

Minimal Verbal and Adjectival Inflection in Dibole***Myles Leitch**

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1. Introduction

In Government and Binding Theory (henceforth GB, Chomsky 1981, 1986, etc.), and a good deal of later work in minimalist syntax, there has been considerable interest in functional categories like Tense (T), Agreement (AGR), Number (NUM), Determiner (D), etc. and their relationship to lexical categories V, N, and A, within the overall architecture of the clause.¹ A particular line of this general research has explored parallels between the functional projections in the verbal and nominal domains (the DP hypothesis of Abney (1987) and subsequent work, almost taken as a ‘given’ in recent work in the Minimalist program). Assuming the basic conceptual framework of the Minimalist program of Chomsky (1995, 1999), in this paper I explore the relationships between a number of what might, at first glance, be considered disparate syntactic phenomena. I argue that in Dibole, a Bantu language of zone C, ‘ordinary’ relative clauses and attributive adjectives have parallel syntactic structure, reflecting the parallel semantic interpretation of ‘modification’.² What is of interest here is that various morphosyntactic features and feature combinations (WH, EPP, T, AGR, etc.) are expressed by different tonal contours on a single verb/adjective agreement prefix. I argue that this segmental prefix corresponds to a single head of a generic functional projection FP (exploiting one option of Feature Scattering as in e.g. Chomsky 1995, Giorgi and Pianesi 1997). For the relative clause analysis, I adopt the standard ‘adjoined to X’ and ‘empty operator’ analysis of relative clauses (for example Haegeman (1994)), where the relative head is ‘adjoined’ to CP and coindexed to an empty WH operator in the structure (whether in subject, object or adjunct position).³ The innovation here is that the head noun is adjoined not to CP but rather to FP; there is no evidence for a C projection in the paradigms under consideration in this paper. There are of course garden-variety complementizers in the language and these *will* project CP. In addition, other kinds of relative clauses (where an explicit

* I acknowledge the invaluable contribution of my Babole research partners from 1988-2001; BIEMBEDI Celestin of Mongouma Bailly, MAKOSO Charlie of Brazzaville, ESSATOLE Seraphin of Dzeke, and MOSSANGAMI Lucien of Brazzaville. None of this research would have been possible without them and the warm welcome of the Babole communities in Dzeke and Brazzaville. Hamida Demirdache (see Demirdache 1991) was closely involved with the development of the original analysis (my University of British Columbia syntax generals paper). I also want to thank the members of the University of Toronto Syntax Project which I was privileged to be part of in 2001-2002 and the audience at the Canadian Linguistics Association meetings (2002) for discussion and comments on the analysis. Special thanks to Prof. Liz Cowper who gave generous time to help develop the analysis in a Minimalist direction. Her influence on this work has been extensive. I also thank Profs Edmond Biloa and Pius Tamanji and the Generative Syntax discussion group at the University of Yaounde for helpful discussion. Finally I thank the participants at the April 2006 SOAS Bantu conference in London for insightful comments and questions. The usual disclaimers apply and all remaining errors and omissions are solely mine.

¹ See especially Ritter (1991, 1992), for Number Phrase.

² The language is Dibole and the people group is called Babole, conventionally. In some previous literature the language is referred to as Babole also.

³ I realize that there is an alternative to the traditional <adjoined to CP + empty operator> view of relatives. For example, Kayne (1994), the view maintained by Cheng and Kula (2006) in their analysis of Bemba relatives. I have no evidence that the current analysis favors a particular view of relatives, so I have adopted the traditional view for concreteness sake.

complementizer is present) will require the positing of CP. However, these kinds of structures are not in focus here and lack an explicit complementizer morpheme. I will therefore maintain that there is no projection of CP.

This amounts to a minimal instantiation of feature scattering: several feature constellations, a single functional head segmental morpheme with differing tonal properties.

This paper draws on a robust tradition of research both in general syntax of Bantu languages and on Bantu relative clauses in particular. This includes the following studies: Meeussen (1971); Bokamba (1975); Bresnan and Mchombo (1987); Kinyalolo (1991); Carstens (1991, 1993, 2000); Demuth and Harford (1999); Harford and Demuth (1999), Cheng and Kula (2006), and others⁴. The author's own syntactic research on Dibole includes the following studies: Leitch (1993, 2000, 2001, and 2005).

