

NULL HEADS AND DP-INTERNAL CONCORD IN BARI

Bureng G.V. Nyombe
University of Nairobi

This paper provides evidence from Bari, an Eastern Nilotic language found in the southern Sudan, that not all that are known as ‘Determiners’ are generated in the D-head of DP as has been advocated by Abney (1987) and others. In agreement with Guisti (1992); Guisti and Giuliana (1994) and Szabolcsi (1987), the paper argues that ‘determiners’ do not constitute one homogeneous categorial and structural group. It shows that co-occurrence of determiners in DP is due to the fact that these elements are generated in different positions and therefore target different positions within DP. It claims that that is the case because DP, at least in Bari, contains X_{max} intermediate projections between D and the complement of NP which hosts the determiners. These intermediate X_{max} projections are obligatorily selected each time the modified head N selects a modifier. The paper further claims that the heads of these projections, including the D-head of DP, are null and that the so-called determiners and other modifiers such as adjectives are base-generated in Spec-positions in DP and other embedded complement projections within DP. These null heads are targets of N movement of the modified head noun which rises head-to-head, triggering widespread Spec-Head agreement within DP and other complement projections embedded in DP. Since the determiners are generated in Spec-projections, this Spec-head relation, the paper argues, accounts for why a modifying determiner or adjective agrees in number and gender with the head noun it modifies.

1. Language Background

Bari belongs to the Eastern Nilotic branch of the Nilotic family of languages. It is largely found in the southern Sudan. Other similar dialects are found in north-western Uganda and north eastern Democratic Republic of Congo. Unlike the other members of this family, Bari lacks subject-verb agreement (see Spagnolo (1963) and Nyombe (1987, 1989, 1996). Agreement is only evident within the Noun Phrase. A noun in Bari must agree in number and gender with its modifiers: determiners, adjectives, numerals, as well as

quantifiers. The morphemes shown in (1) are generally used to indicate gender and agreement in (2)¹:

1.

Singular

- (a) na feminine
- (b) lo masculine

Plural

- (a) kune feminine
- (b) kulo masculine

These morphemes may precede or follow the noun they modify as shown in (2b) and (2c).

- 2. (a) mere
 'mountain'
- (b) mere lo
 mountain DET/MSC/SG
 'The mountain'
- (c) mereya kulo
 mountain DET/MSC/PL
 'The mountains'
- (d). lo mere
 DEM/MSC/SG
 'This mountain'

In citation form, however, the unmodified core noun remains unmarked for both number and gender agreement, and it may be interpreted as definite or indefinite. In that regard (2a) above could be construed as 'a mountain' or 'the mountain'. In Bari, a definite noun ends in a demonstrative (2b and c)).

¹ When used demonstratively these morphemes take three forms: *na*, *lo*, *lu* (this near the speaker), *ɲina*, *ɲilo*, *ɲilu* (that towards the listener) and *kune*, *kinu*, *kunu* (that further from both the speaker and hearer).

When the morphemes in (1) precede the noun they modify, they function as demonstratives (2c)². These and analogous singular morphemes are used to modify genitives, as in (3), and possessives, as in (4):

3. (a) kiko lo matat
road GEN/MSC/SG chief
'The road of the chief/ the chief's road'
- (b) kikolan ti matat
roads GEN/MSC/PL chief
'The roads of the chief/the chief's roads'
- (c) kiterj na mama
cow GEN/FM/SG mother
'The cow of my mother/my mother's cow'
- (d) kisuk ti mama
cows GEN mother
'The cows of my mother/my mother's cows'
4. (a) buk nio
book FM/SG/POS
'My book'
- (b) bukön kwe
books POS/PL
'My books'

The thing to note in the examples in (3) is that gender distinctions merge in the genitive plural as shown in examples (3b) and (3d), in the sense that these are not specified. Furthermore, in genitive phrases, agreement in number and gender is with the thing possessed rather than with the

² Historically, the definite pronoun is derived from the demonstrative pronoun in Bari (see Spagnolo 1963).

possessor. Possessives behave exactly like demonstratives in that they also agree in number and gender with the noun they modify.³

The same number and gender agreement is marked on modifying adjectives, as shown in (5):

5. (a) *njutu lu-rwö*
 person MS/SG black
 ‘A black man’
njutu na-rwö
 person FM/SG black
 ‘A black woman’

2. The Problem

In addition to the facts we have considered so far, it is worth noting that in Bari a noun may also be modified by one, two, or three demonstratives simultaneously. Consider example (6) below:.

