root is low it changes to high.The FHP is on the verb root and downstep occurs as seen in (21):

21. ọ dị́ ! ghí !ónyé !máárá !yá / 'Nobody knows him'

When the inherent tone of the verb root is low there is a low tone on the negative suffix and downstep does not occur as in (22):

22. ọ dághì / 'He did not fall'

Downstep in lexical items

In some lexical items the downstep occurs. They include such words as

é!gó 'money'
é!zé 'tooth'
ó!yí 'cold'

For these words some dialects of Igbo have a sequence of two high tones, hence *égó, ézé* and *óyí* as in the Mbaise dialect (see Ikekeonwu 1986). Downstep in these words has often been regarded as resulting from a lost intervening low tone. We suggest that these items may well be abbreviated forms of longer sequences. For instance, some Igbo dialects use the expression *íbéé!gó* for the coin; *òmúmáó!yí* for fever got from cold. In some Igbo personal/ place names we can still retrieve sequences leading to downstep:

ónwú	!ká	!m	!íké	→	ọnwụ́!ká	'death is stronger than me'
death	more	me	strength		
nwá	!márá	!mmá		→	nwám!má	'a beautiful child'
child	beautiful	beauty			

In these sequences the use of downstep as an indicator of focus is apparent.

Conclusion

We conclude that 'downdrift' and 'downstep' are aspects of declination. They are, however, not the same in terms of pitch realization and the purpose of usage. The difference in pitch may not be sufficient to characterize them. The downdrift is of a more general occurrence affecting not only HLH sequences, as often reported, but but also LHL, HHH and LLL in varying degrees in the language. The downdrift does not occur

when its occurrence would conflict with global intonation. When a downdrifted high and a downstepped high are placed in comparable environments as in Figures 17 and 18, the downstepped high is of a higher pitch realization. However, if a downdrifted high occurs earlier in an utterance it is generally higher than a downstepped high as we see in Figure 19. We note the difference in pitch height of *ó* of *ójé* and *á* of *já*. The latter is downstepped while the former is downdrifted.

Perhaps, more important in the characterization of these two in terms of pitch realization, is the configuration of the Fo contour of each of them. In downdrift we have more of a terrace pattern as often reported,while in the downstep we have the emergence of the 'plateau' form.[4] It must be noted though, that in Igbo and many African languages with downstep the plateau form or terrain extends to the end of the TIG, since no other item is given any form of pitch prominence after the FHP. However, in languages like Japanese and Swedish where downstep is also present the plateau terrain may be interrupted as some syllables may still attract some pitch prominence. The pitch prominence of these latter syllables is certainly less than that of the focal syllable which bears the FHP. The effect of this interruption of the plateau terrain is the emergence of a terrace pattern. The terrace pattern is, of course, nothing like the steep terrace pattern of downdrift in languages with lexical tones.[5] In cases where two or more accented syllables follow in quick succession as in the Japanese example cited by Kubozono 1989, the psuedo terrace may be less gradual.[6]

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[4]Bruce 1982 uses the expression 'plateau' to describe the Fo contour pattern after focus in Swedish.

[5]It is the occurrence of the terrace pattern that might have been responsible for Bruce 1982 referring to the phenomenon as downdrift. In view of our analysis here the Swedish case is an example of downstep.This is because it is tied to focus.

Different terms have appeared in linguistic literature in relation to the expression of the lowering of Fo. values within an utterance. In this paper we use declination as a broad term for this process. Declination could vary both in the extent of occurrence and in the purpose of usage. Aspects of declination could consequently be distinct, as is the case here with downdrift and downstep. The use of the term 'downtrends' (Connell & Ladd 1990) for the specification of virtually all aspects of declination may give an impression of 'sameness' or 'equivalence' of all aspects.

Poser's (1984) 'catathesis' from our discussion here would actually refer to downstep but does not specify the need for focus as the motivation for downstep. Moreover, his consideration of declination as a separate mechanism from the one that yields catathesis obscures the unique dynamism of speech in the ability to manipulate a single mechanism for different effects.

Downstep is not "the lowering of M tones after H" as noted by Liberman et al. 1992, as seen from the discussion here.

[6]Interestingly, the Igbo translation of the Japanese phrase *umai nomimono* 'tasty wine' would reflect downstep as well.