In the section 2 of the paper I lay out the relevant data to be explained by the analysis, documenting in particular the tonal complexity of the prefixes.⁵ In section 3, I develop the analysis of ordinary Recent Past (henceforth REC) non-relative clauses.⁶ In section 4, I present an analysis of REC subject and object relatives. And finally in section 5, I summarize and reflect briefly on the analysis presented.

2. Overview of Data to be Analyzed

Dibole is a Bantu language of zone C spoken by approximately 4000 people in the southern half of the District of Epena, Likouala Region of Congo (Brazzaville). The data I present comes from the dialect spoken in the villages of Dzeke and Impongui. The interest of this research issues largely from the differing tonal properties of the agreement prefixes in the following paradigm of examples.⁷ In (1), the prefix on the predicative adjective in a verbless clause is low toned (parallel to nominal prefixes), somehow the unmarked or neutral case.

(1) Predicative Adjective (Low toned prefix, just like nominals)

dihó dilámù
 di-hó di-lámù
 5-affair AGR5-good
 'The affair is good.'

⁴ In particular, I am aware of the important work by Brent Henderson (2006) on Bantu Relatives, but I have not yet read this work.

⁵ The abbreviations and glossing conventions in this paper are as follows: AGR=Agreement, AGR5=Agreement with Noun Class 5, C5=Noun Class 5, DS=Tonal Downstep, EPP=Extended Projection Principle feature, FP=Functional Projection, INFL=Inflection, NUM= Number, REC=Recent Past, SPEC= Specifier, T=Tense, NP WH=abstract syntactic feature for questions, relatives, etc.

⁶ What I am calling Recent Past is sometimes referred to as Perfective in the Bantu linguistics literature. The -í suffixed forms in Bantu language of zone C are likely cognate to the ile / ire 'perfective' forms of Eastern Bantu. This insight is from Larry Hyman (personal communication).

⁷ The orthographic conventions for notating tonal distinctions in Dibole are as follows. Nominal prefixes and predicative adjective prefixes are without diacritics because they are invariably low-toned (and low is considered the unmarked default in a two-tone system). All vowels with a 'grave' accent (ex. 'è') are low-toned in the context of appearance. All vowels with an 'aigu' accent (e.g. 'é') are high-toned in the context of appearance. The superscripted exclamation mark conventionally indicates a downstepped High tone. In the context of this paper the downstep is only audible between adjacent High tones.

In (2), the same adjective appears with a High tone followed by a downstep (DS) when the adjective is used attributively.

(2) Attributive Adjective (High-DS Melody on Prefix)

dihó dí¹lámù dí¹sídí
 di-hó dí-lámù dí-síd-í
 5-affair AGR5-good AGR5-finish-REC
 ‘The good affair is finished.’

In (3), a simple non-relative REC form has a simple H-tone on the verbal agreement prefix.

(3) Simple REC Verb (High Tone on Prefix)

dingùngù dí¹dzéí byèkà
 di-ngùngù dí-dzé-í byèkà
 5-mosquito AGR5-eat-REC 8food
 ‘The mosquito ate the food.’

In (4) and (5), REC subject and object relatives respectively, the verbal agreement prefix has an H-tone followed by a downstep. There are other interesting aspects of these relatives (like the ‘inversion’ of the Subject and Verb in (5)), but we will examine these forms in detail later in this paper. For the moment, I wish to draw the reader’s attention primarily to the tonal properties of the agreement prefixes, L-toned, H-toned, or H-toned followed by a DS.

(4) Subject Relative (High-Downstepped Melody on Prefix)

dingùngù dí¹dzé¹í byèkà ...
 di-ngùngù dí¹-dzé¹-í byèkà ...
 5-mosquito AGR5:REL-eat-REC 8food ...
 ‘The mosquito who ate the food ...’

(5) Object Relative (High-Downstepped Melody on Prefix)

byèkà bí¹dzé¹-í dingùngù ...
 byèkà bí¹-dzé¹-í di-ngùngù ...
 8food AGR8:REL-eat-REC 5-mosquito ...
 ‘The food that the mosquito ate ...’