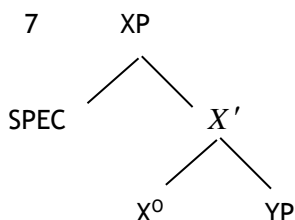
6. (a) *na buk*
 DEM book
 ‘This book’
 (b) *buk na*
 book DET
 ‘The book’
 (c) *na buk na*

³ The possessives in Bari are: *-io*, *-at*, *-nyit*, *-kaŋ*, *-su*, *-se*. These are dependent morphemes and always found adjoined to their gender markers:

Singular		Plural		Gloss
Feminine	Masculine	Feminine	Masculine	
Nio	Lio	Kwe	Kwe	My, mine
Inot	Ilot	Kunök	Kulök	Your, yours
Nanyit	Lonyit	Kanyit	Kanyit	Her, hers
Nikaŋ	Likaŋ	Kaŋ	Kaŋ	Our, ours
Nasu	Losu	Kasu	Kasu	Your, yours
Nase	Lose	Kase	Kase	Their, their

- DEM book DET
 'This specific book'
- (d) buk na na na
 book DEM DEM DET
 'This book' (emphatic)
- (e) na na na book
 DEM DEM DEM book
 'This book'

The occurrences of a number of modifiers to the left or the right of the modified core noun present a number of structural and theoretical problems. Of particular interest structurally are the examples in (6), because they raise empirical questions concerning X-bar theoretical assumptions (see Chomsky (1986) about specifier-head relations). Crucially, basic relations involve the head and its complement on the hand, and its Specifier on the other as shown in Chomsky (1995)) and repeated as (7). In (7), there are two basic 'local' relations: the head-complement relation between X and YP and the Spec-head relation of XP to X' . The head-complement relation is the more fundamental of the two because it is associated with thematic (θ)-relations. X-bar relations are restricted to the patterns seen in (7).



Standard X-bar theoretical assumptions require that every head have one and only one Specifier as shown in (7). The examples in (6) seem to contradict this core assumption, though. Thus an important question concerns the relation of specifiers to their heads in Bari NPs, henceforth DPs. According to X-bar theoretical assumptions, a specifier may occur to the left or the right of the head, but definitely not on both sides of it. In (6c-d),

however, both options appear possible. These examples suggest that the phrase structure for Bari would have to be as in (8)

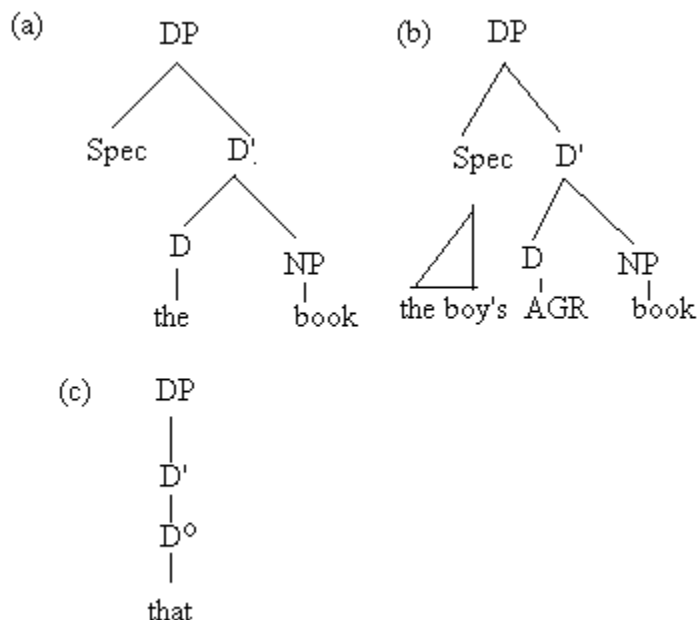
8. Spec X' Spec

(8) simply states that a Bari head may have two Specifiers. But that would not only be an *ad hoc* rule. This is both a theoretical and empirical issue that needs to be addressed.

The other question this paper seeks to answer involves the position of determiners within DP and DP-internal concord. It specifically seeks to determine why agreement occurs within DP only and why it is possible for determiners to co-occur in languages such as Bari while it is disallowed in languages like English.

3. DP Structure

A lot of work has been done on the structure of the DP. Drawing on the symmetry between clauses and NPs, and building on work by Pollock (1989), Postal (1966), Brame (1982), Chomsky (1982), Abney (1987) and Fukuli (1986) assumed that the structure of the DP is as in (9):



Since Agreement is nominal in character, Abney (1987) surmised that the determiner may be base-generated under the NP, now reinterpreted as ‘Determiner Phrase’ (DP), whose head is the determiner D. In (9a), D is realized as the determiner *the*, and D selects an NP as complement, the bare N *book*. In (9b), however, the D-head of DP is not realized by the determiner, but by an abstract nominal element termed AGR (for agreement) which assigns genitive Case to *the boy’s book* in the Spec-DP position. While that in (9c) does not require an NP complement, other determiners such as ‘the’, ‘a’, and ‘an’, do. So, following Postal (1966), Abney (1987) argued that pronouns could also occupy D in (9c); i.e., they do not require complements. Abney’s overall proposal is that noun projections be interpreted as NPs selected by a functional head projection (D,AGR). He proposes further that determiners not co-occur in languages like English because they target the same position within the D in DP.

