

*J. Cowper*

# CLS 20

---

Papers from the  
Twentieth Regional Meeting

Rice & Cowper "Consonant Mutation and  
Autosegmental Morphology" in *CLS 20*: 309-320.

Edited by  
Joseph Drogo  
Veena Mishra  
David Testen

Chicago  
Linguistic  
Society  
1984

6 Principle A' is similar to, but not identical to, Manzini's revision of Principle A, which specifies that an anaphor is bound in its governing category and its domain-governing category. (p.432)

7 Unspecified objects, which are not anaphors, are "little" Pro, which is [-anaphoric], [+pronominal].

8 This assumption is also a condition on Chomsky's definition of governing category. (1981: 220)

#### References

- Aoun, J., and D. Sportiche. 1983. "On the Formal Definition of Government". Linguistic Review 2.3
- Chomsky, N. 1981. Lectures on Government and Binding. Dordrecht: Foris.
- Chomsky, N. 1982. Some Concepts and Consequences of the Theory of Government and Binding. Cambridge, MA: The MIT Press.
- Manzini, M-R. 1983. "On Control and Control Theory". Linguistic Inquiry 14.3

#### Consonant Mutation and Autosegmental Morphology\*

Keren Rice and Elizabeth Cowper  
University of Toronto

Lieber (1983) claims that Consonant Mutation (CM) is a morphological phenomenon best accounted for by a floating autosegment that either is, or is part of, a specific morpheme. This autosegmental analysis automatically accounts for another property of CM: that it is strictly local, whereas this would have to be stipulated in a linear analysis. We agree with Lieber that, *ceteris paribus*, an analysis which does not need to stipulate locality is superior to one which does.

We will show that in Mende, a Mandan language spoken in Sierra Leone, there is a process of CM, similar to those described by Lieber, which is indeed strictly local but for which no floating autosegment can be motivated.

In part 1 we will describe mutation in Mende and give a phonological account of its environment. In part 2 we will examine two possible autosegmental analyses, and show that both have undesirable consequences. We will conclude that CM in Mende is not adequately handled within the autosegmental approach proposed by Lieber.

#### 1. The Facts

The rule of CM affects voiceless and prenasalized consonants, changing them to voiced non-nasal consonants. Examples of segments which undergo CM are given in (1), and of segments which never undergo CM in (2).

|           |         |                          |             |                         |
|-----------|---------|--------------------------|-------------|-------------------------|
| (1) f → v | fà      | 'for'                    | gbé và      | 'what for'              |
| s → j     | séíéí   | 'the banana'             | nyá jèlèí   | 'my banana'             |
| p → w     | pómà    | 'behind'                 | ndòpól wómà | 'behind the child'      |
| t → l     | téí     | 'the chicken'            | nyá lèí     | 'my chicken'            |
| k → g     | kùló    | 'in front of'            | bí gùlò     | 'in front of you'<br>sg |
| kp → gb   | kpèkéí  | 'the razor'              | nyá gbèkéí  | 'my razor'              |
| mb → b    | mbètèí  | 'the platform'           | nyá bètèí   | 'my platform'           |
| nd → l    | ndèndèí | 'the boat'               | nyá lèndèí  | 'my boat'               |
| nj → y    | njéí    | 'the goat'               | nyá yèí     | 'my goat'               |
| ng → y    | ngílèí  | 'the dog'                | nyá yílèí   | 'my dog'                |
| {w}       | ngólíí  | 'the ear, tail'          | nyá wólíí   | 'my ear, tail'          |
| (2) v → v | vòvòí   | 'the lungs'              | nyá vòvòí   | 'my lungs'              |
| j → j     | jòwéí   | 'the chain,<br>necklace' | nyá jòwéí   | 'my chain'              |
| b → b     | bèlèí   | 'the trousers'           | nyá bèlèí   | 'my trousers'           |
| d → d     | dówlí   | 'the duck'               | nyá dówlí   | 'my duck'               |
| g → g     | gílíí   | 'the kidney'             | nyá gílíí   | 'my kidney'             |

|         |        |                   |            |                |
|---------|--------|-------------------|------------|----------------|
| gb → gb | gbàtóí | 'the whip'        | nyá gbàtóí | 'my whip'      |
| m → m   | mèmèé  | 'the mirror'      | nyá mèmèé  | 'my mirror'    |
| n → n   | nèésíí | 'the pineapple'   | nyá nèésíí | 'my pineapple' |
| ny → ny | nyàhéí | 'the woman'       | nyá nyàhéí | 'my woman'     |
| ŋ → ŋ   | ŋòníí  | 'the bird'        | nyá ŋòníí  | 'my bird'      |
| l → l   | lómboí | 'the patch'       | nyá lómboí | 'my patch'     |
| h → h   | hàkàá  | 'the calf of leg' | nyá hàkàá  | 'my calf'      |
| w → w   | wàléí  | 'the slate'       | nyá wàléí  | 'my slate'     |
| y → y   | yíí    | 'thing, stuff'    | nyá yíí    | 'my stuff'     |

The various environments in which CM occurs are listed in (3).

