

LEXICAL STRESS, EMPHASIS FOR CONTRAST, AND SENTENCE INTONATION  
IN ADVANCED STANDARD COPENHAGEN DANISH

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Due to lack of space, no references will be made to the very considerable literature on intonation in other languages, nor will any extensive documentation be given.

1. A model of Danish intonation

Intonation in short sentences in Advanced Standard Copenhagen (ASC) Danish may be presented as in fig. 1, which is but a model, with the advantages and shortcomings that modeling almost always entails in terms of simplicity and inaccuracy, respectively. It is based on recordings by six subjects, three males and three females, of a rather elaborate material (Thorsen 1978a, 1979b). The qualitative statements which can be read off the figure are perfectly representative of all the subjects, but the quantifications involved are, of course, averages, and no one subject behaves as mathematically neatly as the model would have you believe.

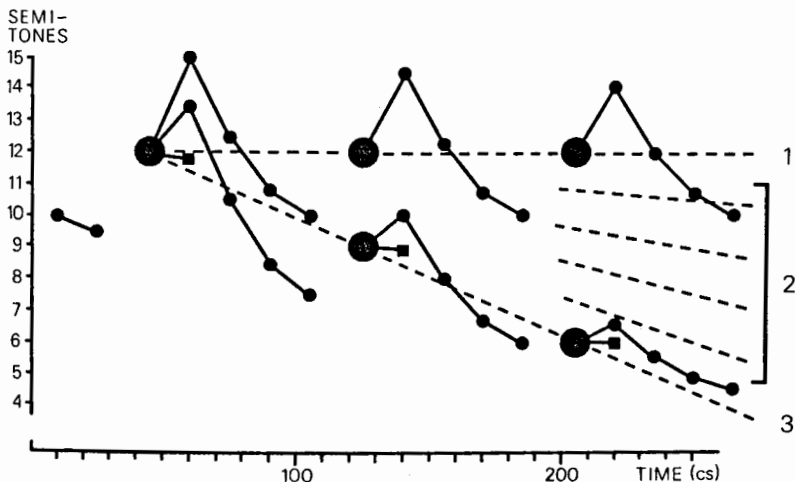


Figure 1

A model for the course of  $F_0$  in short sentences in ASC Danish. 1: statement questions, 2: interrogative sentences with word order inversion and/or interrogative particle, and non-final periods (variable), 3: declarative sentences. The large dots represent stressed syllables, the small dots unstressed ones, and the small squares represent an unstressed syllable being the only one between two stressed ones (see further the text). The full lines represent the  $F_0$  pattern associated with stress groups, and the broken lines denote the intonation contours.

A basic assumption underlying fig. 1 is that the complex course of fundamental frequency (Fo) in an utterance is the outcome of a superposition of several components: (1) A sentence component which supplies the INTONATION CONTOUR (broken lines). (2) On the contour is superposed a stress group component which furnishes the STRESS GROUP PATTERNS (full lines). (3) To the resultant of those two components is added, in words containing stød, a stød component, rendering STØD MOVEMENTS. However, as stød words had been excluded from the material, the model does not include this particular feature. These first three components are language specific and thus "speaker controlled". (4) Finally, intrinsic Fo level differences between segments, and coarticulatory variations at segment boundaries supply a MICROPROSODIC COMPONENT, which is not consciously controlled by the speaker, but due to inherent properties of the speech production apparatus and which, therefore, is superfluous in the model from the point of view of the human speaker. - This concept of "layers" in intonation is anything but original; the triviality of the statement does not, however, deprive it of its validity or its relevance: firstly, it is tremendously useful in the interpretation of Fo tracings (Thorsen forthcoming) and, secondly, it has a very direct bearing on the theme of this symposium, 'The relation between sentence prosody and word prosody (stress and tone)':

The relation between word stress and sentence prosody (i.e. sentence intonation: duration and intensity are not considered) is physically a very close-knit and intricate one, but on the higher and more abstract levels we may hypothesize that very little of the mutual influence which is customary in a relationship takes place, as long as we are dealing with neutral lexical stresses.