In what follows, I shall adopt Abney’s framework but make radical modification along the way. I shall make the following assumptions. One, that D in Bari is null. Two, that this is also true for languages that allow multiple determiner modification such as Swahili. Three, that the inclusion

of the set of elements known collectively as determiners as belonging to one category DET(erminer) obscures the crucial structural and categorial distinctions of these elements. Finally, I will suggest that these elements do not belong to the same category and that they occupy different structural positions within DP. I will further show that the noun in Bari is not double-headed as apparently suggested by the examples in (6c-d) above, but single-headed and thus conforms to X-bar theoretical requirements. I will show and argue that what appears to be a case of double-headedness is, contrary to Brody (1993), Pesetsky (1989) and Puskas (1992), not a result of left-peripheral adjunction to the spec-position of one of the elements, but an outcome of N-movement to D, followed by replication of the AGR features of N in spec-positions of the maximal functional projections embedded in DP. It is the presence of the two spec-positions (one to the right and one to the left of the head) that gives the impression that the head is double-headed, when in actual fact, it has only moved to the null head between the two spec-positions.

Having said that, a crucial structural problem raised by the Bari facts concerns the position of determiners within the DP and how agreement is instantiated in the language. I will show that number and gender agreement in Bari and other languages like it, is structurally determined. I will begin my discussion by considering the structure of the NP, now functionally re-interpreted as a determiner Phrase (DP).

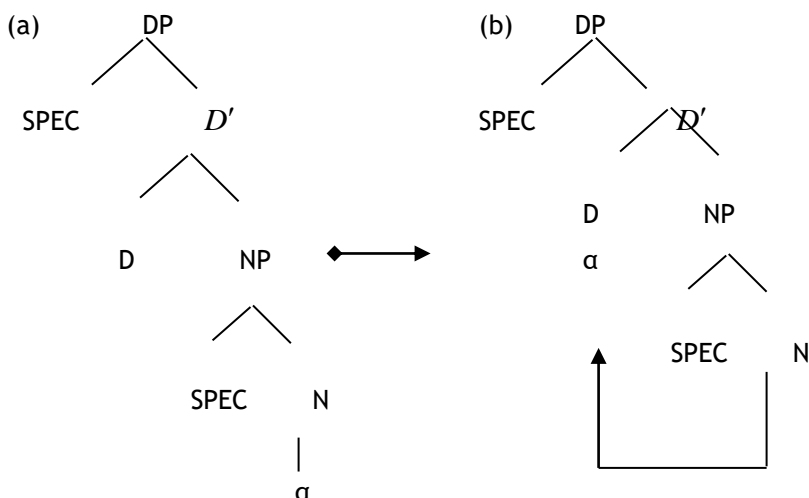
4. The Determiner Phrase

Facts from other languages of the world (cf. Guisti (1992)) and of course Bari are strong evidence that demonstratives and other D-elements such as definite articles, numerals and quantifiers target different positions within the DP. The possibility of having D-elements such as demonstratives on both sides of the modified noun is generally seen as a manifestation that demonstratives do not trigger minimality effects on N-movement. They are the type of X_{max} (maximal projections) that occur in the Specifier position of the functional projection that projects as a component of a DP system. As

will become clear, the fact that the Bari DP allows up to three demonstratives to co-occur in one representation suggests that between the head of DP, D, and its complement NP, the DP may potentially take up to three intermediate Agreement Phrase Projections.

In support of this view, note the variation in the position of the demonstrative in relation to the modified noun in (6). It has been argued that this variation of demonstratives resembles the behaviour of adjectives which can also appear in pre- or post-nominal positions in various languages. Like adjectives, then, they are modifiers inside DP but not in the head of D. In other words, they are not heads. Possessives (POS) may also precede or follow the head. That being the case, I assume that possessive (POS) and genitive (GEN) determiners are also adjectives of sorts and are therefore not heads. If they are not heads, then I assume, as does Guisti (1992), that they are base-generated in Spec-position of either Spec-DP, Spec AGRP or in both positions simultaneously in the case of multiple modification of the head noun. I further assume that the head of DP in Bari is null since Bari does not have a definite article. If the head of DP is null and the head of AGRP contained in DP is empty, we derive the conclusion that Bari phrasal projections in DP are null heads. The picture that emerges is the DP projection in (10).

10.



The idea is that determiners like demonstratives, possessives and quantifiers are generated in Spec-DP and Spec-AGRP. Definiteness, or, more precisely, specificity in Bari is signaled by post modifying the noun with a demonstrative. A noun post-modified by a demonstrative determiner is interpreted as definite or specific in the sense that it refers to a specific entity previously mentioned in discourse. It is equivalent to the English definite article *the*. This can best be illustrated by relative clause constructions (11). (11a), which lacks a final demonstrative determiner, is construed to be non-specific or indefinite in the intended sense, whereas (11b), which ends in a demonstrative determiner is considered to be specific or definite.