- (3) a. [<sub>VP</sub> NP V] The initial consonant of the verb mutates.  
 ì nyá wókòéíṣ 'he imitated me'  
 he me imitate cf. pókòṣ 'imitate'
- b. [<sub>NP</sub> NP N] The initial consonant of the noun mutates.  
 ndòpóí bówéí 'the child's knife'  
 child knife cf. mbówéí 'the knife'
- c. [<sub>NP</sub> N Adj Adj] The initial consonants of the adjectives mutates.  
 ngílà jèmbè lèlíí ná 'that big black dog'  
 dog big black that cf. sémbé 'big'  
 tèlíí 'black'
- d. [<sub>PP</sub> NP P] The initial consonant of the postposition mutates.  
 ndèndéí bù 'in the shade'  
 shade under cf. mbù 'under'
- e. [<sub>S</sub> NP PRT [<sub>VP</sub> V]] In some intransitive sentences, the initial consonant of the verb mutates.  
 mú vèmbéíṣ ngúlíí hù 'we swung on the tree'  
 we swung tree on cf. mú vèmbéíṣ 'we swung'  
 fèmbéí 'the swing'
- f. [<sub>N</sub> N N] In compounds, the initial consonant of the second noun mutates.  
 fèfè léndéí 'sailboat'  
 wind boat cf. ndèndéí 'boat'

Mutation fails to apply in the following environments:

- (4) a. [<sub>VP</sub><sup>e</sup> V] If the object of a transitive verb is phonologically null, CM fails to occur.  
 ndòpóí fèmbéngà 'The child swung it'.  
 child swing  
 cf. ndòpóí mbòmèí vèmbéngà. 'The child swung the hammock.'

- b. [<sub>PP</sub><sup>e</sup> P] If the object of a postposition is phonologically null, CM fails to occur.  
 mbù 'under it'  
 cf. ndèndéí bù 'under the boat'
- c. [<sub>VP</sub><sup>t</sup> V] If the object of a transitive verb is extracted leaving a trace, CM fails to occur.  
 gbémiá ndòpóí k̀pàndiá 'what has the child heated?'  
 ngúléí miá ndòpóí k̀pàndiá 'It's the oil that the child heated.'  
 cf. ndòpóí ngúléí gbàndiá 'The child heated the oil.'
- d. [<sub>S</sub> NP PRT [V...]] In some intransitive sentences, the initial consonant of the verb fails to mutate.  
 tí kàkpàngà ngì má 'They surrounded him'  
 they surrounded him  
 \*tí gàkpàngà ngì má  
 \*tí kàkpàngà

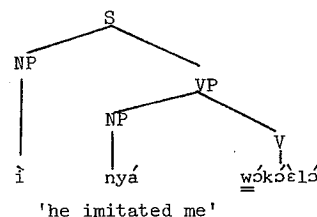
The difference between (3e) and (4d) follows from the fact that in (3e), the post-verbal material is outside VP while in (4d) the post-verbal material is inside VP. The relevance of this will become clear directly.

The environment for CM can be stated as follows.<sup>1</sup>

- (5) If a lexical item of a major category c-commands and is immediately to the right of any phonological material then the initial consonant of that item mutates.

The structures in (6) illustrate how the rule works. In each of these, the relevant segment, which is underlined, mutates because the item c-commands the word to its left.

- (6) a.



- b.
- 
- NP  
 NP N  
 ndòpólí bówéí  
 'the child's knife'
- c.
- 
- NP  
 N ADJ ADJ Det  
 ngílà ìémbè ìlèlèí ná  
 'that big black dog'
- d.
- 
- PP  
 NP P  
 ndèndéí bú  
 'in the shade'
- e.
- 
- NP  
 N N  
 fèfè ìéndèí  
 wind boat  
 'the sailboat'

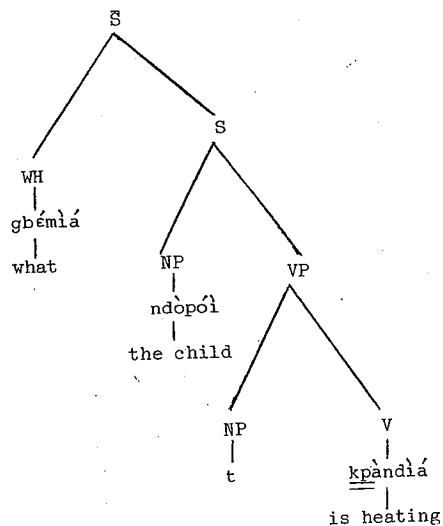
In (3e), whose structure is given in (7), the verb phrase does not branch, and therefore does not qualify as a domain for c-command. Since S is the first branching node above V, the verb does in fact c-command the subject, and mutation applies.

