

## NEW PROPOSALS FOR THE DESCRIPTION OF TONE SEQUENCES IN THE IGBO COMPLETIVE PHRASE

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1. The tone sequences of the Igbo completive phrase have been described by Green and Igwe, and by Patricia G. Carrell.<sup>1</sup> We checked completive phrases with two-syllable nouns with the help of an informant.<sup>2</sup> The observed phenomena resembled closely those described by the other authors. The following differences have been noted:

(i) Next to tone classes LL, HL, LH and HH, a fifth class with high followed by downstepped high was found, which showed downstepped high also in isolation (not only after preposition as in Green and Igwe).

(ii) We found some exceptional nouns: *ɛzɛ* 'king' was treated as a HL-noun (as in Green and Igwe), but also as a LL-noun (cf. iii); *cuku* 'God' was treated as a HH-noun (as in Green and Igwe), but also as a LH-noun; *ɲwa* 'child' and *nne* 'mother' were treated as a LH- or a HH-noun.<sup>3</sup>

(iii) If treated as a LL-noun, *ɛzɛ* 'king' as a second noun in the completive phrase got a more emphatic or predicative translation: 'it is the — of the king'.

(iv) Both Green and Igwe and Dr Carrell describe low tones in a string as all realized on a fixed level, lower than a last high tone of the string. We have found a terracing down of both low and high tones, so that low tones early in the string may very well be pronounced on a higher level than high tones late in the string.

The first difference might be explained as dialectal.<sup>4</sup> The second might be explained in part by what Green and Igwe (but not Dr Carrell) observed about completive phrases with a noun used as a proper name in second position. In that case a first high was changed to low. The same explanation does not apply to the last two examples, because these are realized as LH in isolation, and as HH in second position in the completive phrase. The third difference has been confirmed by Dr Kay Williamson and Mr Thomas Cook in private communications. They assured us that the change from high to low is not only due to the fact that the noun is used as a proper name. The last difference seems fundamental and has direct impact on the rules.<sup>5</sup> It might be worth while to study this phenomenon in more detail by instrumental means.

<sup>1</sup> M. M. Green and G. E. Igwe, *A DESCRIPTIVE GRAMMAR OF IGBO* (Berlin and London, 1963). Patricia Lynn Gronemeyer Carrell, *A TRANSFORMATIONAL GRAMMAR OF IGBO* (mimeographed dissertation, Austin, Texas, 1966), to be published shortly as West African Language Monograph, no. 8.

<sup>2</sup> Mr Emeka Nwafor acted as informant. He was brought up in Ogoja and speaks normal standard Igbo. Research was carried out as part of the training programme at Leiden University.

<sup>3</sup> Green and Igwe and Dr Carrell described *ɲwa* 'child' as a one-syllable noun.

<sup>4</sup> Cf. Green and Igwe, *op. cit.* p. 18: 'It is evidently not irrelevant to recall that some, at any rate, of these nouns have high mid lexical tones in some other dialects of Igbo.' Tones in isolated words are regarded as lexical tones in this grammar.

<sup>5</sup> Mr Thomas Cook confirms that in Efik the low tones of a string terrace down.

2. The tonal phenomena may be summarized in the following table. It presents the lexical tones of all combinations of tone classes LL, HL, LH and HH, followed by the actual realizations between slant lines. Downstepped high is marked with '. Nouns with high-downstepped high are treated as HH-nouns in the completive phrase. The right half of the table has to be changed into the left half in case the second noun is used as a proper name (according to Green and Igwe).

abha- <i>enwo</i>	òdhu- <i>enwo</i>	ala- <i>mbe</i>	ùlɔ- <i>mbe</i>
/abhá <i>enwo</i> /	/òdhub̃ <i>enwo</i> /	/ala <i>mbe</i> /	/ùlɔ <i>mbe</i> /
jaw of monkey	tail of monkey	land of tortoise	shed of tortoise
ahù- <i>enwo</i>	ísí- <i>enwo</i>	ahù- <i>mbe</i>	ísí- <i>mbe</i>
/ahù <i>enwo</i> /	/ísí <i>enwo</i> /	/ahù <i>mbe</i> /	/ísí <i>mbe</i> /
body of monkey	head of monkey	body of tortoise	head of tortoise
abha- <i>oké</i>	òdhu- <i>oké</i>	abha- <i>éghú</i>	ùlɔ- <i>éghú</i>
/abhá <i>oké</i> /	/òdhub̃ <i>oké</i> /	/abha <i>éghú</i> /	/ùlɔ <i>éghú</i> /
jaw of rat	tail of rat	jaw of goat	shed of goat
ahù- <i>oké</i>	ísí- <i>oké</i>	ahù- <i>éghú</i>	ísí- <i>éghú</i>
/ahù <i>oké</i> /	/ísí <i>oké</i> /	/ahù <i>éghú</i> /	/ísí <i>éghú</i> /
body of rat	head of rat	body of goat	head of goat

