

Command and Fula d̥um Pronominals

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Command and Fula *ɗum* pronominals

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1. Introduction

Since the earliest studies of anaphora, some notion of command has been taken to be crucial to understanding the binding properties of pronouns.* In this paper I argue that the binding properties of the *ɗum* forms in Fula must be characterized without reference to any notion of command. This is a highly unusual situation for non-logophoric pronouns (Sells 1988) and provides support for a Lexical Functional Grammar (LFG) analysis of binding properties.

2. The data

Fula is a language with noun classes, but I will be considering pronouns from just one of the classes: the neutral (or *ɗum*) class. In addition, I will be considering only the Object form (*ɗum*), used as Direct and Indirect Objects, and the Complement form (*muudum/mum*), used as Possessors, Objects of Prepositions, and in certain other constructions which I will not detail here. The forms are given in (1).

(1) Fula *ɗum* forms

a. Object	<i>ɗum</i>
b. Complement	<i>muudum/mum</i>

Although Fula exhibits a wide variety of dialectal variation (Culy 1990), the data considered here are from three dialects that seem to have identical properties as far as the Object and Complement pronouns are concerned. The three dialects are Adamawa, spoken in Nigeria (East 1934/67), Gombe, also spoken in Nigeria (Arnott 1970), and Liptako, spoken in Burkina Faso (Bidaud and Prost 1982).

A word of caution is in order: all of these sources are traditional descriptive grammars, and as such give only positive data. I have little or no negative evidence concerning the properties under consideration. On the other hand, there are no counterexamples to the generalizations I will give. Thus, I think that these grammars do give us a pretty accurate view of the pronouns in these dialects.

3. Agreement

There are three aspects of the binding properties of the *ɗum* forms, and none of these aspects involve the notion of command. The first aspect could be called a type of agreement. *ɗum* forms are used only when they are coindexed with non-pronominal NPs, as suggested by the examples in (2). In (2a), we have a *ɗum* form coindexed with the non-pronominal NP *Bello*. For comparison, in (2b,c) we see the singular human class Complement pronoun *maako*, which normally cannot be coindexed with non-pronominal NPs. In (2b) then, it must be disjoint from *Bello*, while in (2c) *maako* can be coindexed with the pronoun *o* (see also Culy and Gnalibouly Dicko 1988 on a Fula dialect spoken in Mali).

(2) Short distance agreement facts (Gombe, Arnott 1970:154)

- a. Bello -noddi soobajo muud'um
Bello called friend muud'um
'Bello_i called his_i friend'
- b. Bello -noddi soobajo maako
Bello called friend maako
'Bello_i called his_k/*_i friend'
- c. 'o -noddi soobajo maako
3sg called friend maako
'He_i called his_{i/k} friend'

This restriction on the d'um forms is not limited to antecedents in the same clause, as we can see in the examples in (3). In (3a) the subordinate object d'um form is coindexed with the matrix subject non-pronominal, *Amadu*; in (3b) the human class object form *mo* cannot be coindexed with the matrix subject *Amadu*; and in (3c), the human class object form *mo* can be coindexed with the pronominal matrix subject. (3d) contains a real-life example from Adamawa Fula, where the object d'um form is coindexed with a non-pronominal object in a preceding conjunct.

(3) Long distance agreement facts

- a. Lipatako, Bidaud and Prost 1982:82

Amadu wi'ii ñe nodda d'um
Amadu said they call d'um
'Amadu_i said that they call him_i'

- b. Lipatako, Bidaud and Prost 1982:82

Amadu wi'ii ñe nodda mo
Amadu said they call mo
'Amadu_i said that they call him_k'

- b. Lipatako, Bidaud and Prost 1982:82

o wi'ii ñe nodda mo
o said they call mo
'He_i said that they call him_{i/k}'

- d. Adamawa, East 1934/67:122

o neli dou Lamfo Mandara, o umri d'um tokkago mo
he sent to chief Mandara, he ordered d'um follow him
'He sent to the chief of the Mandara_i, and ordered him_i to follow him'

When the choice of pronoun depends on a property of its antecedent we say that it agrees with its antecedent with respect to that property. Thus, we can follow a suggestion made by Joan Bresnan and say that Fula pronouns must agree with their antecedents with respect to pronominality (see also Koopman and Sportiche 1989 on Abe). While agreement in pronominality is unusual, it is also very robust across the dialects (Culy 1990). Clearly, no notion of command is relevant for agreement.