- (7)
- 
- S  
 NP VP PP  
 mú V ìémbélló ngúlíí P  
 hú  
 'we swung on the tree'

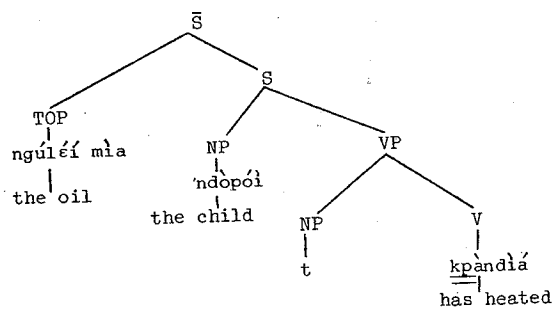
In (4a,b) and (4c), whose structures are given in (8), the role of the empty categories e and t is illustrated.

- (8) a.
- 
- S  
 NP VP  
 ndòpólí V  
 the child NP V  
 e fèmbéngà  
 it swung  
 'The child swung it'
- b.
- 
- S  
 NP VP PP  
 táà V ìónì NP P  
 he is standing e it mbù  
 under  
 'He is standing under it'

c.



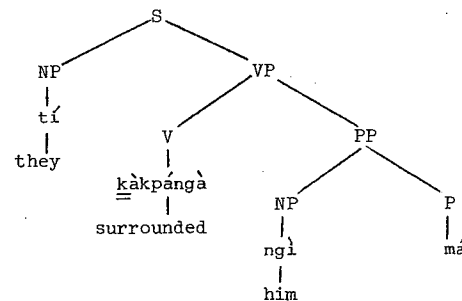
'What is the child heating?'

d.<sup>2</sup>

'it's the oil that the child has heated.'

(4d), whose structure is given in (9), illustrates that when an intransitive verb has strictly subcategorized arguments, mutation of the verb does not apply.

(9)



'They surrounded him.'

Thus c-command seems to be an appropriate generalization. However, so far our analysis directly stipulates that CM is local, i.e. the triggering material must be adjacent to the word undergoing mutation.

Lieber (1983) has made a rather attractive proposal which, if it works for Mende, might eliminate the need to stipulate the locality of the rule. She proposes that mutation is a morphological phenomenon that is accounted for by a floating autosegment.

## 2. The analyses

Using Lieber's model, we will now examine two possible analyses of CM in Mende. We will show that in the one case, CM is local, but the autosegment is completely *ad hoc*, having no morphological content, and c-command must still be stipulated. In the other, although the autosegment may have morphological justification, the rule is not, in fact, local and c-command again must be stipulated.

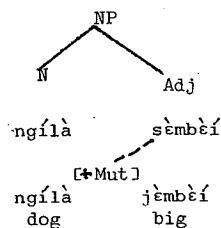
### 2.1. Analysis 1

Under analysis 1, every lexical item that triggers CM has the representation  $X_{[+Mut]}$ .

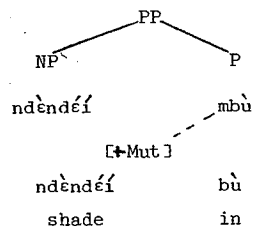
[+Mut] is a shorthand for whatever features will cause the appropriate segmental changes. We will not be concerned with the nature of these features, since under any analysis the problem of the segmental alternations is exactly the same.

When  $X_{[+Mut]}$  occurs adjacent to some other lexical item Y, the [+Mut] autosegment associates with Y, as in (10).

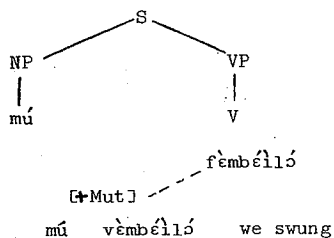
(10) a.



b.