#### 1.1 Stress group patterns

As can be seen from the full lines of fig. 1, the stress group pattern can be described as a (relatively) low stressed syllable followed by a high-falling tail of unstressed syllables. This pattern is a predictable and recurrent entity, though allowing for contextual variation in the magnitude of the rise from stressed to unstressed syllable and in the slope of the fall through the unstressed ones. It was this observation which gave rise to the definition of the STRESS GROUP in ASC Danish as A STRESSED SYLLABLE PLUS ALL SUCCEEDING UNSTRESSED SYLLABLES (within the same, non-compound sentence), irrespective of intervening word or morpheme boundaries, and, as a consequence of this predictability and recurrency, it al-

so brought about the definition of the INTONATION CONTOUR as THE COURSE DESCRIBED BY THE STRESSED SYLLABLES ALONE.

#### 1.2 Intonation contours

The intonation contours tend to vary systematically with sentence type, declarative sentences having the most steeply falling contours, at one extreme, and statement questions (i.e. questions with statement syntax where only the intonation contour signals their interrogative function) having "flat" contours, at the other extreme. In between these two are found other types of questions as well as non-final periods. For a further account of these contours and their perception, see Thorsen 1978b, 1979a.

#### 2. Implications of the model

##### 2.1 Fo movements in syllables

The model does not specify the Fo movements of syllables: the tonal composition of the stress group pattern as one of LOW plus HIGH FALLING allows for a very simple account of Fo movements in vowels and consonants: segments do not carry specific movements (except when stød is involved) but simply float on the Fo pattern, and slight variations in Fo movement would be due then to the fact that segments do not always hit the patterns at exactly the same place.

##### 2.2 The course of the intonation contour

(a) When the number of stress groups changes, everything else being equal, so does the slope of a given contour, leaving only the "flat" ones intact; the constancy presumably lies in the interval between the first and the last stressed syllable, with intervening stressed syllables evenly distributed between them, and not in a certain rate of change (this point needs further verification which I hope to present orally in August).

(b) When the number of unstressed syllables varies in the stress groups, the stressed syllables will not be equidistantly spaced in time, and the straight lines of fig. 1 break up into a succession of shorter ones with unequal slopes.

Combining the effects of changes of both types leaves us with an infinity of physically different intonation contour configurations. On a higher level in production these variations may not exist, and perceptually they may be obliterated, turning the contours into smoothly slanting slopes, (1) if what we aim at producing and what we perceive are equal intervals between stressed syllables and not the actual slope of the contour, and (2) if we assume that isochrony, be it not a physical reality, is a psycho-

logical reality with the speaker/listener.

### 2.3 Fo patterns of stress groups

#### 2.3.1 Stress groups with more than one unstressed syllable

(a) In statements, the rise from stressed to unstressed syllable is, on the average  $1\frac{1}{2}$ , 1, and  $\frac{1}{2}$  semitone, respectively, in the first, second, and third stress group. In statement questions, the rises amount to 3,  $2\frac{1}{2}$ , and 2 semitones, respectively. The difference in magnitude of this rise, between patterns riding on different contours is very likely a direct consequence of differences in the level of the following stressed syllable.

(b) The decrease with time in the rise from stressed to unstressed syllable is the same in statement questions and statements, one semitone. This decrease, which is independent of the particular contour, may be seen as a consequence of either of two distinct processes, or of a combination of them. It may be a "voluntary" decrease, i.e. a signal of finality, and/or it may be a physiological phenomenon: the closer you get to the end of the utterance, the less "energy" is expended and the less complete the gestures will be; either or both phenomena may also account for the less and less steep falls through the unstressed syllables.

If the variation in the Fo patterns with intonation contour and time is physiologically determined, the speaker may be unconscious of it, and the listener may neglect or compensate for it.

#### 2.3.2 Stress groups with only one unstressed syllable

Stress groups with one unstressed syllable will of course be shorter than those with several, a feature which is not reflected in fig. 1. - A single unstressed syllable does not accomplish a full rise-fall when the following stressed syllable is considerably lower than the preceding one, as is the case in statements. Instead it lands on very nearly the same level or slightly below the preceding stressed syllable and, accordingly, the rise-fall is amputated. A full rise-fall may be intended by the speaker and the amputation be due to a shortcoming in the peripheral speech production mechanism. Accordingly, the listener may well re-introduce a rise-fall (this is, indeed, my own subjective impression). But we have here an indication that time (rhythm) overrides Fo when the two are in conflict. On the other hand, there is definitely a tendency towards as complete rise-falls as possible. Two unstressed syllables will traverse more than half the fall exhibited by four, everything else being equal. - These two facts together are

another reminder that speech is not a card-board structure but a smooth and dynamic process.