In a morphophonological description one would like to posit a floating high tone between the two elements of the completive phrase. Four unordered rules are now needed, the second and third of which can be condensed into one, but then at the cost of some notational complication:

$$\left. \begin{array}{l} 'HH : /H'H/ \\ L'(L : /H/ \\ HL'(L : /H'H/ \end{array} \right\} (H)L'(L : /H'H/$$

$$'LH : /'HH/$$

In all other cases, low and high have direct representation as /L/ and /H/ respectively, but floating high is not manifested. Morphophonological rules produce final strings on the phonemic level. Rules must be added to produce final strings on the phonetic level. The way in which these rules give some insight can be seen in the following paraphrase.

A floating high

(1) before high—raises this high, the only effect being that the next high, if any, appears as lowered high;

(2) before low—raises a preceding low, and any sequence 'high low high' involving a floating high ('LH or HL') has its low raised to lowered high.

3. Green and Igwe presented the facts without interpretation. Their first attempt at generalization was not sufficiently explicit. Dr Carrell devised explicit rules to account for the tonal phenomena in the completive phrase. The main differences with our proposals are the following:

(i) instead of her feature specification 'echo' [e] we use a feature 'downdrift' [d]. [d] is partly a mirror reflexion of [e], but works quite differently;

(ii) we define the boundary between two elements of the completive phrase in phonological terms, while Dr Carrell left it undefined;

(iii) we accept non-segmental or floating tones. The boundary in the completive phrase has in fact been defined as a non-segmental high tone. Non-segmental tones are also produced by tone rules.

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To make both proposals comparable, we followed as closely as possible the writing conventions in Dr Carrell's thesis,<sup>6</sup> and left out rules explaining tonal phenomena in phrases with a proper name in second position.<sup>7</sup>

The completive phrase will be produced in the grammar by a transformation. We start from the output of this rule: a succession of two (two-syllable) nouns, but with an intermediate non-segmental high tone. This intermediate non-segmental high tone might be produced by the same transformation. So we are starting from a completive phrase

$$[+s] [+s] \left[ \begin{array}{c} -s \\ +h \end{array} \right] [+s] [+s].$$

All vowels and syllabic nasals in the lexicon are assumed to be marked by [+h] (high tone) or by [-h] (low tone). They are also marked by [+s] (segmental). A feature [+d] is produced by rule 3. This forces us to add the feature specification [-d] in the lexicon. Since there is no distinction between [+s] and [-s] or between [+d] and [-d] in the lexicon, as far as we can see at the moment,<sup>8</sup> these features are better introduced by convention:

$$[] \rightarrow \left[ \begin{array}{c} +s \\ -d \end{array} \right].$$

In the rules non-syllabic consonants have been omitted as not relevant for the tonal behaviour in the strings. It might be possible to define a segment as a syllable, or to insert by general rule the symbol C between all segments (C standing for non-syllabic consonant or zero). We do not regard this as an important deviation from Dr Carrell's set of rules. No principles are involved.

The following set of rules is needed:

$$(1) \left[ \begin{array}{c} -s \\ +h \end{array} \right] \left[ \begin{array}{c} +s \\ +h \end{array} \right] \rightarrow \left[ \begin{array}{c} +s \\ +h \end{array} \right] \left[ \begin{array}{c} -s \\ -h \end{array} \right].$$

A rule which accounts for the downstepped high in the last syllable after high (cf. quarter right below of the table on p. 80). The downstepped high is produced in an indirect way by inserting a non-segmental low between the two high tones. By rule 3 this low tone produces downdrift. Rule 7 deletes this non-segmental low tone from the string. The three rules together produce the downstep. Other rules are possible, producing [+d] directly

<sup>6</sup> The special writing conventions are the following (i) a change to [+x] implies a feature [-x] to the left of the arrow, (ii) if a feature other than [s] is left unchanged, it is not repeated to the right of the arrow. (The feature [+s] is used in our rules for identification, and therefore cannot be changed.)