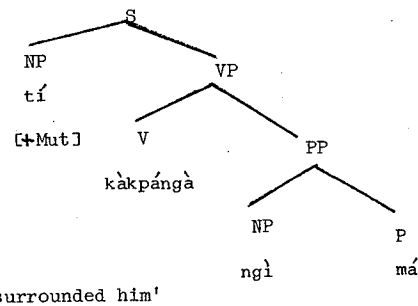


c.



In cases where  $X_{[+Mut]}$  is followed by an empty category, the autosegment will attach to the empty category because it can only attach to an immediately adjacent element. Since the empty category is phonologically null, the autosegment will not surface. What remains to be accounted for is why intransitive verbs followed by VP-internal material never mutate, as in (11).

(11)



Unless some kind of c-command restriction is incorporated into the rule associating the autosegment, it is predicted that the verb in (11) should mutate.

This analysis thus suffers from two major problems. First, it is impossible to assign any morphological significance to the [+Mut] autosegment. It is part of the lexical entry of nouns, as in the examples above, but also of adjectives to account for (12) and particles as in (13).<sup>2</sup>

(12) ngíla jèmbè lèlíí 'big black dog'

sèmbé 'big'  
tèlí 'black'

(13) hótéí à gílí ló 'the stranger will think'

hótéí 'the stranger'  
à FUTURE  
kílí 'think'

Thus this analysis would not be allowed even by Lieber since the autosegment has no morphological content.

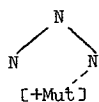
Second, the association of the autosegment to a following word is not fully automatic, as Lieber's approach would lead one to expect. It is restricted by a condition requiring the mutating word to c-command the trigger.

## 2.2 Analysis 2

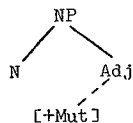
Under analysis 2, we suggest an autosegment that is not entirely ad hoc as it was in analysis 1. Here [+Mut] is a noun formative. Nouns thus have the form  $X_{[-Mut]}$ . It turns out that in most cases the triggering element is a N or NP, as we saw in the previous section. One might propose that there is a morphological rule attaching [+Mut] to  $N^{-1}$  to form  $N^0$ .

In compounds and within NP's, as in (14), CM applies correctly.

(14) a.

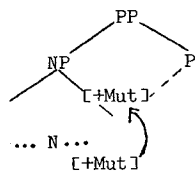


b.

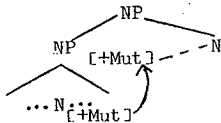


To account for the situations where the trigger is NP rather than N, a percolation convention is necessary to ensure that the material following the NP mutates. Thus in [NP N] and [NP P], it can be assumed that features are copied from the head onto the maximal projection, as shown in (15).

(15) a.

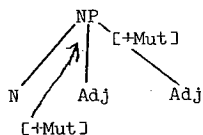


b.



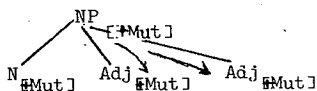
A rather different problem arises in cases like (16), where the second of two postnominal Adjectives mutates.

(16)



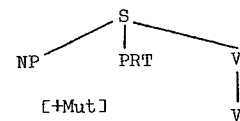
Even assuming that [+Mut] percolates to NP, it is unclear how it gets associated with the second adjective. We would have to claim, now, that Percolation is not only to  $X^{max}$ , from  $X^0$  but also down to all constituents of  $X^{max}$ , as in (17).

(17)



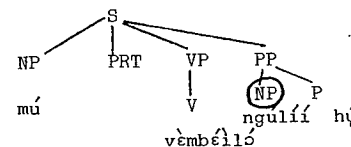
This revision does not affect the data in (15). Another problem arises in cases like (18).

(18)



Here, even if [+Mut] percolates from N to NP, it still cannot, by virtue of locality, attach to V. Thus we have to assume that [+Mut] somehow percolates, via S, to the particle. At this point the percolation convention has spread the autosegment throughout the entire sentence. This has two undesirable consequences. First, it predicts that mutation should occur in environments where it does not. An example is given in (19).

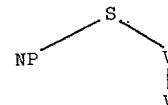
(19)



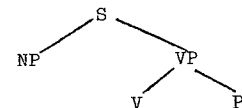
[+Mut] will climb from NP to S and then spread to PRT, VP, and PP. There is now no reason why the circled NP should not mutate since it is adjacent to VP which bears [+Mut].

This problem can be eliminated if there is a c-command condition on the association of the floating autosegment. For example in (20), percolation occurs in both cases. Association is allowed in (a) but blocked in (b) due to the lack of c-command.

(20) a.



b.



Association with the circled NP would also be blocked in (19) by this condition.

