WHAT IS DOWNSTEP? A REPLY TO CLARK

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This paper replies to a proposal by Clark [1980] that
syntactically conditioned downstep in Igbo and Kikuyu
should be reinterpreted within a dynamic framework of
tonal representation according to which tone patterns
are characterized in terms of pitch change markers
(pcm's). We show that the reanalyses proposed by
Clark within this framework involve an unnecessary
proliferation of rules, failing to capture simple
generalizations that are naturally expressed within
an autosegmental approach.

1. Introduction

In recent papers and in her 1978 thesis, Mary Clark proposes a new theory
of tone which she terms the *dynamic-tone framework*. Her contribution to a
recent number of *Studies in African Linguistics* [Clark 1980] argues that this
theory provides an account of downstep which is superior to those given within an alternative framework (that of autosegmental phonology) by Goldsmith
[1976] for Igbo and by Clements and Ford [1977] for Kikuyu. Briefly, downstep is characterized by Clark as a primitive phonological entity " ↓ ", occurring at syllable boundaries, which determines a phonetic drop in pitch on
subsequent syllables. The novelty of Clark's proposal is that *all tonal distinctions*, not just those normally treated under the rubric of "downstep" in
terraced-level tone languages, are characterized in terms of this unit, or in
terms of its converse " ↑ " (upstep), which determines pitch rises. It is
quite natural that Clark should seek to find prime evidence for such a frame-

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work in tone languages evidencing terraced-level systems at the surface lev-
el, as do Igbo and Kikuyu, for such languages should in principle be the most
susceptible to successful treatment within this framework.

However, we remain unconvinced by Clark's argumentation for two primary
reasons. First, the conception she presents of explanation in phonology is
constructed in such a way as to optimalize theories characterized by the pro-
liferation of rules of a certain type. Second, the specific analyses of Igbo
and Kikuyu offered within this framework involve a needless loss of gen-
eralization, and moreover, fail to account for much of the data considered.
(Clark's article offers further discussion of Akan; we leave the evaluation
of her proposals to those with more experience in this language than we have.)

Clark suggests that only a dynamic-tone analysis offers a principled ac-
count of tonal alternations triggered by the presence of lexical or grammat-
ical downstep. This claim derives not only from her proposal to eliminate
level tones in favor of "pitch change markers" (downsteps and upsteps), but
also from another, quite independent proposal: that sequences of contiguous
pitch change markers located at syllable boundaries are "ill-formed". Clark
states: "One important property of the system is that there can be no more
than one pcm [pitch change marker] at a given boundary in the surface form;
representations such as " σ ↑ ↓ σ " (where " σ " = "syllable") are ill-
formed..." (p.115). From such a principle, Clark draws the conclusion that
any rule that may be proposed for a tone language which removes one of a
pair of offending pcm's at a boundary in a given representation is *ipso facto*
derived in a principled way. Such rules are (following Clark) "principled"
even if their effect is to create offending, ill-formed structures in turn
(as do her rules (41) and (48)).

This is, at best, a novel use of the term "principled"; in the present
case, it is highly misleading as well. If a theory rules out certain sur-
face forms—here, those with two successive pitch change markers—then it is
no credit to the same theory that various rules must be invoked within that
framework to patch up representations containing adjacent pcm's. Yet patch-
ing up is the primary function played by the various "resolution" rules
Clark proposes. Furthermore, the connection between the various rules is

not one that is linguistically explanatory in that it might hold promise of explaining how the language could be acquired. Quite the contrary: given the patching up role that the later rules play for the earlier rules in Clark's analysis of Igbo, it is quite difficult to imagine how such a system could be gradually acquired at all. No subpart of the rules could have been acquired at some early stage, for, by Clark's hypothesis, such a subgrammar would generate not only forms which were different from the adult grammar's forms—a reasonable state of affairs—but it would generate simply unpronounceable surface forms, leaving the child with no form at all in a large number of cases.