I will claim in this paper that these different tonal contours in fact ‘spell-out’ different functional feature complexes on a single functional head, corresponding to a single segmental prefix. The syntactic and semantic parallelism of relative clauses and attributive adjectives follows directly with no stipulation, since they have parallel syntactic feature complexes. I start in the following section with a characterization and analysis of simple REC clauses, and follow up by presenting an analysis of the variation just sketched.

3. Recent Past Non-Relative Verbs

Ordinary REC non-relative verbs have an H-tone on the verbal agreement prefix as in (6). The example shows a Recent Past which I consider to be a tensed form. There is

no distinct REC prefix. The H-toned REC suffix *í*, and the H-tone on the AGR prefix mark this verbal paradigm.

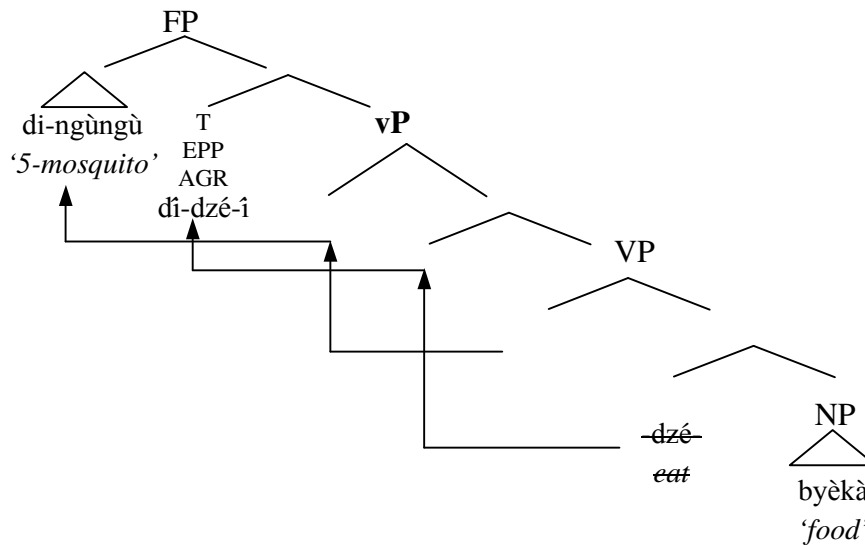
- (6) Simple Tensed Verb (High Tone on Prefix) = (3)
 dingùngù dídzéí byèkà
 di-ngùngù dí-dzé-í byèkà
 5-mosquito AGR5-eat-REC 8food
 ‘The mosquito ate the food.’

The analysis of (6) is given in (7). Instead of INFL (IP) or some combination of ‘split-INFL’ functional heads (Pollock 1989) like T or AGR, I posit simply the generic structure FP (Functional Phrase). The structure in this case hosts AGR (abbreviating phi-features), T(ense), and the EPP feature needed to motivate raising of the internal subject to SPEC FP.⁸ This feature complex spells-out as a H-tone on the single agreement prefix. The verb raises to the head of FP where its uninterpretable features can be checked via the SPEC-Head relationship.⁹

⁸ The Extended Projection Principle is in GB essentially a stipulation requiring that each clause have a subject. This is construed as a syntactic feature EPP in minimalist syntax.

⁹ There is no hard evidence to justify a raising-to-FP analysis for the verbal head in the Recent Past. The uninterpretable features of the inflected verbal form could be checked in VP or vP via the AGREE relation, since C-command is the only relevant requirement. With the reader’s indulgence, I will maintain the ‘raising to FP’ story for this form, with the caveat that the verbal inflectional features could be checked in-situ without raising beyond vP.

(7) Tensed Verb Form (T-EPP-AGR) spells out as simple High on Agreement Prefix)



Although I only deal with the Recent Past paradigm in this paper, the approach is assumed to extend, perhaps with some adjustments, to other verbal forms.