Secondly, the floating autosegment is no longer provably a N formative. With a percolation convention such as this one, [+Mut] could originate almost anywhere and have the same effect. Thus analysis 2 essentially reduces to a cumbersome version of analysis 1. The ad hocness of analysis 1 has not been eliminated; it has merely been concealed.

The c-command condition, required in analysis 1, remains necessary here.

### 3. Conclusion

We have proposed two analyses of Mende CM along the lines of Lieber (1983), and have shown that each causes more problems than it solves. It appears that the difference between Lieber's data and ours is that she was looking at instances of morphological mutation. What we have in Mende is a phonological phenomenon which is best described in phonological terms. We thus dispute Lieber's claim that CM is universally a morphological phenomenon.

### Footnotes

\*We would like to thank Patrick Conteh for help with the data. The names are given in reverse alphabetical order; no priority of authorship is intended.

1. We use the traditional definition of c-command, namely:  $\alpha$  c-commands  $\beta$  if  $\alpha$  does not dominate  $\beta$  and the first branching node dominating  $\alpha$  also dominates  $\beta$ . More recent definitions of c-command, involving maximal projections rather than branching nodes, do not make the right predictions for Mende CM.
2. The structure  $\bar{S}$  is not crucial; in fact it is probably wrong.

$$\begin{array}{c} \text{Top} \\ \diagup \quad \diagdown \\ \text{S} \end{array}$$

We suspect, but have no arguments as yet, that the topic NP is base generated in its surface position, and that an empty operator moves from the VP to COMP. What is important for this paper is that there is a trace preceding the verb.

3. It is entirely possible that verbs bear [+Mut] as well. However, the language conceals any evidence bearing on the question. The only lexical items which occur to the right of a verb and c-command the verb are adverbs. As a class, adverbs never mutate.

### References

- Conteh, P., E. Gowper & K. Rice (to appear 1984) 'The Environment for Consonant Mutation in Mende' in G. Dimmendaal, ed. *Current Approaches to African Linguistics*, Volume 3. Dordrecht: Foris Publications
- Lieber, R. (1983) 'New Developments in Autosegmental Morphology: Consonant Mutation' *Proceedings of the 2nd West Coast Conference on Formal Linguistics*. Stanford.

### Sources of Data

- Innes, G. (1967) *A Practical Introduction to Mende*. (1969) *A Mende-English Dictionary*
- Spears, R.A. (1967) *Basic Course in Mende*.

Let  $\bar{X} = \bar{X}^*$

John F. Richardson  
University of Chicago

### 0. Introduction

This paper is meant as a contribution to the furtherance of methodological puritanism. Specifically, I will be advocating an X-bar conception of phrase structure uncontaminated by ad hoc unbranching nodes that violate the X-bar template. In section (1), certain traditional NP expansion rules will be targeted for dismissal from phrase structure theory. These rules have been chosen as a case study largely because of the incredible hold they seem to have had on the collective linguistic imagination despite their obvious status as X-bar violations and the sheer vacuity of the traditional arguments for them. In section (2), a step back will be taken to review the considerable motivation for X-bar. This section is directed primarily at the infidels and can be skimmed, but shouldn't be skipped, by true believers. Section (3) will be devoted to sinking two proposals to weaken the notion of syntactic category to readmit into grammatical theory the impermissible rules noted in section (1). An attempt ostensibly within X-bar--positing headless constituents--will be shown to do such a good job of weakening X-bar that it in fact kills it as a predictive theory. An attempt substantially outside X-bar--positing fuzzy categories--will be shown to be methodologically wrong-spirited but will prove useful in clearing up the confusion surrounding the impermissible NP expansions. In section (4), the crux of the NP issue will be identified as the conflation of the distinct notions of structural vs. relational categories. It is a fact of life and language that members of more than one structural category can bear the same relation to some third entity. Once this is recognized, X-bar is seen to strongly encourage and perhaps force a relational conception of syntactic processes--though not necessarily one in which grammatical relations are taken as primitive. The idea that X-bar and some sort of a relational grammar are mutually motivating theories may come as something of a surprise. But such surprises often pop up when one takes the tenets of a theory seriously and refuses to fudge results that go against traditional analytical assumptions.<sup>1</sup>

#### 1. X-bar and the NP Node

X-bar theory is basically a template theory of permissible phrase structure. Any phrase structure rule, whether conceived generatively or interpretively, must pass certain well-formedness tests defined on rule templates, such as the fundamental mother-head template given two formulations below in (1) and (2). Jackendoff (1977) presents (1) as the fundamental mother-head template, where  $X^n$  is the mother and  $X^{n-1}$  is the head, which must match the mother's category specifications in all respects except, of course, the so-called bar level denoted by the superscripts.