### 2.4 Conclusion

If the assumptions made about production and perception of Fo courses hold water, we are left with two components which physically are highly interactive but on more abstract levels may be invariant, apart from the fact that contours change with sentence type.

#### 3. Emphasis for contrast

By emphasis for contrast is meant the extra prominence on one of the syllables in the utterance, used to denote a contrast which may be implicit or may be explicitly stated in the context. I have deliberately avoided terms like 'focus', 'sentence accent', or 'nucleus' because these terms are used, in a number of languages, to describe a phenomenon different from emphasis for contrast: one of the lexically stressed syllables in the utterance will always have slightly greater prominence (realized, very roughly speaking, as a more elaborate Fo movement within that syllable), and if nothing else is specified by the context, it will fall on the last stressed syllable. - A similar phenomenon does not exist in ASC Danish as a thing apart from emphasis for contrast. Whenever and wherever such a slightly heavier stress is introduced, it invariably invokes the impression of contrast. Insofar as we are not faced with incomplete evidence or with a false dichotomy, i.e. one due to differences in concepts, Danish seems to be markedly different from e.g. English, German, and Swedish.

#### 3.1 Contrastive stress and Fo

The following account is based on a material of sentences, uttered in dialogues, where the contrasts were all explicitly stated in the context (but I strongly believe that they would have looked no different had they been implicit). - When emphasis for contrast occurs, it affects the intonation contour as well as Fo patterns.

Fig. 2 compares the neutral edition with three statements where the emphasis lay on the first, second, and third lexically stressed syllable. (Durational differences between the neutral and emphatic editions are very slight and there is no doubt that Fo is the prime cue to contrast, as it is to neutral lexical stress.) The obvious changes introduced in the Fo course by emphasis for contrast is a raising of the syllable in question (represented by a star), a drastic fall from first to second unstressed syllable, plus a not inconsiderable shrinking of the surrounding Fo patterns:

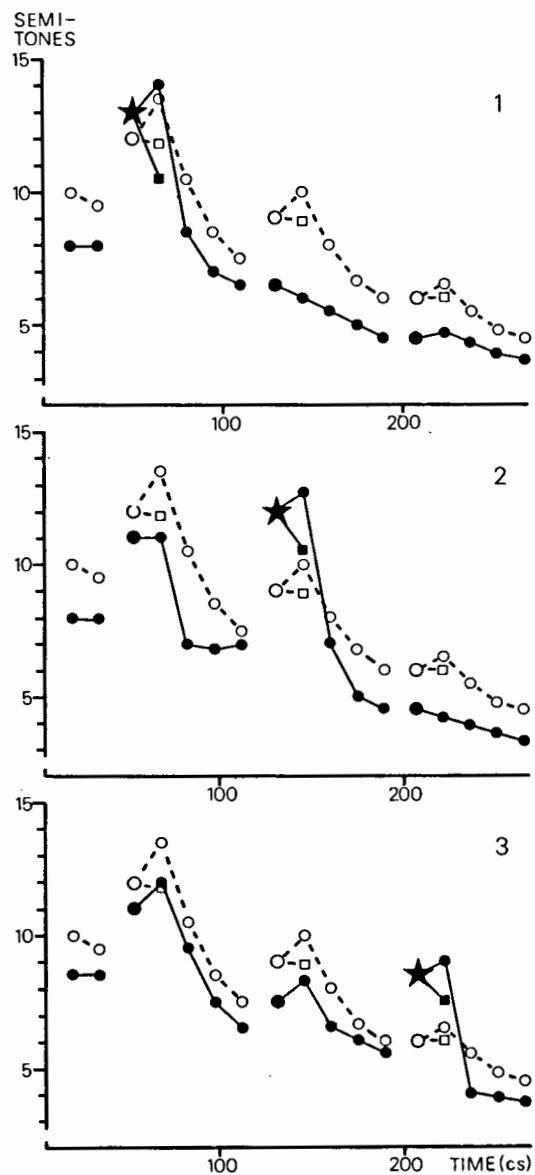


Figure 2

Models for statements with emphasis for contrast on (1) the first, (2) the second, and (3) the last stressed syllable, compared to the neutral edition (broken lines and empty dots).