4. Recent Past Relativized Verbs (Subject and Object)

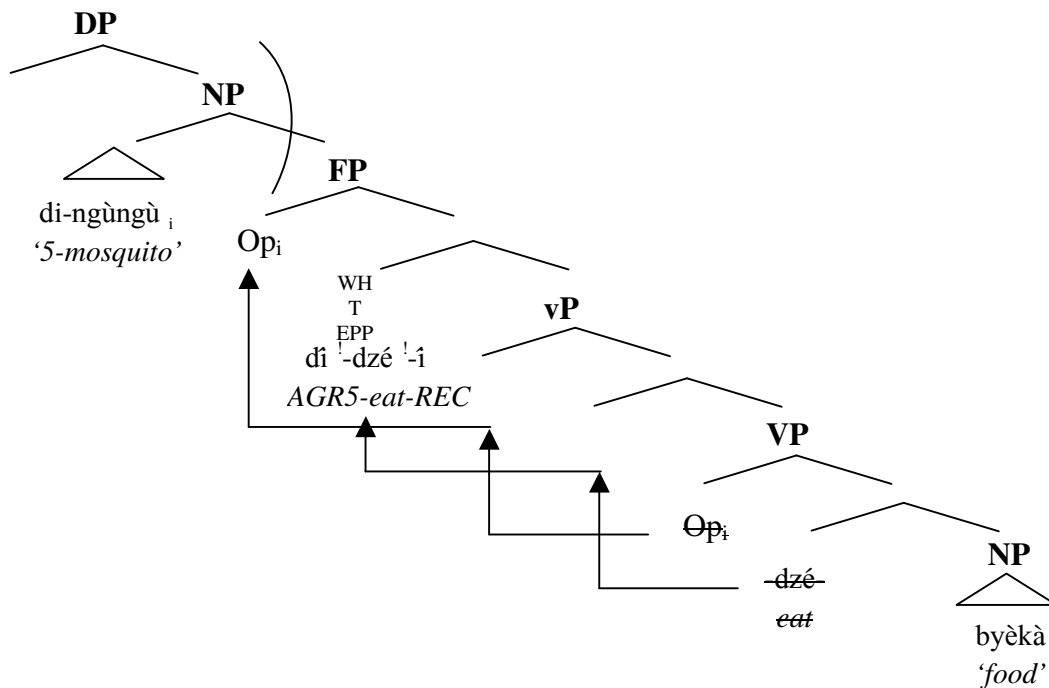
In this section we look at relativized REC verbs. In addition to the EPP, AGR and T features seen in FP in non-relatives, we now have a WH feature as well. Example (8) shows a Recent Past subject relative.

(8) Subject Relative (High-Downstepped Melody on Prefix)

dingùngù dí¹dzé¹ byèkà dzé háò
 [di-ngùngù dí¹-dzé¹-í byèkà] dzé háò
 5-mosquito AGR5:REL-eat-REC 8food AGR5: COP here
 'The mosquito who ate the food] is here.'

The relativized verb in (8) has two tonal downsteps. The first follows the H-toned prefix and the second follows the lexical High tone on the verb root. So we have non-relative *dídzéí*, a plateau of three level high tones, contrasting dramatically with *dí¹dzé¹í*, the relativized form. The second downstep is particular to the relativized REC forms (see Leitch (2005) for details of the various TAM verbal paradigms in Dibole).

(9) Tensed Subject Relative



The crucial aspect of (9) involves the raising to SPEC FP of the Empty Operator which is coindexed with the relative head NP. This can be accomplished through the PROBE-GOAL mechanism of Chomsky (1999). The WH-T complex in F_0 probes for the Op_i 'goal' and attracts it to SPEC FP. The phi-features of WH can be checked as 'free riders'.

The technical analysis of the object relative of (10), shown in (11), is exactly the same as the subject relative except the relative head is coindexed with the Op_i whose base position is in the object position in VP.¹⁰ The relativized verb is agreeing with the phi-features of the Operator (which is coindexed with the relative head *byèkà*, 'food'). The logical subject is now in the post-verbal position, showing that the verb has indeed moved around the internal subject.