In our view, then, Clark's frequent use of the term "principled" is idiosyncratic. In general, it is not the function of a linguistic theory to "explain" the contents of language-specific rules; on the contrary, language-specific rules summarize what the language learner has inferred strictly on the basis of listening to the data presented and are thus in a literal sense *ad hoc*: they are motivated purely by the effort of the language learner to internalize a grammar that will produce the kinds of effects that the learner observes.

In our view, theories tend to be successful when they have the following property (and grammars produced by such theories may then be called principled): a large range of otherwise chaotic data is seen to be the result of the confluence of several simple and largely independent factors, factors which interact in ways that tend to repeat themselves in various human languages (and thus may be seen as the contribution of linguistic theory). We propose to show that the autosegmental accounts of Igbo and Kikuyu have precisely this property. We discuss these languages in turn.

2. Igbo

The basic structure of the Igbo associative construction, from an autosegmental point of view, is relatively simple. A morphologically "floating" High tone occurring between the modified and the modifying nouns is always associated (in the autosegmental sense) with the word on the left, where it is generally phonetically realized (and is thus not an abstract segment). It is, however, deleted when the following word begins with a High tone:

(1) $[H_{affix}]\# H$

      1   2 →

      ∅   2

In addition, there are two rules that "mutate" or modify the tone of the
second word in the construction, both of which are triggered by this assoc-
iative High tone. The first, given in (2), shifts a stem-initial High tone
to Mid (also called "Drop"), which, in conformity with Clark's informal nota-
tion, we symbolize as " $^!H$ ". The second rule, (3), deletes a Low prefix
tone:

(2) $H \rightarrow {}^!H$ / $[H_{affix}]\#$ (T) + ___

(3) $L \rightarrow \emptyset$ / $[H_{affix}]\#$ ___

These two rules precede the floating-High deletion rule (1). Each of the
rules is formally and conceptually simple, and there is surface information
that could naturally lead a language learner to arrive at each of them
largely independently of the others. A typical derivation is as in (4).
The associative High tone is circled.

(4) a.   ì sì   o ke
        | | | | (2)
        H H Ⓗ L H →

   b.   ì sì   o ke
        | | | | (3)
        H H Ⓗ L $^!H$ →

   c.   í sí $^!$ó ké   'head of rat'
        | \/
        H H Ⓗ $^!H$

Any account of this construction must deal with three aspects:

(A)   the set of tonal mutations of the left-hand word;

(B)   the fact that the left-hand word mutates if and only if the (mu-
      tated) right-hand word does not begin with High, i.e. the right-
      hand word forms part of the conditioning environment for the change
      described in (A);

(C)   the set of tonal mutations of the right-hand word, as illustrated
      in (5):

(5)   Isolation (underlying) tone   Mutated tone

   a. i.   H H   H !H

           H   !H

    ii.   L H   !H H

   b.   L L   (no change)

        H L   (no change)

    We will limit our remarks largely to points (B) and (C), for Clark
[1980:106] notes that the analysis of the tonal alternation in the left-
hand word given by Goldsmith [1976], i.e. (A), is an "entirely principled
account of this alternation".

    Generalization (B) (noted, in fact, by Clark as her (4c)) is not res-
pected by her system, which consists of the following rules:

(6) a.   ↓ Insertion (39), which inserts the associative marker ↓ ,
       circled in representations for ease of identification.

   b.   ↓ Shift (48), with this effect:

$$_N[\underset{\curvearrowright}{↓ V} \ldots ↓ .$$

   c.   Identical PCM Deletion (36), which deletes the first of two identi-
       cal, consecutive pitch change markers, under the condition that if the
       pcm is a ↓ , then # # must appear between the two identical pcm's.

   d.   ↑ Retraction (41), which shifts σ↑↓ to ↑σ↓ .

   e.   ↑ Deletion, stated first as (44): ↓↑ → ↓ , later revised to (46):
       ↓(V)↑ → ↓(V).

   f.   ↓ Before ↓ Reduction (38), which changes a sequence of consecutive
       ↓ 's: ↓...↓ becomes ↑...↓ .