(1) when emphasis is on the first stressed syllable, it is higher, the rise to the first unstressed syllable is smaller, and the fall through the following unstressed syllables is steeper than for the neutral case. The levels of the second and third stressed syllables are considerably lowered and the LOW+HIGH FALLING pattern is annihilated in the second and shrunk in the third stress group. The syllables of the second and third stress groups look, tonally, more like a series of unstressed syllables continuing the fall in the first one.

(2): emphasis on the second stressed syllable repeats the pattern of (1), and we also get a certain reduction of the first stress group with a very steep fall from first to second unstressed syllable.

(3) the pattern repeats itself in the last stress group, with a shrinking of the preceding ones as well.

Again we note that a single unstressed syllable does not accomplish a full rise-fall but instead drops well below the preceding emphatic one.

The feature common to

the three cases seems to be that the syllable on which the emphasis for contrast occurs must stand out clearly from the surroundings, which is brought about by a raising of that syllable as well as by a lowering of the immediate surroundings, except for the first of several post-tonic syllables. The change is slightly greater in the succeeding than in the preceding Fo course. During some informal experiments performed with the ILS-system for analysis and synthesis at the Institute of Linguistics, Uppsala University, it appeared that shrinking the Fo course in the surroundings is sufficient to create the impression of emphasis for contrast. To get emphasis on the word 'sidste' in the statement 'Det er sidste bus til Tiflis.' (It's the last bus for Tiflis.) it is sufficient to change the rise from 'bus' to 'til' to a level or a slight fall, whereas just raising the stressed syllable of 'sidste' will not do the trick. Likewise, to get emphasis on 'bus', lowering the unstressed syllable of 'sidste' will do and just raising 'bus' does not accomplish anything.

The three Fo courses in fig. 2 look widely different and only vaguely resemble fig. 1 "3" although the utterances still sound declarative. What constitutes the intonation contour in utterances with emphasis for contrast, I hesitate to say at present. They may resemble one-word utterances in that the difference between statement and question lies in the level of and movement within the emphatically stressed syllable as well as in the course of the succeeding unstressed ones (Thorsen, 1978a), or the intonation contour may be extrapolated from, and thus still be definable in terms of, the lexically stressed syllables surrounding the emphatic one. The first solution would be interesting, because it implies that in utterances with emphasis, word prosody takes precedence over sentence prosody, whereas the second solution would make the definition of intonation contour apply to a wider range of utterances.

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## SENTENCE TONE IN SOME SOUTHERN NIGERIAN LANGUAGES

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The lexical tones of words can be modified in various ways:

1. By essentially phonetic rules, such as tone-spreading (Hyman & Schuh, 1974): e.g. Yoruba /Low-High/ → [Low-Rising] because Low 'spreads' into the following High. Such phonetic rules result in phonological change if the conditioning factor is lost.
2. By morphophonemic rules, i.e. rules whose phonetic motivation is no longer obvious: e.g. in the Kolokuma dialect of Izon two words which have the same tone pattern in isolation may have different tonal effects upon the following word (cf. Williamson, 1965).
3. By the interaction of purely tonal morphemes with the tones of the normal morphemes which consist of both segments and tones: e.g. the subject concord marker of Edo is analysed by Amayo (1975) as having lost its segmental features in practically all contexts, so that its presence is normally detected only by its tonal effects on neighbouring morphemes. Purely tonal morphemes appear to be restricted to common grammatical elements.

Lexical tones are also modified to show sentence type. In some languages such modifications involve changing the absolute but not the relative pitch of sentences: e.g. in Kana (Ogoni group: tonemes High, Mid, Low):

Statement: Lo tɔ. [--] 'The house.'  
 Question: Lo tɔ? [^^] 'The house?'  
 Exclamation: Lo tɔ! [^^] 'The house!'

The basic Mid-Mid tone (seen in the statement) is raised for a question and raised even more for an exclamation (this is indicated phonetically by writing it above the square brackets, i.e. outside the normal voice range). This type of modification is here called intonational, and is regarded as comparable to what obtains in a non-tone language.

Other languages have a second type of modification co-existing with the intonational type. This involves a change of the tone pattern, not simply a general modification of the absolute pitch, and is here called sentence tone. In the examples that follow, the tone system of each language will be summarized and then the sentence tone modifications will be stated.