(10) Object Relative (High-Downstepped Melody on Prefix)

byèkà bí'dzé'í dingùngù byé háò

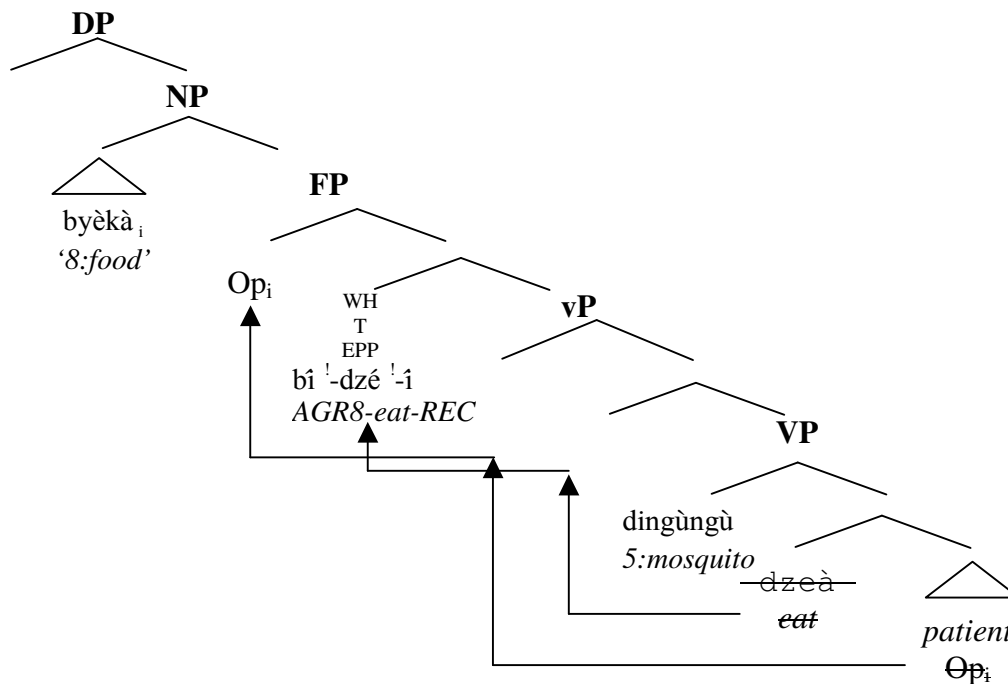
[byèkà bí'dzé'í dingùngu] byé háò

8food AGR8:REL-eat-CMPL 5-mosquito AGR8:COP here

'[The food that the mosquito ate] is here'

¹⁰ Co-indexing here means 'sharing' all relevant phi-features, in particular Gender and Number.

(11) Object Relative Analysis



The only difference between (8) and (10) is that the relative head NPs are respectively subject and object of the matrix clause (and of course the ‘inversion’). Otherwise the syntactic structure of the relatives is exactly the same, with the verb ‘agreeing’ with the preverbal relative head. The critical point of these examples is that in both cases the WH-T-AGR feature complex spells out as High-DS tonal contour on the agreement prefix. We now turn to the analysis of adjectives. We will see how they behave like verbs in some ways and like nominals in other ways.

5. The Syntax of Adjectives

Dibole, like many Bantu languages, has a three-way categorial distinction between N(oun), V(erb) and A(djective). Nominal stems generally allow a single ‘gender’ pair of noun-class prefixes, for example *mosébà*, ‘chin’ / *misébà*, ‘chins’. I adopt the standard view that noun stems have abstract gender features only and that number features involve a functional projection for ‘number’ in the syntax of DP (DP-NumP-NP).¹¹ Adjective roots, on the other hand, can appear with any NC prefixes depending on the syntactic environment; the adjective prefix ‘agrees’ with the noun being modified. The number of roots showing this syntactic behavior is rather small, as in (11), approximately. (See also the discussion of numerals below).

¹¹ As in Ritter (1991) and Carstens (1991).

(12) Small “closed” class of adjective roots.

-bé	<i>bad</i>
-lámù	<i>good</i>
-sóní	<i>small</i>
-ngàtà	<i>big</i>

5.1 Predicative Adjectives

Adjectival roots, in their predicative usage, look very much like nominals in that the prefixes are identical segmentally and tonally to noun-class prefixes. The roots appear in predicative structures either with or without a copula, as in (13).