Clark [personal communication] notes that these rules must be ordered, with
generalization (B) then emerging out of the formulation of (6b) and its or-
dering before (6c) and (6d). She suggests [p.c.] that this ordering follows
in a principled way from the fact that (6b), correctly formulated, contains
a syntactic specification ("+N"), whereas (6c) and (6d) do not. This ac-
count, however, is less than convincing, for there appears to be no inde-
pendent motivation for the syntactic specification found in (6b) but not in
(6c) or (6d), as far as we can see. The crucial rule ordering remains nec-
essary, then, in Clark's analysis.

Note that there is no natural way to specify the class of right-hand words in generalization (B) above within Clark's framework (unlike the auto-segmental framework). Thus, to exclude monosyllabic H words from under-going (6b) (which would incorrectly bleed the left-hand word from undergoing mutation), Clark must specify syllable structure ("begins with V ") in (6b). If the rule were written in what is presumably the simpler form within the dynamic tone framework, ↓ σ͜ ... ↓ , it would operate incorrectly when the right-hand form is a monosyllabic High, as noted.

Turning to area (C), and considering the tonal mutations described in (5), Clark's account as given fares no better. As Clark has correctly ob-served, bisyllabic words in Igbo are composed of prefix plus stem; the rare monosyllabic nouns have no prefix. Rule (5) can thus be summarized as fol-lows: all and only words with High tone on the stem undergo a tonal muta-tion in this position in the associative construction (and thus words in (5b) undergo no change); in particular, the change is from High to Mid, as noted in (5ai). Furthermore, L H changes to ꜛH H . How does Clark's system of rules describe these changes?

In the case of a H L word, no tonal change in fact occurs, but Clark's rules do not function correctly:

(7)   ì sí ↓ ⟨↓⟩ m   ↓ be ↑   6a

      ì sí ↓   m ⟨↓⟩ ↓ be ↑   6b

      ì sí   m ⟨↓⟩ ↓ be ↑   6c

                                     6d, 6e: do not apply

     *ì sí   m ˅ ↓ be ↑   6f

but cf. the correct:

      ìsí   m ↓ be ↑

(We assume Clark's "V" in (6b) stands for syllabic nasals as well as vowels.) This surface form violates Clark's central surface filter prohibiting sur-face sequences of pitch change markers, but it is the only output produced for words in second position with H L tone pattern.

There is no way within Clark's framework to express the generalization concerning which forms do in fact undergo mutation in (5), i.e., those in (5a), with stem High tone. In fact, this is an explicit embarrassment; the

change from H H to H$^!$H must, on Clark's account, be accommodated by a
special rule (6b) which includes a condition that Clark does "not regard...
as a particularly natural condition" (p.122). On the other hand, the auto-
segmental rule which she criticizes, (2), parallel to her (10), handles
these cases correctly, treating the H H cases as normal rather than ex-
ceptional.

We have thus far considered Clark's account of right-hand H H words,
H L words, and H words. Nothing happens in the case of L L words; in
the final remaining case, L H words, Clark introduces a new rule (her (46),
stated in (6e)) under the guise of extending another one, her (44). We find
this step most unconvincing for two reasons. The extended rule (46), delet-
ing a ↑ across a vowel from a preceding ↓ , is in no way consistent with
Clark's claim that the "set of tonal alternations...should be predictable
from what we know about the general behavior of high tones and floating
tones" (p.104). The extended rule (46) does not satisfy this criterion. It
might be observed that (46) as such is a rule schema, of which one sub-part,
i.e. (44), is, by Clark's criterion, expected or natural. But it surely
goes against both the spirit and the letter of Clark's criterion to say that
any rule is principled just so long as it forms a subpart of a rule schema
of which a different subrule is independently principled. Along similar
lines, it is well worth observing that the notions of rule schema and abbre-
viation of rules have their primary justification in the view that rules
are justified on the basis of their formal simplicity, not their substantive
content.

The justification of (46) is suspect for a second reason: it rests
heavily upon (44)'s being independently motivated. Rule (44), repeated here
as (8), is itself quite suspect, however. It serves only to patch up the
bad effects of rule (6d), repeated as (9).