A. YEKHEE (=ETSAKO), Ekpheli dialect (North-Central Edo group), Elimelech (1976):

Basic tones: H, L

Tone rules: a) downdrift on each series of highs separated by low  
 b) falling and rising glides formed from HL, LH  
 c) downstep from simplification of rising glide

Sentence tone: (for nouns; verbal sentence questioning said to be different but not specified, Elimelech, 1976, 50):

1. statement: additional final low added to final high
2. question: additional final high added to statement tone pattern

Lexical tone patterns of disyllabic nouns: LL, HL, HH

| Data:         | Statement  | Question   |
|---------------|------------|------------|
| 1. LL 'cup'   | Àkpà. [--] | Àkpà? [^]  |
| 2. HL 'house' | Ówà. [^-]  | Ówà? [^-]  |
| 3. HH 'axe'   | Údzé. [^^] | Údzé? [^^] |

B. DEGEMA (Delta Edo group), personal investigation, analysis tentative:

Basic tones: H, L; downstep probably predictable

Tone rules: a) downdrift on each series of highs separated by low  
 b) falling glide formed from HL  
 c) the final low in a series of lows becomes high (under certain conditions)  
 d) all but the first of a final series of highs are downstepped

Sentence tone: 1. statement: basic tones + tone rules  
 2. question: final low added to statement tone pattern, combines variously with preceding tone  
 3. exclamation: general raising of statement tone

Lexical tone patterns of disyllabic nouns: LL, HH, HL (loanwords only):

| Data          | Statement       | Question        | Exclamation     |
|---------------|-----------------|-----------------|-----------------|
| 1. LL 'head'  | Útóm. [^-]      | Útóm? [^-]      | Útóm! [^-]      |
| 2. HH 'river' | Édá. [^^]       | Édá? [^^]       | Édá! [^^]       |
| 3. HL 'cat'   | Pòsì. [^-]      | Pòsì? [^-]      | Pòsì! [^-]      |
| 4. LL (?)     | Mòyà. [^-]      | Mòyà? [^-]      | Mòyà! [^-]      |
|               | 'He is coming.' | 'Is he coming?' | 'He is coming!' |
| 5. HH (?)     | Àbò. [^^]       | Àbò? [^^]       | Àbò! [^^]       |
|               | 'He is there.'  | 'Is he there?'  | 'He is there!'  |

## C. ISOKO (Southwestern Edoïd group), Elugbe (1977):

Basic tones: H, LTone rules: a) falling glide formed from HL  
b) no downdriftSentence tone: 1. statement: final series of lows raised to mid  
2. question: additional final low added  
3. exclamation: no raising of final series of lowsLexical tone patterns of disyllabic nouns: LL, HH, HL

| Data:                 | Statement    | Question     |
|-----------------------|--------------|--------------|
| 1. LL 'native doctor' | Ọ̀bù. [--]   | Ọ̀bù? [ _ ]  |
| 2. HH 'warrior'       | Ọ̀gbá. [ ^ ] | Ọ̀gbá? [ ^ ] |
| 3. HL 'maize'         | Ọ̀kà. [ ^ ]  | Ọ̀kà? [ ^ ]  |

## D. IZON, Kolukuma dialect (Ijọ group), personal investigation:

Basic tones: H, LTone rules: a) downdrift on each series of highs separated by low  
b) complex morphophonemic rulesSentence tone: 1. statement: basic tones + tone rules  
2. question: slight raising of highs, cancellation of downdrift, final low added  
3. exclamation: general raising of highs and of final low; cancellation of downdrift  
4. command: slight raising of highs, cancellation of downdriftLexical tone patterns of disyllabic nouns: LH (3 types), HH (2 types), HL

| Data:            | Statement        | Question        | Exclamation        |
|------------------|------------------|-----------------|--------------------|
| 1. LH 'yam'      | Bùrú. [ _ ]      | Bùrú? [ _ ]     | Bùrú! [ _ ]        |
| 2. HH 'medicine' | Dírí. [ ^ ]      | Dírí? [ ^ ]     | Dírí! [ ^ ]        |
| 3. HL 'sail'     | Bálà. [ ^ ]      | Bálà? [ ^ ]     | Bálà! [ ^ ]        |
|                  | <u>Statement</u> | <u>Question</u> | <u>Exclamation</u> |
| 4. Wónì múdọ̀.   | Wónì múdọ̀?      | Wónì múdọ̀!     | Wómìnì mú!         |
| [ ^ _ - - ]      | [ ^ _ - ]        | [ ^ _ - ]       | [ ^ _ - ]          |
| 'We have gone.'  | 'Have we gone?'  | 'We've gone!'   | 'Let's go!'        |