4. Non-coargument condition

The second aspect of the binding properties of the *d'um* forms is more familiar. A *d'um* form does not have as its antecedent a coargument. In other words, the antecedent of a *d'um* form will not be an argument of the same predicate that the *d'um* form itself is an argument of. Some examples illustrating this property are in (4). In (4a), the father is the one doing the telling, and the *d'um* form cannot refer to the father, but must refer to Gooto. Similarly, in (4b), Bello will do the bringing, and the *d'um* form has to refer to Towd'o, not Bello.

(4) Non-coargument condition

a. Gombe, Arnott 1970:158

baaba 'on -noddi Gooto, -wi'i *d'um*...
 father the called Gooto, said *d'um*
 the father_i called Gooto_k and told him_k/*himself_i...

b. Liptako, Bidaud and Prost 1982:83

Towd'o wi'ii Bello, waddana *d'um* dewtere makko
 Towd'o told Bello, bring, *d'um* book makko
 'Towd'o_i told Bello_k to bring him_i/*_k his_k book'

Clearly, the notion of coargument does not depend on any type of command. Thus, the non-coargument condition on *d'um* forms does not make use of any type of command.

5. Same sentence condition

The third aspect of the binding properties of the *d'um* forms, and the one that is the most crucial for the claim that command is not relevant in characterizing the binding properties, is that the *d'um* forms must be coindexed with a non-pronominal NP in the same sentence. Arnott's description of the *d'um* forms is given in (5).

(5) Arnott 1970:153 on *d'um* forms

The *d'um*-forms, on the other hand, are used in referring to (a) a full nominal, (b) a specifier, (c) a verbo-nominal, or (d) the relative element *mo*, when the antecedent and the pronominal form occur *in the same sentence* ... [emphasis in original—CC]

Another way of putting this is that *d'um* forms cannot be free in a sentence. So for example, *muud'um* in (2a) can only refer to Bello, and cannot refer to some person who is merely salient in the discourse.

To see that command is not relevant for this aspect of the binding properties, consider the examples in (6). In each of these examples, the antecedent does not in any sense command the pronouns. In (6a), the antecedent "chief" is the subject of a temporal clause and the pronouns are in the matrix clause; in (6b) the antecedent "chief" is in the protasis of a conditional and the pronouns are in the

apodosis; and in (6c) the antecedent "people" is the possessor of a direct object in one conjunct, and the pronouns are in other conjuncts.

(6) Antecedent does not c-command pronoun

a. Antecedent in temporal clause, Arnott 1970:156

nde laamiid'o -fini, sey ndu-wari les muud'um
when chief awoke then it came close to muud'um

ngam ndu-holla-d'um ko ndu-haββanaa

so that it might show him what it had.had.tied.to.it

'when the chief awoke, it came close to him, so that it might show him what it had had tied to it'

b. Antecedent in protasis, Biduau and Prost 1982:205

si ni jowro wattitay, himbe diwan d'um nder wuro

if ASP chief change-NEG, people chase-Fut d'um from village

'if the chief doesn't change, the people will chase him from the village'

c. Antecedent in conjunct, Arnott 1970:313

Bed'on -pecca deed'i yimbe βe-ta'ya tetekki muud'um βe-nyootitoo-d'um

they-open.up stomachs people they-operate intestines muud'um they-sew.

up d'um

'they open up people's stomachs, operate on their intestines, and sew them up again'

Let's look at (6a) in a little more detail. The d'um forms must be bound in the sentence, and "chief" is the only possible antecedent for them, so they are bound by "chief." However, "chief" does not, in any sense, command the pronouns, so command is not relevant to this third aspect of the binding properties of the d'um forms.

6. The problem

These properties of the Fula d'um forms, while intuitively natural and simple, are in fact extremely difficult to capture in most existing theories of anaphora, e.g. Government and Binding, Head Driven Phrase Structure Grammar, and Lexical Functional Grammar. The difficulty arises because these theories incorporate some form of command into the notion of binding. A sample quote from *Lectures on Government and Binding* is given in (7).