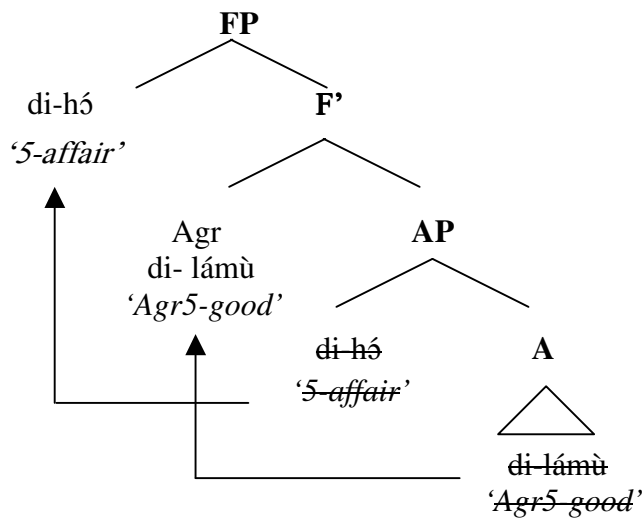
(13) Nominal-like Predicative Adjective

with copula	=	without copula	
dihò dzé dilámù	=	dihó dilámù	‘the affair is good’
mahò mé malámù	=	mahó malámù	‘the affairs are good’
byèkà byé bilámù	=	byèkà bilámù	‘the food is good’

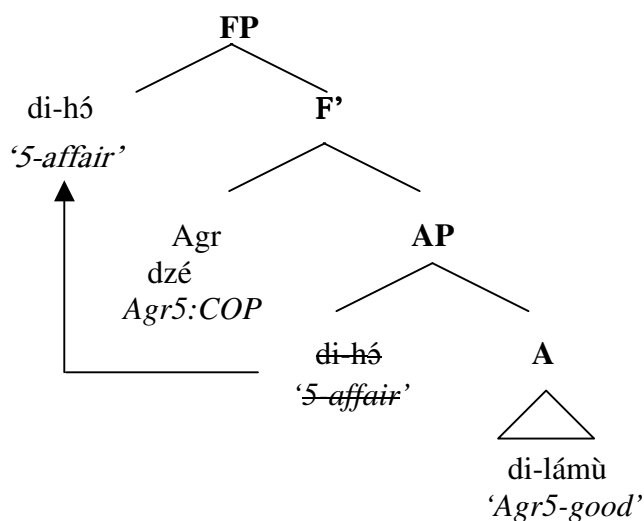
Our analysis of these two kinds of structures is given in (14).

(14) Analysis of Predicative Adjective (a): AGR alone spells-out as low toned prefix

(a) Without Copula



(b) With Copula



There is a functional projection FP dominating the AP. The subject nominal 'raises' from the internal SPEC AP position to SPEC FP to check its nominative case (or satisfy the EPP feature). There is crucially no T(ense) projection or feature, as in Rappoport (1987), correctly predicting that no event interpretation is available, but only a stative interpretation. In the structure without a copula (14a), the adjective head raises to the head of FP position to check its phi-features against the nominal in SPEC FP. Crucially, AGR alone spells out as a low-toned prefix in (14a). In the structure in (14b), the copula is 'inserted' and its features are checked under the SPEC-Head relationship. The phi-features of the adjectival head *di-lámù* farther down in the structure are checked via the AGREE relation with the F₀ head under C-command.¹² The copula in (14b) above, is probably best analyzed as 'inserted' to host the AGR (and other?) features in F₀ just in case the head-position is unfilled. I will not comment further on the motivation or mechanism for copula insertion.

5.2 Attributive Adjectives

Contrast the above case with the attributive use of adjectival roots. In (15) when an adjective is used attributively, the prefix is high-toned and followed by a downstep. The crucial contrast here is with the predicative adjectives in (13) where the prefixes are simply low-toned.