11. (a) [ligotot lo rembu kömiru] a
 twan
 hunter Rel killed lion Pst
 die
 ‘The hunter who killed a lion died’
- (b) [ligotot lo rembu kömiru lo]
 a twan
 hunter Rel killed lion DEM
 Pst die
 ‘The hunter who killed the lion died’

I assume, in that regard, that the AGR features of number and gender in Bari associated with determiners, are a spell-out of the AGR features of the modified head noun generated in Spec-DP, as in (10).⁴

⁴ The Bari verb does not conjugate for person and number unlike in languages like English. Agreement (gender and number only) is expressed in modified nouns but not in citation form.

- (a). Nan a po
 I Pst come
 ‘I came’
- (b). Lopenj a po
 ‘I Pst come

In Abney's (1987) framework, the set of agreement features (AGR) (person, number and gender), termed phi-features, are base-generated in D, the head of DP. These features may or may not be lexically instantiated. D may be abstract or phonetically realized. The head of DP, D may or may not select a complement. Thus a complement may have either an overt or a non-overt head. The case of Bari suggests that these AGR features are not confined only to D but are also generated in SPEC. In (10), DP is the functional projection of D and D the head of DP. D must select an AGRP if it selects an NP complement which must come between D and the modified noun which is a complement of AGR. The AGR features of the head noun are morphologically realized in Spec-DP and Spec-AGRP; in other words, there is Specifier-head agreement. If no modifier is selected, however, no AGRP need be chosen, and there is no overt AGR manifestation on the modified noun.

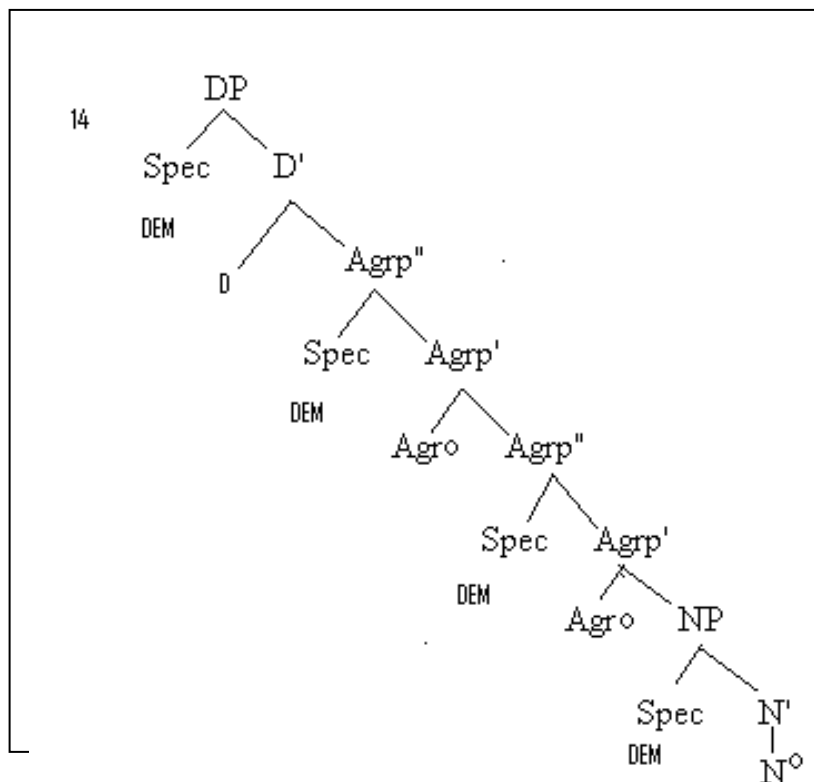
Let us return to (10) above (where α stands for a core noun) and consider it in conjunction with the facts in (13). Let α in (10) stand for the noun *kurtöt* 'worm'.

13. (a) **kurütöt**
a/this worm
- (b) **lo kurütöt**
DEM worm
'this worm'
- (c) **kurütöt lo**
worm DEM
'the worm'
- (d) **lo kurütöt lo**
DEM worm DEM
'This specific worm'
- (e) **lo lo kurütöt**

'He came'
(c). Lopenjat a po
They Pst come
'They came'

- DEM DEM worm
 ‘this as opposed to that worm’
- (f) **kurutöt lo lo**
 worm DEM DEM
 ‘The specific worm’
- (g) **lo kurutöt lo lo**
 DEM worm DEM DEM
 ‘The (specific) worm’

If α is unmodified, as in (13a), its AGR features in SPEC remain unexpressed. In other words, the SPEC node in DP is not projected, as required by the Economy Principle (Chomsky (1995)). If, however, α is modified there appear to be two possible options for the instantiation of AGR features in SPEC-position. One, all the AGR features in SPEC-positions are instantiated simultaneously; two, they are instantiated iteratively, i.e., cyclically. The first scenario, where α remains *in-situ* but is still able to check AGR features upwards, is shown in (13e). The rest of the forms in (13) are generated via cyclic head-to-head movement of the modified head noun from its base position to the next null embedded head higher up (13d) and so on. Each time the core noun moves up into the next null head, it is in a SPEC-head relation. It is in this structural configuration, that the AGR features are spelled-out and checked. But (10) can only generate forms (13a-13d), not (13f and 13g). Thus (10) needs to be modified as in (14) below:



Derivation remains the same. I assume that the head noun has risen from N to the head of AGRP, triggering Spec-Head agreement. The forms are derived by raising the modified noun head-to-head upwards to D. In so doing, the head noun has merely moved to the next higher up null head, i.e., Agr^o, to Agr^o, to D. In doing so, it moves to the left, over SPEC-NP and SPEC-AGRP, to D. N in D now either triggers Spec-head AGR with Spec-DP to its left and Spec-AGRP to its right, or with both positions simultaneously. (13e) on the other hand is derived via N movement to the head of AGRP followed by a spelled-out of AGR features of N.