<sup>7</sup> If [-s] marks a non-segmental tone, the following rules are possible to account for this complication. A lexical rule:

$$N [+N, \dots, -\text{Proper Name}] \rightarrow \left[ \begin{array}{c} -s \\ -h \end{array} \right] N [+N, \dots, +\text{Proper Name}].$$

A tone rule:

$$\left[ \begin{array}{c} -s \\ -h \end{array} \right] [+s] \rightarrow \left[ \begin{array}{c} +s \\ -h \end{array} \right] / \left[ \begin{array}{c} -s \\ +h \end{array} \right] \text{---}$$

The environment specifies second position in the completive phrase. This rule accounts for the change from high to low.

<sup>8</sup> The fifth tone class with high-downstepped high might introduce [+d] in the lexicon, or perhaps [-s] (cf. note 9). Some of these nouns as *ɲwoke* 'man' are complex, and the downstep in such a case might be produced by a grammatical rule.

as a feature of the following high tone, or via a new feature 'raising' of the preceding syllable. Our choice has also been based on a parallelism with Efik tone rules.<sup>9</sup>

$$(2) \begin{bmatrix} +s \\ -h \end{bmatrix} \rightarrow \begin{bmatrix} +s \\ -h \end{bmatrix} \begin{bmatrix} -s \\ +h \end{bmatrix} / \begin{bmatrix} -s \\ +h \end{bmatrix} - \begin{bmatrix} +s \\ +h \end{bmatrix}$$

This rule prepares the assimilation of a low tone after juncture to the following high tone. Rule 6 completes the assimilation. This rule is not supported directly by Efik tone rules, but might also figure in Efik, because it does not alter the final result. Other solutions are possible. We experimented with a feature [+a] (assimilation), but did not like to multiply feature specifications without strong universal claim. Another possibility would be to leave this rule out here, and to insert a rule 5a:

$$[+s] \rightarrow \begin{bmatrix} +s \\ n \end{bmatrix} / [-s] - \begin{bmatrix} +s \\ n \end{bmatrix}$$

which, however, has the disadvantage of presenting a rather late correction on an undesired result of the preceding rules.

$$(3) [-h] \rightarrow [+d] / [+h] -$$

This rule adds downdrift [+d] to every low (segmental or not) after every high (segmental or not). The phonetic realization of downdrift is stated in rule 5.

$$(4) \sim \begin{bmatrix} +h \\ -h \end{bmatrix} \rightarrow \sim \begin{bmatrix} 1 \\ 3 \end{bmatrix}.$$

This rule assigns numerical values to every high and low tone (segmental or non-segmental). We propose a graphical distinction between two types of square brackets: simple ones (surrounding feature specifications), complex ones (preceded by tilde) guiding the choice between possibilities before and after the arrow. The lowest numerical value represents the highest tone.

$$(5) \begin{bmatrix} n \\ +d \end{bmatrix} ([-d]) \rightarrow \begin{bmatrix} n+1 \\ -d \end{bmatrix} ([+d]).$$

This rule works out the downdrift phenomenon. Every value marked [+d] and all following values are lowered one interval. Rules 3, 4 and 5 will be needed in all languages presenting downdrift and/or downstep.

$$(6) [+s] \begin{bmatrix} -s \\ n \end{bmatrix} \rightarrow \begin{bmatrix} +s \\ n \end{bmatrix} \text{ if } n \text{ is dominated by } [+h].$$

If one wants to exclude the condition, one could state this rule in a different way:  $\begin{bmatrix} +s \\ n+2 \end{bmatrix} \begin{bmatrix} -s \\ n \end{bmatrix} \rightarrow \begin{bmatrix} +s \\ n \end{bmatrix}$ . This rule states the type of regressive assimilation that is operating in the language.

$$(7) \begin{bmatrix} -s \\ n \end{bmatrix} \rightarrow \phi.$$

<sup>9</sup> This rule may also account for the existence of a fifth tone class in the lexicon (high-downstepped high). This tone class may be represented as  $\begin{bmatrix} -s \\ +h \end{bmatrix} \begin{bmatrix} +s \\ +h \end{bmatrix} \begin{bmatrix} +s \\ +h \end{bmatrix}$ . Cf. also note 8.

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Rules 6 and 7 specify the influence of the non-segmental tones in the string. If in rule 6 the segmental tone is dominated by low, it is in fact changed to high. Non-segmental low tones are deleted from the string by rule 7, but only after they have produced their down-drift influence on the complete string.