(7) C-command and binding in GB, Chomsky 1981:184

α is X-bound by β if and only if α and β are coindexed, β c-commands α , and β is in an X position [emphasis added—CC]

Thus in GB, the property of c-command is built into the very definition of binding. A pronoun simply cannot be bound, on this view, if its antecedent does not c-command it. Yet we have just seen that the Fula d'um forms can have non-c-commanding antecedents. In some cases, the only possible antecedent is a non-c-

commanding one. The challenge, then, is to modify theories of binding to account for the Fula facts, where command is not relevant.

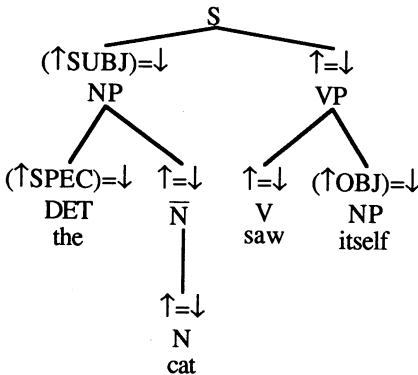
7. A solution

I will now show how LFG can be adapted to handle the lack of command in Fula by modifying slightly the approach in Dalrymple 1990. The analysis presented here will also provide a neat way of parameterizing the differences in command facts across languages.

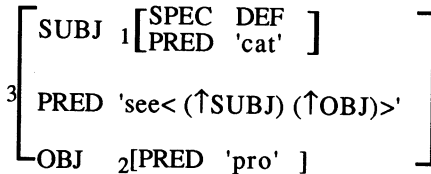
LFG makes use of three levels of structure: c(onstituent)-structure, f(unctional)-structure, and s(ematic)-structure. In (8) are sample c- and f-structures for the English sentence "the cat saw itself". How these structures are constructed is not relevant for our purposes. Nor will s-structure play much of a role, and I have omitted it.

(8) Sample c-structure and f-structure

a. c-structure



b. f-structure



In Dalrymple's LFG approach, each pronoun has associated with it binding constraints, expressed in the form of equations relating the relevant pieces of the three types of structure. The schematic form of a constraint is given in (9a).

(9) Schematic binding equation (Dalrymple 1990)

- a. $[(\text{DomainPath } \uparrow) \text{AntecedentPath}]_{\sigma} = \uparrow_{\sigma}$
- b. \uparrow = the f-structure of the pronoun
- c. $(\text{DomainPath } \uparrow)$ = f-structure containing the antecedent and the pronoun
- d. AntecedentPath = the path in (c) to the antecedent
- e. X_{σ} = the projection in semantic structure of X

I will explain what the different parts of the constraint mean, by using the English example as a reference, as shown in (10). As indicated in (9), the \uparrow refers to the f-structure of the pronoun, labelled "2" in our example. The expression $(\text{DomainPath } \uparrow)$ refers to the f-structure containing the f-structures of the pronoun and of its antecedent. This is similar to the notion of "governing category" in GB, and in our example it is the whole f-structure, labelled "3". The DomainPath stands for the sequence of attributes in the large f-structure leading to the f-structure of the pronoun. In our example the DomainPath is simply OBJ. Similarly, the AntecedentPath stands for the sequence of attributes in the large f-structure leading to the f-structure of the antecedent. In our example the AntecedentPath is just SUBJ. Finally, the σ indicates that the identity is not between the f-structures themselves, but between their corresponding parts in s-structure. If we put everything together in the example, we end up with the constraint that the semantic projections of the subject and the object must be the same, i.e. they must be coindexed.

(10) Example (9) illustrated ("The cat saw itself")

- a. $\uparrow = 2$
- b. $(\text{DomainPath } \uparrow) = 3$
- c. $\text{DomainPath} = \text{OBJ}$
- d. $\text{AntecedentPath} = \text{SUBJ}$
- e. Substitution: $(3 \text{ SUBJ})_{\sigma} = 2_{\sigma}$

Instead of using c-command, LFG makes use of its analog in f-structure, called f-command, defined in (11).