There are outstanding theoretical issues that need to be considered here, specifically having to do with why the SPEC-DP position is morphologically realized in (13g), while it is not in (3f). A number of assumptions may be made to account for these facts. One such assumption is that once spelled-out the morphological AGR features of the head noun in

SPEC-DP remain phonetically realized and are not deleted, or the instantiation of the morphological features of N in SPEC-DP is optional. If the instantiation of the features of N in SPEC-DP can be both optional and obligatory, they are argumentum ad absurdum optional. If correct, then the representations in (13) are simply a matter of N rising to D in order to be to the left of the determiners in Spec-AGRP. This would account for why the Spec-DP position remains abstract in (13f).

5. DP-Internal Agreement

5.1. Possessives

In this section, I give further evidence in support of the structure proposed for the Bari DP in (14) and show why it is possible to have virtually all the determiners considered so far simultaneously serve as modifiers in a DP. But first of all, let us consider the modification by possessives, as in (15):

15. (a) kitenj nio
cow mine
'My cow'
- (b) nio kitenj
my cow
- (c) kisuk kaŋ
cows our
'Our cows'
- (d) kaŋ kisuk
our cows

Note that (b) is variant of (a) and (d) that of (c). As we have done for demonstratives, we may also assume that possessives are generated in SPEC-position, in this case in SPEC-NP, just as in (10). If that is the case, then (15b) and (15d) are derived via N moving to D where its AGR features are checked. Unlike for demonstratives however, N, cannot check its AGR

features up the projection to SPEC-DP. It can only do so to POS, and not beyond. Thus such forms as those in (16a) are ill-formed.

16. (a) *Na nio kiteŋ
 DEM POS cow
 ‘This cow of mine’
- (b) nio kiteŋ
 POS cow
 ‘My cow’
- (c) Na kiteŋ nio
 DEM cow POS
 ‘This cow of mine’
- (d) Kiteŋ nio
 Cow mine
 ‘My cow’

In (16b) and (16c), however, the core noun has moved to the left across SPEC-NP to the next c-commanding null D where it may trigger SPEC-head agreement with SPEC-DP (as is the case in (16c)), or may not as in (16d). This movement suggests a cyclic iteration of N rather than a simultaneous instantiation of AGR features in SPEC-positions, while N remains *in situ* lower down the projection.

5.2. Agreement of demonstratives and Possessives

The possessive and demonstrative determiners co-occur in Bari, giving such forms as are shown in (17):

17. (a) **nio na na buk**
 POS DEM DEM book
 ‘my book’
- (b) **nio na buk na**
 POS DEM book DEM

- ‘my this book’
- (c) **nio** **buk** **na** **na**
 POS book DEM DEM
- ‘my book this the’
- (d) **buk** **nio** **na** **na**
 book POS DEM DEM
- ‘book mine this the’
- (e) **na** **buk** **nio** **na** **na**
 DEM BOOK POS DEM DEM
- ‘this book mine this the’

In (17a), the noun *buk* is pre-modified by a possessive and two demonstratives. In (17b), it is pre-modified by a possessive and a demonstrative and post-modified by a demonstrative which, I argued, functions like a definite article. In (17c), *buk* is pre-modified a possessive and post-modified by two demonstratives, while in (17d) it is post-modified simultaneously by a possessive and two demonstratives. Finally, in (17e) *buk* is pre-modified by a demonstrative and post-modified by a possessive, and two demonstratives.

Though structurally complicated, actually the forms above are derived straightforwardly by head-to-head movement of the modified noun from within NP to the head of the most embedded AGRP to the head of the topmost AGRP. All that needs to be assumed is that POS is generated in the highest Spec-AGRP position. In this way, while in situ, the core noun can check its AGR features all the way up the tree to SPEC-AGRP but not beyond. For some reason, the Spec-DP position remains unaffected until N has moved to D. To be to the left of the most embedded DEM in (17b), the modified noun rises to the next head in AGRP. The next movement of N to the next null head results in (17c) and (17d). (17e) is a consequence of spell-out of the AGR features of the modified noun in Spec-DP, now involved in AGR relations after the head noun has moved to D.