4. It may be worth while to present the generation of one completive phrase in full, the phrase consisting of the two elements  $\phi dh\dot{u}$  'tail' and  $ok\acute{e}$  'rat', giving  $\phi dh\dot{u} ok\acute{e}$  'the tail of a rat'. This completive phrase must be represented as:

$$\begin{bmatrix} +s \\ -d \\ +h \end{bmatrix} \begin{bmatrix} +s \\ -d \\ -h \end{bmatrix} \begin{bmatrix} -s \\ -d \\ +h \end{bmatrix} \begin{bmatrix} +s \\ -d \\ -h \end{bmatrix} \begin{bmatrix} +s \\ -d \\ +h \end{bmatrix}$$

Rule 1 does not apply.

$$\begin{bmatrix} +s \\ -d \\ +h \end{bmatrix} \begin{bmatrix} +s \\ -d \\ -h \end{bmatrix} \begin{bmatrix} -s \\ -d \\ +h \end{bmatrix} \begin{bmatrix} +s \\ -d \\ -h \end{bmatrix} \begin{bmatrix} -s \\ -d \\ +h \end{bmatrix} \begin{bmatrix} +s \\ -d \\ +h \end{bmatrix} \quad \text{after rule 2.}$$

$$\begin{bmatrix} +s \\ -d \\ +h \end{bmatrix} \begin{bmatrix} +s \\ +d \\ -h \end{bmatrix} \begin{bmatrix} -s \\ -d \\ +h \end{bmatrix} \begin{bmatrix} +s \\ +d \\ -h \end{bmatrix} \begin{bmatrix} -s \\ -d \\ +h \end{bmatrix} \begin{bmatrix} +s \\ -d \\ +h \end{bmatrix} \quad \text{after rule 3.}$$

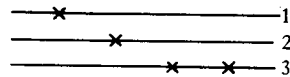
$$\begin{bmatrix} +s \\ -d \\ \mathbf{1} \end{bmatrix} \begin{bmatrix} +s \\ +d \\ \mathbf{3} \end{bmatrix} \begin{bmatrix} -s \\ -d \\ \mathbf{1} \end{bmatrix} \begin{bmatrix} +s \\ +d \\ \mathbf{3} \end{bmatrix} \begin{bmatrix} -s \\ -d \\ \mathbf{1} \end{bmatrix} \begin{bmatrix} +s \\ -d \\ \mathbf{1} \end{bmatrix} \quad \text{after rule 4.}$$

$$\begin{bmatrix} +s \\ -d \\ \mathbf{1} \end{bmatrix} \begin{bmatrix} +s \\ -d \\ \mathbf{4} \end{bmatrix} \begin{bmatrix} -s \\ -d \\ \mathbf{2} \end{bmatrix} \begin{bmatrix} +s \\ -d \\ \mathbf{5} \end{bmatrix} \begin{bmatrix} -s \\ -d \\ \mathbf{3} \end{bmatrix} \begin{bmatrix} +s \\ -d \\ \mathbf{3} \end{bmatrix} \quad \text{after rule 5.}$$

$$\begin{bmatrix} +s \\ -d \\ \mathbf{1} \end{bmatrix} \begin{bmatrix} +s \\ -d \\ \mathbf{2} \end{bmatrix} \quad \begin{bmatrix} +s \\ -d \\ \mathbf{3} \end{bmatrix} \quad \begin{bmatrix} +s \\ -d \\ \mathbf{3} \end{bmatrix} \quad \text{after rule 6.}$$

Rule 7 does not apply.

We can now set up a grid of numbered lines and just fill in the actual realization of this completive phrase:



5. In the course of our research, one interesting problem has been met with: alternative solutions always seem possible. We wonder whether the choice between them should only be based on the language itself (simplicity, elegance), or perhaps also on parallels found in other languages, especially related languages, using wider applicability as an operational criterion. We have found support for this description in Efik.<sup>10</sup> Our knowledge of related languages is, however, limited. This is the main reason for

<sup>10</sup> We would like to acknowledge the help of Mr Thomas Cook in the interpretation of Efik data. For the description of the tone sequences in the Efik completive phrase (two-syllable nouns only), the same rules 1-5 can be used, followed by one rule 6' (replacing rules 6-7 in Igbo):  $\begin{bmatrix} -s \\ n \end{bmatrix} [+s] \rightarrow \begin{bmatrix} +s \\ n \end{bmatrix}$ . Rule 2 is not necessary in Efik. For three-syllable nouns an additional rule is needed.

publication of these proposals. We hope other linguists will consider their value and are willing to report.

The most essential points of our proposals seem to be:

- (i) the use of non-segmental tones which enables us to formalize the results of morphophonological analysis in a generative grammar,
- (ii) the use of the feature downdrift in such a way that the analysis of this type of language falls in line with the general feeling that downdrift and downstep are based on the same phenomenon.