(8) = Clark's (44)   ↑ → ∅ / ↓ ___

(9)   σ ↑ ↓

If the data that are used to motivate (8) and (9) are considered in their
own right, a better solution is available, even within the dynamic tone

framework, in which no rule comparable to (9) is necessary.

If we look at the pcm changes that occur between the underlying form and
the surface form to a left-hand word ending in a ↑ in a mutation environ-
ment, we find the following rather straight-forward generalization: if the
pcm is the only pcm in the word, i.e. if it is a L L word, the pcm retracts;
otherwise, it deletes. These two statements are given in (10) and (11),
ordered thusly as by any of the proposed versions of the elsewhere condition.

(10) σ σ ↑ ↓

(11) ↑ → ∅ / ___ ↓

These two rules can be formally conflated as in (12).

(12) < σ > σ ↑ ↓ → < σ ↑ > σ ↓

If we compare (8) and (9), Clark's version, against (10)-(11), the two al-
ternatives appear to be   equivalent . But independent considerations
suggest that, *even if one adopts the dynamic-tone framework for research,*
(10)-(11), or (12), is preferable to (8) and (9). Considerable evidence has
been amassed in phonology that deletion is a very common structural change,
especially of the sort considered here. This observation can be captured
in a number of ways formally, one of them being the use of angle-brackets,
as suggested in unpublished work by Morris Halle. In any event, the inform-
al statement noted above (10), in which deletion is an elsewhere-effect fol-
lowing permutation, points directly to (12) as a unified account of the dyn-
amic-tone analysis of the left-hand mutation of the L L words and L H
words.

But such a result is, in fact, disastrous for the dynamic-tone analysis
of the entire construction. For no longer is a rule such as (8) independ-
ently motivated, and no longer can it be extended to Clark's (46); and there
is, then, no analysis available for the right-hand mutation of L ‚H words
to ꞌH H .

In summary, then, we find Clark's analysis of the Igbo tonal mutations
under discussion unsatisfactory because it fails to handle the data correct-
ly, because it fails to state succinctly the generalizations that can be
found in the data (above and beyond any mechanical problems), and because

the dynamic-tone system (as distinct from the specific analysis Clark proposes within the system) ɪas the unacceptable property of presenting a less coherent and less highly-valued grammar as a whole when the individual subparts of the grammar are analyzed more carefully. Furthermore, contrary to Clark's claim, no consistent theoretical advantages do in fact arise in the dynamic tone framework vis-a-vis the autosegmental analysis.

3. Kikuyu

Turning now to the analysis of Kikuyu, Clark argues that the account given in Clements and Ford [1977] is faulty on two principal counts: first, it is overly abstract; and second, it is non-explanatory. We consider these criticisms in turn, after a brief review of the relevant features of the Kikuyu tone system.

Kikuyu words fall into classes according to their tonal influence upon following words. Words of one class induce "total downstep" on following words, i.e. they condition a lowering of the pitch register by an interval equivalent to the drop between a High and a Low. Words of the second class do not. In the analysis given in Clements and Ford [1977], words of the first class are characterized in the lexicon by the presence of a "downstep entity" (identified as a floating $\overline{L}$ (extra-Low) tone in a subsequent study [Clements and Ford 1979]) finally in their lexical tone melody, while words of the second class are not. This downstep, or floating $\overline{L}$ tone, serves as an "operator" which triggers the distinctive lowering (by a full step) of the pitch register upon which subsequent tones in the tone group are realized. It will be noted that this downstep is not an independent "morpheme" in any sense, but simply an element of the tonal tier characterizing any word. In this analysis the different tonal properties of the two classes of words are a consequence of the presence or absence of the word-final downstep.