(15) Attributive Adjective

[dingúngú dí¹lámù]_{DP} díkèí

[dingúngú dí¹lámù díkèí

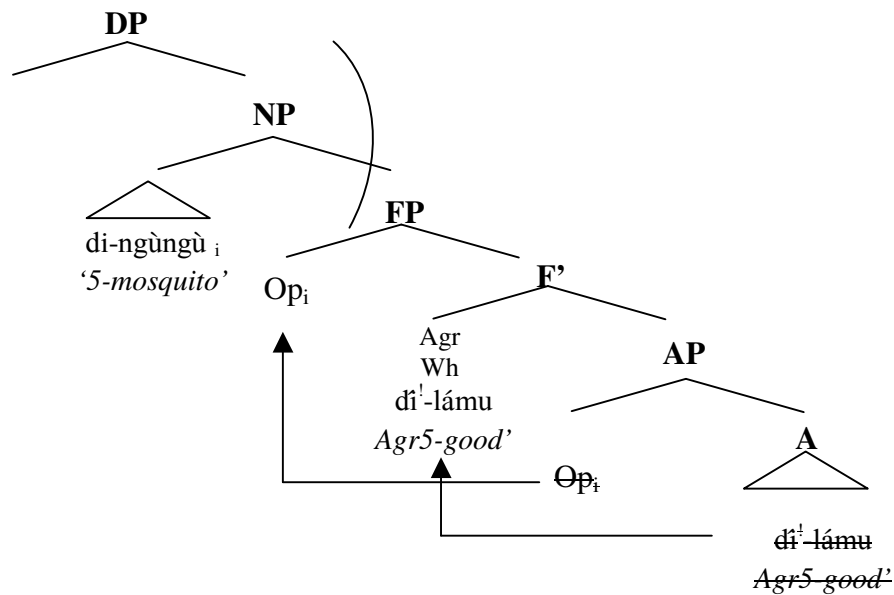
5-mosquito 5-good AGR5-left-REC

'The good mosquito left' = 'The mosquito [which is good] left.'

¹² The AGREE relationship seems to legitimize an analysis where the 'verbless' structure is actually just like (14b) rather than (14a). In other words if the phi-features of the Adjectival head can be checked in-situ via AGREE in (14b), then why not in (14a) as well? After all, English main verbs check their tense features in-situ via AGREE without raising to T⁰. I will leave this possibility open without further comment for the moment. A constraint preferring to have phrasal head positions filled would argue for the movement analysis in structure (14a).

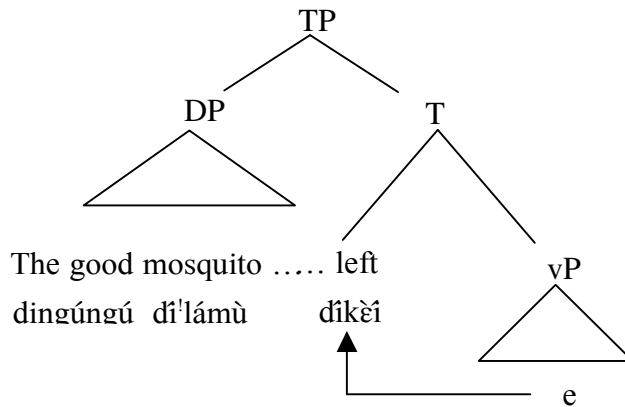
As shown in (16) below, the analysis of the subject DP in (15) is that attributive adjectives have covert relative clause structure (following the analysis already discussed). The relative head NP is adjoined to the now familiar FP (not CP) and it is the F_0 head which crucially hosts WH and AGR features. In a classical analysis, CP would have been stipulatively required to host the WH feature, but in this minimalist analysis, with no empirical evidence for a C projection, a single functional head FP hosts the WH and AGR features, one possibility of feature ‘scattering’. The WH feature in F ‘probes’ for the ‘empty operator’ goal in the SPEC AP ‘internal subject’ position and attracts it to SPEC FP where its features can be checked. The combination of AGR and WH features spells out as High-Downstep tonal melody (just as it did for the verbal relatives in (8) to(11)).