## E. NEMBE (Ijọ group), personal investigation:

Basic tones: H, LTone rules: a) downdrift on each successive high even without intervening low  
b) complex morphophonemic rulesSentence tone: 1. statement: final low tone becomes high  
2. question: final high tone becomes low  
3. exclamation: general raising of highs; cancellation of downdrift after low  
4. command: additional final low added to statement patternLexical tone patterns of disyllabic nouns: LH, LL, HL

| Data:        | Statement        | Question        | Exclamation        |
|--------------|------------------|-----------------|--------------------|
| 1. LH 'yam'  | Bùrú. [ _ ]      | Bùrú? [ _ ]     | Bùrú! [ _ ]        |
| 2. LL 'book' | Dírí. [ _ ]      | Dírí? [ _ ]     | Dírí! [ _ ]        |
| 3. HL 'Ebi'  | Ébí. [ ^ ]       | Ébí? [ ^ ]      | Ébí! [ ^ ]         |
|              | <u>Statement</u> | <u>Question</u> | <u>Exclamation</u> |
| 4. Ébì ọ̀.   | Ébì ọ̀?          | Ébì ọ̀!         | Ébì, ọ̀!           |
| [ ^ _ - ]    | [ ^ _ - ]        | [ ^ _ - ]       | [ ^ _ - ]          |
| 'Ebi came.'  | 'Did Ebi come?'  | 'Ebi came!'     | 'Ebi, come!'       |

## F. KALABARI, didlect of Eastern Ijọ, Jenewari (1977) and personal investigation:

Basic tones: H, L, distinctive downstep (')Tone rules: a) downdrift on each series of highs separated by low  
b) complex morphophonemic rulesSentence tone: 1. statement: a) basic tones + tone rules (for non-emphasized nouns)  
b) basic tones + (H)'H (first H only after L)

(for verb forms ending H, NPs ending in pronoun/article, and emphasized nouns, especially in answer to a question)

2. question: basic tones + tone rules  
3. exclamation: as for 1b), plus general raising  
4. command: basic tones + tone rules + additional LLexical tone patterns of disyllabic nouns: LL, HH, H'H, HL, LH

| Data:           | Statement a) + Question | Statement b)   |
|-----------------|-------------------------|----------------|
| 1. LL 'yam'     | Bùrú. Bùrú? [ _ ]       | Bùrú'ú. [ _ ]  |
| 2. HH 'book'    | Dírí. Dírí? [ ^ ]       | Dírí'i. [ ^ ]  |
| 3. H'H 'house'  | Wá'rí. Wá'rí? [ ^ ]     | Wá'rí'i. [ ^ ] |
| 4. HL 'leopard' | Sírí. Sí'rí? [ ^ ]      | Sírí'i. [ ^ ]  |
| 5. LH 'Gogo'    | Gógó. Gógó? [ _ ]       | Gógó'o. [ _ ]  |

|    | <u>Statement b)</u> | <u>Question</u> | <u>Exclamation</u> | <u>Command</u>  |
|----|---------------------|-----------------|--------------------|-----------------|
| 6. | ò ɓòtẹ́'ẹ̀          | ò ɓòtẹ́?        | ò ɓòtẹ́'ẹ̀!        | ò ɓòo!          |
|    | [ _ _ \ ]           | [ _ - - ]       | [ _ - \ ]          | [ _ \ ]         |
|    | 'He has come.'      | 'Has he come?'  | 'He has come!'     | 'Let him come!' |

G. IGBO, Green and Igwe (1963) and personal investigation:

Basic tones: H, L, distinctive downstep (')

Tone rules: a) downdrift on each series of highs separated by low  
b) falling and rising glides formed from HL, LH  
c) morphophonemic rules