Clark [1980] objects to the "extreme abstractness" of this analysis on two grounds. In the first place, floating tones, she notes, are "inaudible" (p.124). In contrast, "the dynamic-tone framework allows a very concrete representation of the downstep as a pitch drop (which is just what it is phonetically)" (p.131). But in what sense is a pitch change marker any more concrete than a floating tone? One cannot "hear" a pitch change marker;

rather, its presence in a tonal string is inferred from its effects upon
the pitch contours of surrounding syllables. In Clark's analysis, pitch
change markers occupy the boundaries between such units as the syllable and
are thus no more audible than, for example, such "juncture" elements as word
boundaries.

Clark's second criticism of the "abstractness" of the floating-tone an-
alysis of downstep concerns the question of its learnability. Clark assumes
that floating-tone analyses of downstep cannot be carried out on a univer-
sal basis, and that for languages other than Kikuyu, other (perhaps more
"concrete") formal representations of downstep will be required. If this
is true, then it would follow that the language learner, confronted with a
downstep system, would have to learn which type of representation is in-
volved in each given case. However, it is pointed out in Clements and Ford
[1979:205] that "floating tones are well-documented in the languages of
Africa, and it appears likely that the downsteps identified in other lang-
uages can be assigned a similar status... It is abundantly clear that pres-
ent phonological theories provide an overly rich array of mechanisms for
describing downstep. If we analyze downstep everywhere it occurs as a
floating tone, we shall have imposed a desirable restriction on the number
of analyses compatible with the data in any terraced-tone language." Clark
does not offer an argument against this claim. Instead, she asserts that
"there is no satisfactory way to attribute the downstep of Igbo to a float-
ing low tone" (p.124). As should be clear from the discussion of section 2,
we are in agreement with Clark in this respect: we attribute the *introduc-
tion* of downstep into Igbo tonal representations to the configuration stated
in the structural description of (2), involving in particular the presence
of a floating High tone. However, this does not commit us to the position
that downstep in Igbo cannot be *characterized* as a floating Low tone. All
we need to do in this respect is to interpret the symbol " ! " in (2)-(5) as
a floating Low tone. And indeed, we know of no convincing argument against
such an analysis.

Clark's second main objection to the floating-tone treatment of downstep
involves the "complexity and apparent arbitrariness" (p.124) of the rule of
Downstep Displacement proposed by Clements and Ford. It will be recalled

that according to their rule, whenever a word of the downstep-final class
ends in a High tone and the following word begins (in its isolation form)
with a Low tone, the downstep is shifted to the right of the Low tone (or
to the end of the maximal Low tone sequence). This Low tone (or Low tone
sequence) assimilates in turn to the preceding High tone. We illustrate the
effects of this rule with the following forms, in which the verb ndinarɔra
is a downstep-final form (these examples, like all those following, are tak-
en from Clements and Ford [1977]):

(13) a. ndīnárɔ́rá ꜛɲjátá   'I didn't watch stars'

     b. ndīnárɔ́rá ŋá꜁ŋá   'I didn't watch Ng'ang'a'

     c. ndīnárɔ́rá kéŋá꜁ŋí   'I didn't watch (a) crocodile'

     d. ndīnárɔ́rá móɣɛ́rá꜁niá   'I didn't watch (an) examiner'

     e. ndīnárɔ́rá moánékí   'I didn't watch Mwanīki'

     /ɲjátá꜁/   'star'   /mōɣɛ̄rānia/   'examiner'
     /ŋāŋá/   'Ng'ang'a'   /moānēkī꜁/   'Mwanīki'
     /kēŋāŋí/   'crocodile'

As these examples show, the downstep lexically associated with the verb
shifts across the maximal sequence of following Low tones, which themselves
become High. Thus, if the downstep is shifted to the end of the phrase
(where its phonetic effect is null), all Low tones become High (13e). In
Clements and Ford[1977] Downstep Displacement was stated as follows:

(14) $^!L_Q \rightarrow H_Q^! \;/\; H\underline{}$

The subscript " Q " designates a maximal string of segments (here, tonal
segments) to which it is subscripted. The element represented by the raised
exclamation point is to be understood, in accordance with Clements and Ford
[1979], as a floating $\bar{L}$ tone.