(11) Definition of f-command

An element α f-commands an element β iff every f-structure properly containing α also contains β , and α does not contain β .

The way f-command is encoded in the binding equation is by constraining the length of the AntecedentPath to be 1, as shown in (12). In other words, speaking in terms of f-structures, the antecedent must be an immediate element of

the f-structure containing it and the pronoun. Thus, the f-structure of the antecedent will necessarily f-command the f-structure of the pronoun.¹

(12) F-command constraint

$$| \text{AntecedentPath} | = 1$$

Given that the f-command constraint is so nicely isolated, it is easy to relax it to account for the Fula *d'um* facts. So for the *d'um* forms, we will say that there is no restriction on the length of the AntecedentPath.

An application of this mechanism to part of the Fula example in (6a) ('when the chief awoke, it came close to him, ...') is given in (13). The \uparrow is the f-structure of the pronoun, labelled "2" again. The (DomainPath \uparrow) is the f-structure containing the f-structures of the pronoun and of its antecedent. Again it is the whole f-structure and labelled "3". This time the DomainPath is OBL OBJ, while the AntecedentPath is TEMP SUBJ. Note that the AntecedentPath is of length 2 in this case. Putting it all together, we have that the temporal clause's subject is coindexed with the oblique object of the matrix clause.

13. Fula example (6a) ('when the chief awoke, it came close to him, ...')

a. Rough f-structure

$$3 \left[\begin{array}{l} \text{TEMP} \left[\begin{array}{l} \text{SUBJ} \quad 1[\text{PRED 'chief' }] \\ \text{PRED} \quad \text{awaken} < \uparrow \text{SUBJ} > \end{array} \right] \\ \text{SUBJ} \quad [\text{PRED 'pro' }] \\ \text{PRED} \quad [\text{PRED come} < \uparrow \text{SUBJ} >] \\ \text{OBL} \quad [\text{OBJ} \quad 2[\text{PRED 'pro' }]] \end{array} \right]$$

b. $\uparrow = 2$

c. (DomainPath \uparrow) = 3

d. DomainPath = OBL OBJ

e. AntecedentPath = TEMP SUBJ

f. Substitution: $(3 \text{ TEMP SUBJ})_{\sigma} = 2_{\sigma}$

It may turn out that there should be other constraints on the AntecedentPath to account for the full range of facts in Fula. For example, it might be that the AntecedentPath must end in a SUBJ or POSS if the length is longer than one. In other words, it might be the case that only subjects and possessors are allowed as non-f-commanding antecedents. Certainly all of the examples I have given are consistent with this generalization.

Another possible constraint would be to restrict the AntecedentPath to being of length less than or equal to two. In other words, if the antecedent does not f-command the pronoun, then perhaps the f-structure containing the antecedent must itself f-command the pronoun. Again, all the examples I have given seem consistent with this generalization.

Whatever the ultimate generalizations end up being, we have a neat way of isolating the parameter of variation: in the AntecedentPath.

8. Conclusion

In this paper I have examined the binding properties of the d'um Object and Complement pronouns in three varieties of Fula. In particular, I have shown that no notion of command is relevant for the characterization of the binding properties, a fact which is a challenge to current theories of anaphora.

I have also shown how LFG can be modified to account in a precise way for the Fula facts, as well as for accounting for the cross-linguistic variation in the role of command in binding constraints. Other theories of anaphora do not have mechanisms in place to handle this variation. Unless new mechanisms are introduced, theories such as Government and Binding and Head Driven Phrase Structure Grammar will have to parameterize either the notion of binding, or the notion of c-command.²

I should note that parameterizing the notion of c-command is essentially the approach I have taken in LFG, and that to a certain extent, c-command has already been parameterized in some GB work (Chomsky 1986). Thus, it seems that parameterizing the notion of c-command is the right approach, independent of the particular framework.

Notes

* I would like to thank Lee Baker, Joan Bresnan, Randy Hendrick, Ivan Sag, Peter Sells, and Tom Wasow for their help with this paper. None of them necessarily agrees with the views expressed.

¹Strictly speaking, we also need to constrain the DomainPath to being non-null, but this is required independently to prevent the pronoun from containing the antecedent.

²Or o-command in the case of Head Driven Phrase Structure Grammar.

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