Sentence tone: 1. statement: basic tones + tone rules  
2. question: a) intonational raising of high, etc., in nominal sentences  
b) inseparable subject pronouns change from H to L, in verbal sentences  
3. exclamation: a) intonational raising of high and lowering of low  
b) cancellation of downdrift  
4. command: basic tones + tone rules

Lexical tone patterns of disyllabic nouns: HH, LH, HL, LL, H'H

| <u>Data:</u>   | <u>Statement</u>                  | <u>Question</u>                   | <u>Exclamation</u>                |
|----------------|-----------------------------------|-----------------------------------|-----------------------------------|
| 1. HH 'head'   | Ísí. [ -- ]                       | Ísí? [ -- ]                       | Ísí! [ -- ]                       |
| 2. LH 'rat'    | Òké. [ - - ]                      | Òké? [ - - ]                      | Òké! [ - - ]                      |
| 3. HL 'house'  | Úlọ. [ - _ ]                      | Úlọ? [ - _ ]                      | Úlọ! [ - _ ]                      |
| 4. LL 'earth'  | Àlà. [ - - ]                      | Àlà? [ - - ]                      | Àlà! [ - - ]                      |
| 5. H'H 'tooth' | É'zé. [ - - ]                     | Ézé? [ - - ]                      | É'zé! [ - - ]                     |
| 6.             | Ó jèrè ahíá.<br>[ - _ - ] [ - - ] | Ó jèrè ahíá?<br>[ - _ - ] [ - - ] | Ó jèrè ahíá!<br>[ - _ - ] [ - - ] |
|                | 'He went to market.'              | 'Did he go to market?'            | 'He went to market!'              |

Summary and conclusions

The statement is the most basic form of sentence, for:

- a) Most commonly the statement form uses only basic forms plus general tone rules (Kana, Degema, Iẗon, Kalabari (type a), Igbo), whereas questions and exclamations usually require extra rules.  
b) Questions are normally formed by addition to the statement form (Yekhee), or to the basic/statement form (Degema, Isoko, Iẗon).  
c) The only case where the statement form appears more complex than the question is in Kalabari b), and this is apparently an emphatic

form which has become generalized for certain grammatical categories.

- d) Exclamations are formed by modification of the statement, never of the question.

CONCLUSION 1. The statement is the most basic sentence type.

This is probably a universal.

Questions are formed from statements by:

- a) addition of a floating low tone (Degema, Isoko, Iẗon)  
b) replacement of a high by a low tone (Nembe, Igbo in verbal sentences)  
c) addition of a floating high tone (Yekhee)  
d) general raising (Kana, Iẗon, Igbo in nominal sentences)  
e) cancellation of downdrift (Iẗon)

CONCLUSION 2. Yes/no questions are marked by a question marker, by intonational raising (including cancellation of downdrift), or by both. This is probably a universal.

Question markers are morphemes which are segmental + tonal or purely tonal (cf. the introduction). The floating low tones of Degema, Isoko, and Iẗon result from morphemes which have lost their segmental features; e.g. in Engenni (Delta Edoid group, closely related to Degema) the sentence-final question marker is à (Thomas, 1969).

It is also possible for the floating tone to replace the adjacent segmental tone (Nembe, Igbo). Historically, the floating tone first combines with the adjacent tone to form a glide (Yekhee, Degema, Isoko, Iẗon); later, the glide is simplified to a level tone:

Nembe: \*H + ' > \*F > L  
Igbo: \*' + H > \*R > L

CONCLUSION 3. Question markers are morphemes which in a tone language always include tone and sometimes lose their segmental features, after which they are realized like other floating tones. There is no universal that question markers must have high tone, or that they must be sentence-final.

Exclamations are marked by the raising of high tones (sometimes also of low tones) to a greater extent than in questions, and sometimes by the cancellation of downdrift (Iẗon, Nembe, Igbo) and the lowering of low tones (Igbo).

CONCLUSION 4. Exclamations are marked by the raising of tones, especially high ones, and by the increasing of the intervals between tones. This is probably a universal.

Commands seem not to be primarily marked by tone/intonation changes. In the reported cases they either have the same pattern as statements (Igbo) or the statement pattern with an additional floating tone marker (Nembe, Kalabari), or with slight raising and cancellation of downdrift (Izon).

CONCLUSION 5. Commands either resemble statements or differ from them only by the addition of an imperative marker, or by slight raising and elimination of downdrift. This is probably a universal.

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