Some discussion about spell-out, or feature copying, of the AGR features of the head to Spec is in order here. Note, for example, that as expected,

the movement of the modified noun to the head of Spec-AGRP triggers Spec-Head agreement in (17a). But since movement is only to the head of Spec-AGRP, the expectation would be that agreement would only be between the modified core noun N in Agr^o and its immediate Spec-position. Curiously, however, the constructions in (17a) appear to have been derived by a global spell-out of AGR features in Spec-AGRP positions. In that connection, the head noun in Agr^o seems to cause widespread Spec-Head agreement with similar positions with AGRP in DP. That this is so is supported by the fact that the Spec-DP position remains unaffected by this pervasive Spec-Head agreement until the modified head has moved to D. If that was the case, the output in (17a) after a spell-out of the morphological features of Spec-positions would be the unacceptable (18).

18. *(a) **na** **nio** **na** **na** **buk**
 DEM POS DEM DEM book
 ‘this, mine, this, book’

This confirms our suspicion that the Spec-DP position becomes involved in AGR relations only after the modified head noun has moved to D. Once in D, a spell-out of the AGR features in Spec-DP is possible, as in (17e).

There therefore appear to be two stages of AGR features spread within the DP in Bari. The first stage involves Spec-head within AGRP, while the second involves the whole of DP. It is only when N has moved to D that the Spec-DP position becomes involved in AGR relations. This would be natural if, as we have maintained, the Bari DP contains other projections within it. Our analysis has so far revealed the following facts regarding how agreement works within Bari DP: firstly, it accounts for why agreement is only with the thing possessed and not with the possessor in genitive and possessive phrases. Secondly, it explains why the heads D and Agr^o agree with the modified noun and all elements in Spec-AGRP and Spec-DP. Finally our account sheds light on the apparent aberrant behaviour of the head with regard to the headedness-parameter.

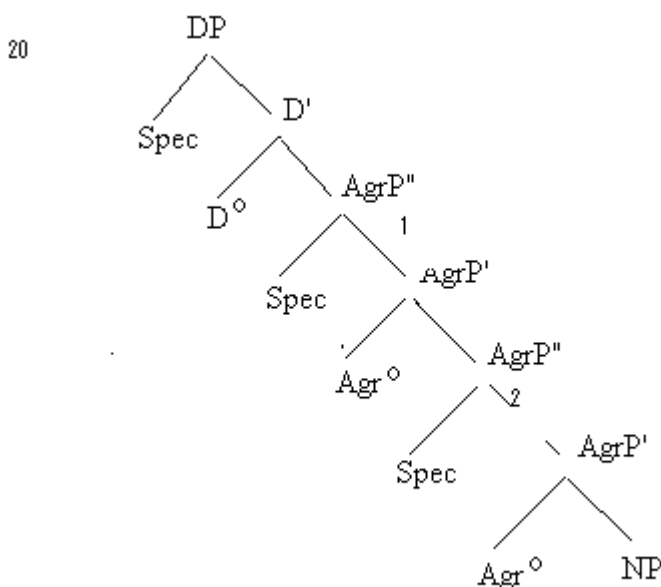
In summary, this paper has shown that the assumption that demonstrative, possessive and genitive determiners are generated in various places within DP, specifically in Spec-DP and Spec-AGRP. This has offered a more comprehensive explanation of what have hitherto appeared to be unrelated and recalcitrant facts. The AGR features of the modified head noun in D^0 or Agr^0 may remain purely abstract or be lexically realized. Once D has selected an NP complement, it must also select an AGRP which is in turn headed by its own head. There may be up to three intermediate AGRP Projections between D and the complement NP. The morphological features of the modified noun may be lexically realized at Spec-AGRP, Spec-DP or in both places simultaneously.

6. Noun - Adjective Agreement

Our analysis gets further independent support from adjectival phrases. We assume that the same structure can be used to compute of adjectival representations. Adjectives in Bari also agree in number and gender with the noun they modify. Number is signaled by tone: High-High tones for singular adjectives, as shown in (19b), and High-Low tones for plural ones, as shown (19c).

19. *(a) **ɲútú tór**
 person red
 ‘a red person’
- (b) **ɲútú ná-tór**
 person Fm-red
 a red person’
- (c) **ɲútù ná-tòr**
 Peple Fm-red
 ‘Red people’

I assume that the generation of adjectival phrases can be accounted for by the general framework we have adopted so far. I pointed out in section 1 that an NP modified by an adjective shares the same agreement features with the modifying adjective. Since these features are generated in Spec-AGRP—because adjectives have same structural characteristics as demonstratives—adjectival phrases should be amenable to the same treatment as demonstratives and possessives. Due to positional restrictions in the occurrence of adjectives and demonstrative and possessive/genitive determiners, I assume that the adjective is base-generated in the lower Spec-AGRP position of an AGRP lower than the POS or GEN. As I pointed out previously, POS and GEN are base-generated in the Spec-AGRP, that is in AGRP, i.e. the direct complement of D°, as in (20).



The structure in (20) assumes that the modified NP is base-generated within NP and the modifying adjective in the Specifier-position of AGRP(2).

Now let us consider the forms in (21).