    Clark maintains that rule (14) "serves only to describe the facts and
not to explain them" (p.124). In Clark's view, as we have noted, a linguis-
tic theory provides a principled (and presumably, therefore, explanatory)
account of a language to the extent that it describes that language in terms
of rules that belong to a small set of strategies (specified by the theory)
for "resolving" (or patching up) ill-formed representations. Clark proposes

an account of Downstep Displacement which is "principled" in these terms, "for the rule which effects this change is one of a small set of possible strategies for the resolution of an ill-formedness created by the insertion of a 'bare' pcm into the string" (p.131). We have already expressed our reservations with regard to this view of explanation; here we examine some of its consequences for the description of Kikuyu.

In Clark's description, tone levels are characterized by pitch change markers (pcm's) which precede the syllable or syllables whose tone they characterize. Downsteps (↓) are inserted after words marked with the morphological feature "Class I" and then cliticized to the following word, should there be one. Four rules then apply, which we restate informally:

(15) a. Identical Pitch Change Marker Deletion (60) deletes any pcm which is identical to the first pcm preceding it; in the case of ↓ , this rule does not apply within the word.

 b. Downstep Displacement (67) moves the second of two adjacent ↓ 's maximally far to the right, that is, to the end of the phrase or to the end of the next pcm, whichever comes first.

 c. ↓ Before ↓ Deletion (69) deletes a ↓ if the next following pcm is also a ↓ .

 d. ↑ Deletion (64) reduces any ↓↑ sequence to ↓ .

These four rules apply in the order given (see Clark's derivation (71) and her note 27). These rules, together with the rules of ↓ insertion and cliticization mentioned earlier, have no motivation other than that of describing the tonal changes which are described, within the Clements and Ford analysis, by the rule of Downstep Displacement (14). We stress this point: these rules do not account for any tonal phenomena not fully described by the floating-tone analysis of Kikuyu summarized above.

There are a number of inaccuracies in Clark's description which seriously weaken its claim to provide a viable alternative treatment of Kikuyu. First of all, rule (15c) is incorrect. This rule is intended to provide a description of forms which have undergone Downstep Displacement, such as those illustrated in (13) above. However, while (15c) gives correct results in these cases, it yields incorrect results elsewhere. For instance, it incorrectly raises the first of two successive Low toned "Class I" items to

High after a "Class II" item ending in a High tone; more generally, it in-
correctly predicts that one will never find two successive "steps" downward
in surface representation except where these are created by the operation
of (15d). These problems are anticipated by Clark in her note 46, where
she suggests that if (15c) proves to be incorrect, it should be eliminated
and (15b) revised so that it not only permutes the second member of the ↓↓
sequence but deletes the first. We assume this modification of rule system
(15) in the following discussion.

   A more serious problem arises when we consider the result of combining
a "Class I" (downstep-final) word ending in Low tone with a word beginning
with High tone. As we know, due to the downstep, the High tone will be
realized at the same pitch level as the preceding Low tone, as in the fol-
lowing example, where ne is produced at the same pitch level as the pre-
ceding syllable:

(16) keāɣárārɔ̄ ˈné keɛ̄ɣá   'the stile is good'

The input to rules (15) (as revised in the preceding paragraph) is the fol-
lowing (downsteps inserted after "Class I" words are circled):

(17) ↓ kea ↑ ɣa ↓ rarɔ Ⓓ ↑ ne ↓ keɛ ↑ ɣa Ⓓ

Identical Pitch Change Marker Deletion (15a) deletes the initial member of
the ↓↑ sequence preceding ne . No further rules are applicable. We
therefore have

(18) * ↓ kea ↑ ɣa ↓ rarɔ ↑ ne ↓ keɛ ↑ ɣa ↓

The pitch rise on ne must somehow be eliminated. However, no rule is pro-
vided to accomplish this. Presumably, such a rule can be stated, but the
point is that it will be "unprincipled" even within the terms of the dynamic-
tone theory since it does not function to resolve an ill-formedness.