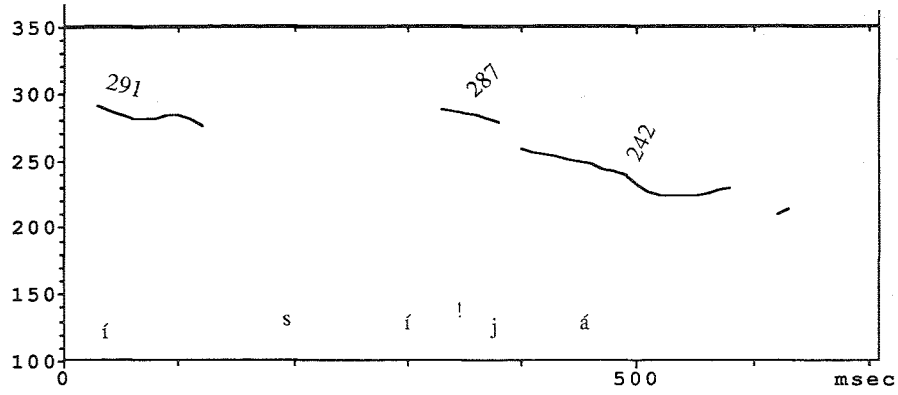

Figure 17. Fo contour for *ísí ¡yá* 'its head'

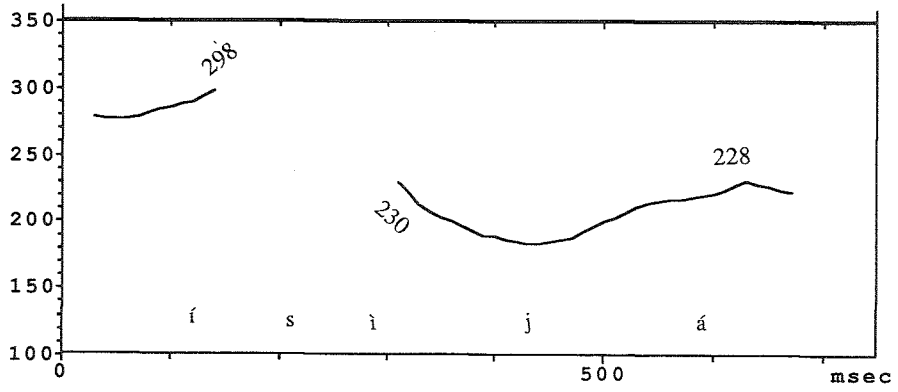

Figure 18. Fo contour for *ísì yá* 'its smell'

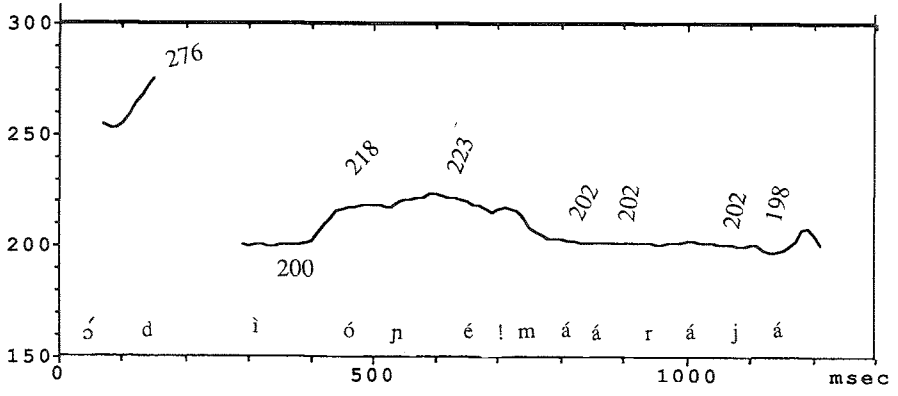

Figure 19. Fo contour for *ọ dị ónyé ¡máárá ¡yá*

A ready equation of the downstep to a mid tone may have inherent problems when we consider languages like Yala Ikom where the mid tone is affected by downdrift. The key difference between downdrift and downstep is that downstep is bound to focus/emphasis while downdrift is not. Downstep helps in the indication of focus. Downdrift is not used for this purpose. This significant difference had gone unnoticed because much attention has not been paid to the treatment of prosodic features within phrasal and sentential domains (i.e. phonological phrase, phonological sentence) in tonal languages. Useful generalizations on aspects of intonation of these languages are consequently missed out.

Finally, for the occurrence or initiation of downstep we may borrow a phrase from Bruce 1984: "there is a complex interaction between syntax and semantics on the one hand and prosody on the other...". A straightforward link, or rather a one-to-one correspondence between syntactic structures and the occurrence of downstep or a complete reliance on diachronic explanation, apparently does not tell the whole story. It is not asserted here though, that the whole story has been told by a reanalysis of downstep as a prosodic feature for the reflection of emphasis or focus. Rather the data analyzed and the intuitive knowledge of the author suggest a further consideration of downstep in African and non-African languages in this perspective.

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