21. (a) **ńúró ná-ké**
 young person Fm-beautiful

‘a beautiful girl’

(b) **ηwájik ná-ki**
 young persons Fm-beautiful
 ‘beautiful girls’

(c) **ηúró ló-ké**
 young person Ms-beautiful
 ‘a handsome boy’

(d) **ηwájik lókè**
 young persons Ms-beautiful
 ‘handsome boys’

Since there is one modifier, the adjective, the Economy and Mirror principles require there be only one AGRP projection. In this case, the adjective is generated in the Spec-AGRP, that is the direct complement of D. If that is correct, then the representations in (21) are derived via head movement of the modified head noun to Agr^o to be in Spec-Head relation, followed by a spell-out of the AGR features of the head in Spec-AGRP. But, since in Bari, the adjective must post-modify, not pre-modify, the head noun, this must therefore rise further up to D across Spec-AGRP to be to the left of the adjective. Thus in (21) the head noun has risen to D with its AGR features spelled-out in AGRP and optionally in Spec-DP.

22. (a) **(na) ηúró ná-ké**
 DEM young person Fm-beautiful
 ‘this beautiful girl’

(b) **(kune) ηwájik ná-kè**
 DEM young persons
 ‘these beautiful girls’

(c) (lo) ɲúró lóké
 DEM young person Ms.beautiful
 ‘this handsome boy’

(d) (kulo) ɲwájik lókè
 DEM young persons Ms-beautiful
 ‘these handsome boys’

Note in particular the change in gender in (22a) and (22c), and the signaling of number by tone in (22b) and (22d). As stated, the adjective *ké* (‘beautiful’) is base-generated in Spec-AGRP and receives AGR features of the head when it is in Spec-Head configuration. Observe that the AGR features in Spec-DP change with the head noun in D: feminine in (22a & b) and masculine in (22c & d).

23. (a) **dwöt lio lú-rwö (lo) (lo)**
 bull POS Ms-black DEM DEM
 ‘this black bull of mine’

(b) **dwönin kwe lú-rwö (kulo) (kulu)**
 bulls POS MS-black DET DEM
 ‘those black bulls of mine’

(c) (lo) **dwöt lio lú-rwök(lo) (lu)**
 DEM bull POS Ms-black DEM DEM
 this black bull of mine’

(d) (kulo) **dwönin kwe lú-rwök(kulo) (kulu)**
 DEM bulls POS MS-black DEM DEM
 this black bull of mine’

Based on the Mirror Principle (Baker 1985), there are three intermediate AGRP projections between D and the NP complement in whose Spec-positions

the POS, the Adj. and the DEM are base-generated. In (23a), the modified noun has risen up to D crossing over the base-generated adjective in Spec-AGRP and the POS determiner in the higher Spec-AGRP. As is standard, the parentheses show that these elements may be optionally spelled-out. That POS is higher up in the tree than the adjective is supported by the fact the modified noun can be interposed between the possessive and and the adjective, as in (24).

24. (a) **lio dwöt lu-rwö (lo) (lo)**
 POS bull MS-black (DEM) (DEM)

7. Numerals and Quantifiers

7.1. Numerals

Before we conclude the discussion of determiners, it is in order to quickly review the position of numerals and quantifiers within DP and how they relate to agreement. Consider (25) below.

25. (a) **kajak musala**
 calves three
 ‘three calves’
- (b) **kajak na-sok musala**
 calves Fm-thin three
 ‘three thin calves’
- (c) **kajak musala na-sok**
 calves three Fm-thin
 ‘three thin calves’
- (d) **kajak kunök na-sok (na)-musala**
 calves your Fm-thin Fm-three
 ‘your three thin calves’
- (e) **kajak kunök na-musala na-sok kune**
 calves your Fm-three Fm-thin DEM/Pl
 ‘Your three thin calves’

7.2. Quantifiers

Analysis of quantifiers is not yet problem free. Abney (1987), in agreement with Szabolcsi (1987), argues that quantifiers are like adjectives and as such they are not heads of functional projections. Shlonsky (1991), following Sportiche (1988), maintains that (universal) quantifiers are the head of the quantified nominal. Guisti (1992) argues that the question whether or not quantifiers are modifiers or heads is not necessary paradoxical. Each position has some part of the truth. The quantifier may function both as a head and as a modifier. Guisti (1992) suggests that a quantifier preceded by a determiner functions as a modifier of the noun, in parallel with adjectives.