   But most seriously, the rule of Identical Pitch Change Marker Deletion,
which is crucially involved in most of Clark's derivations, is itself in-
correct. The problem arises in this case with words that contain internal
downsteps:

(19) ndiɔ̄nɛ́ˈrɛ́ moāɣáhīɲá   'I didn't see a weakling'

Here the first syllable of moaɣahiɲa is a step lower than the syllable im-
mediately preceding it. The input to the rules of (15) is:

(20)   ↓ndiɔ↑ni↓rɛ ↓moa↑ɣa↓hi↑ɲa⊕

Identical Pitch Change Marker Deletion deletes the initial ↓ of moaɣahiɲa
No further rules apply, and we derive the incorrect:

(21)   *↓ ndiɔ ↑ n̄ī ↓ rɛ   moa ↑ ȳā ↓ hi ↑ n̄ā ↓

In this case the problem seems to be not one of oversight, but of principle.
The overly restrictive theoretical vocabulary of the dynamic-tone framework
does not allow us to draw a formal distinction between words containing
H!H sequences and words containing HL sequences. Both are represented
(in a total downstep system like that of Kikuyu) as ↑σ↓σ . Only word final
HL sequences, and not H!H sequences, trigger Identical Pitch Change Mark-
er deletion, but the dynamic-tone notation has no way of capturing this dis-
tinction. Consequently, forms like (19) apparently cannot be derived at
all.

    To summarize, the dynamic-tone framework—or at least the particular
analysis offered by Clark within this framework—fails to capture the gener-
alization incorporated in the rule of Downstep Displacement (14) proposed by
Clements and Ford. The dynamic-tone analysis denies the existence of any
such generalization. Each of the logically possible combinations of "Class
I" words with following words is treated, in this system, by a different
rule or rules:

A. "Class I" word ending in a High tone + word beginning in Low tone;
    Downstep Displacement (15b) applies:

        ↑σ ↓↓σ → ↑σ σ↓

B. "Class I" word ending in High tone + word beginning in High tone;
    ↑ Deletion (15d) applies:

        ↑σ ↓↑σ → ↑σ ↓σ

C. "Class I" word ending in Low tone + word beginning in Low tone;
    Identical Pitch Change Marker Deletion (15a) applies:

        ↓σ ↓↓σ → ↓σ ↓σ

D. "Class I" word ending in Low tone + word beginning in High tone;
    Identical Pitch Change Marker Deletion (15a) and an unspecified further
    rule apply:

    ↓σ ↓↑σ → ↓σ ↑σ → ↓σ σ

This system evidently makes use of a needless proliferation of rules. Even
granting that the mechanical errors pointed out earlier can be overcome,
there appears to be no possibility of achieving any significant increase in
generalization within the dynamic-tone framework.

    We shall not consider in detail a third and final objection raised by
Clark, which involves the existence of a dialect with a slightly different
version of Downstep Displacement (our (14)). Our response to this objection,
which is based upon the allegedly unprincipled nature of (14) and which
crucially appeals to rule (15c), is implicit in the above discussion.

4. Conclusion

    As we mentioned at the outset, terraced-level tone systems should pro-
vide favored ground for analyses within the dynamic-tone framework, which
describes all tonal phenomena uniquely in terms of downsteps (↓) and up-
steps (↑). However, the analyses of downstep-related phenomena in Igbo
and Kikuyu provided by Clark, considered strictly on their own terms, fail
to provide the explanatory accounts that are offered as primary motivation
for the dynamic-tone framework. We conclude that syntactic downstep in Igbo
and Kikuyu remains most adequately characterized within the framework of
autosegmental phonology as originally proposed in Goldsmith [1976] and Clem-
ents and Ford [1977].

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This section is for short remarks on articles dealing with African languages which have appeared in *Studies in African Linguistics* or elsewhere and for contributions which are too short to constitute full articles. These may be short descriptive or historical statements of interesting phenomena in African languages or theoretical comments utilizing African language data.

Contributions to "Notes and Queries" should be less than 1000 words, including examples. No footnotes should be used, but references may be listed at the end.