(16) Attributive Adjective Analysis



Of course this whole analysis is suggested in the first place by the identical tonal properties (H-DS) of the AGR prefix in relativized verbs and adjectival phrases. Note that the whole DP structure in (16) is a syntactic fragment that will end up merged as SPEC TP of the tensed matrix clause of which it is the syntactic subject, as in (17).

(17) Matrix Structure



It turns out that plural cardinal numbers have the same analysis as attributive adjectives, perhaps not surprisingly, given the shared semantics of modification. It is to this we now turn our attention.

5.3 Cardinal Numbers

It is of some interest that cardinal plurals in this language behave exactly like attributive adjectives but singular cardinals do not. That is, plurals have the familiar H-DS tonal properties, while the word for ‘one’ has simply a low tone, as in (18).

(18) Cardinal Numbers

ma-ngúngú má ¹ -éngé ...	‘two mosquitoes’ = ‘mosquitoes that are two’
di-ngúngú di-hókò ...	‘one mosquito’ = ‘a mosquito’

How do we account for this anomaly? The analysis for cardinal plurals would be exactly as in (16). The identical combination of features in F_0 ensures that the spell-out for cardinal plurals is identical to the attributive adjective case. An analysis of the anomalous behaviour of the singulars is more difficult to develop, and I can only make a tentative suggestion here. Their exceptional behaviour may result from an incompatibility between the WH feature and singularity (possibly because restrictive relatives tend to have a default [+definite] interpretation while singulars typically have a [-definite] interpretation). If this is right, the covert relative structure cannot work for the singular cardinals. Rather for singulars the WH feature in F is lacking, hence the High tone and tonal DS are lacking. AGR alone spells out as a low tone on the agreement prefix. While this proposal is speculative, it is something that can be developed further in future research.

6. Summary and Conclusion

We have seen a sketch of how complex Bantu verbal morphology can be accounted for in a minimalist syntactic analysis. This approach echoes the concern of Marantz (2002) where he affirms that ‘there is no morphology without syntax’ even though we are not ‘assembling’ words from morphemes as in early GB work (affixation by head-raising). In contrast, the ‘minimalist’ analysis starts with fully inflected forms and then ‘checks’ the morphosyntactic features associated with inflectional morphemes in various configurations within syntactic structures. This paper has attempted to show

how this can actually be worked out in a fragment of the grammar of a Bantu language. The particular challenge of this study (and others dealing with Bantu syntax) is that we often have to account for the syntactic use of tone and not just segmental morphemes. While some of the proposals here are speculative, this study has shown one concrete way that such an analysis of syntactic tone might proceed. Table (19) summarizes the correspondences between different feature complexes, prefix tonal properties and the morphosyntactic categories and functions involved.

(19) Summary Table of Feature Constellations on Agreement prefixes

Morphosyntactic Features	Tonal Properties	Syntactic Category + Function
[AGR] alone	Low Tone	N and Predicative Adj
[T] + [AGR]	High Tone	V
WH+T+AGR	High-DS	Relativized V
WH+AGR	High-DS	Attributive Adj

What this table should make clear is that the analysis (and I believe the syntax) exploits feature commonality, in particular the presence of WH (shaded cells) expressions, via tone, the semantics of modification shared by Relatives and Attributive adjectives.

The other emphasis of this study has been the idea that structure be truly minimal. I have claimed that this fragment of the syntax of Dibole, although clearly involving WH type operations, does not require the projection of CP, but rather that a single functional projection FP hosts the various feature complexes via tone. Clearly this claim is tied in general to the expression of morphosyntactic features via suprasegmental phonological features. If we had distinct segmental morphemes for T, AGR and C, we would need distinct functional projections when the features appeared together. This interesting correlation between prosody and syntax perhaps needs to be looked into more carefully. This is really just one outworking of the notion of ‘feature scattering’. Certainly, other aspects of Dibole syntax will require CP for complementation structures and even other relative clause types: there are indeed various explicit complementizers in Dibole. However, I maintain that the phenomena examined in this fragment of the syntax are reasonably and plausibly captured in this way, in particular the striking tonal and semantic parallels between Relatives and Attributive Adjectives. The analysis provides a simple and elegant syntactic account of an otherwise puzzling correlation between tonal properties, minimalist syntactic structure, and the semantics of modification.

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