Although they may not be preceded by determiners, quantifiers in Bari function like adjectives. Consider (27):

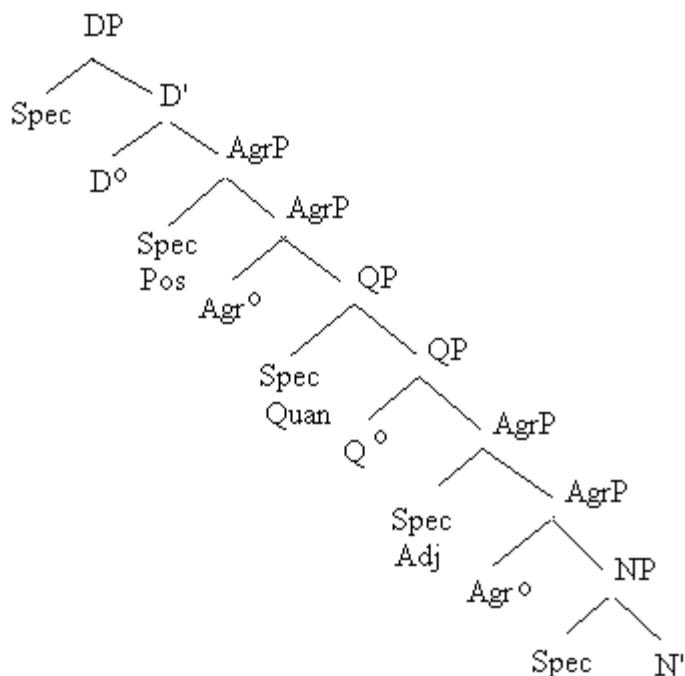
27. (a) **kisuk ti matat liŋ jore**
 cows POS chief all many
 ‘all/many of the chief’s cows’
- (b) **ŋutu ti matat liŋ/jore**
 people POS matat all/many
 ‘All the Bari people are many’
- (c) **ŋwajjik kulye ku’dik ti sukul**
 pupils some few GEN/Pl school
 ‘some/few school pupils’
- (d) **kulye/*ku’dik ŋwajjik ti sukul**
 some/few pupils GEN/Pl school
 ‘some/few school pupils’

With the sole exception of the existential quantifier *kulye* (masculine), *kunye* (feminine) ‘few’ which may precede the quantified noun (27d), all universal and existential quantifiers follow the quantified noun in Bari. Except for the universal quantifier *liŋ* quantifiers in Bari may agree in number and gender with the quantified noun (28).

28. (a) **somot na jore a 'burön**
fish Fm many pst rotten
'many fish got rotten'
- (b) **ɲutu lo-ku'dik mörö parik**
people Ms-few fight hard
'people who are few fight very hard'
- (c) **ɲutu kunye a poni**
people some pst came here
'some people came here'

Because quantifiers agree in number and gender with the quantified noun, I assume that they are base-generated in Spec-QP in the DP structure, as in (29). Being in this position, they may also get involved in Spec-Head AGR, as will be shown below. The phrasal projection in (29) predicts that POS, when present, must come before the quantifier. But quantifiers like *kulye* in (27c & d) may precede or follow the adjective.

29.



If correct, the universal quantifier *liŋ*, the indefinite quantifiers *kulye* and *jore* are base-generated in the Spec-QP. From within NP, the modified noun rises head-to-head to D°, crossing over POS in Spec-AGR to be to the left of these modifiers. This is true of all cases in (27) except (27d) where the quantifier *kulye* precedes the quantified noun. Since only this particular quantifier behaves in this manner, I assume that this is an idiosyncratic property that can best be relegated to the lexicon. The difference between (27c) and (27d) is then based on the fact that in (27c), the QP is embedded in DP whereas in (27d), the QP heads the DP.

An example like (30b) also suggests that the whole QP node may be moved over Spec-QP to adjoin to Spec-DP to be to the left of the quantifier *liŋ/jore*. Note that the two constructions are synonymous. There is therefore no difference in the scope of quantification of the quantifier in the structures in (30a) and (30b).

30. (a) **kakitak liŋ ti matat**
workers all GEN chief
‘all the workers of the chief’

- (b) **kakitak ti matat lij/jore**
 workers GEN chief all/many
 ‘all/many workers of the chief’

A final point to make is that quantifiers like *lij* can co-occur with determiners. Quantifiers therefore function as modifiers. As such, the minimal conclusion that can be derived is that they are adjectives. As adjectives, they cannot be heads of DP. This reinforces our earlier position that all projections in DP, including D, are not heads in Bari. Thus the DP projection and the intermediate AGRP projections within it are instantiated by elements in Spec, not D or Agr. The heads in DP are therefore null.

8. Conclusion

This paper has considered the structure and distribution of the following modifiers within DP: demonstratives, possessives, genitives, adjectives, numerals, and quantifiers. I have argued that since there is no definite article in contemporary Bari Grammar, the head of DP is empty. I have also argued that all maximal projections contained in DP, with the exception of the complement NP, have null heads.

Further, I have shown that possessives, genitives, demonstratives, adjectives, numerals and quantifiers are base-generated in Spec-positions in SPEC-DP, SPEC-AGRP or Spec-NP. I have also shown that the pervasive agreement within the DP in Bari is the result of N movement to the null heads of the maximal projections in DP triggering Spec-head agreement.

Finally, the paper has accounted for the co-occurrence of the so called determiners within DP. Co-occurrence is possible because each of the determiners occupies a different structural position within DP. If all the determiners were generated in D, co-occurrence would be impossible.

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