

DETERMINATION IN BAMBARA¹

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The great majority of published material on the grammar of the Bambara-Maninka-Dyula language complex has ignored the important structural as well as lexical role of tone.² Among other short-comings due to this oversight, one finds statements to the effect that there is no morpheme which corresponds to the definite article as found in French and English. It soon becomes apparent however in the attempt to explicitly describe the tonal system of Bambara that there is such a morpheme belonging to a syntactic class of determiners. As in other Mande languages, these determiners occur at the end of the noun phrase. The Bambara determiners differ from those found in related languages in that they are frequently marked only by tone.

To effectively illustrate the operation of these morphemes, the first part of this paper will be a very brief enumeration of some of the more simple types of syntactic structures and an analysis of the various forms of the determiners. This will be followed by a set of explicit tonal rules.³ These rules are applied to the output of the syntactic component of the grammar in order to convert the abstract tonemes accompanying the lexical items into a more delicate specification of the sentence pitch pattern.

The theoretical framework for this study is drawn from transformational grammar. A detailed discussion of this theory is certainly beyond the scope of this paper. However, it is felt that a few introductory comments will lead to a clearer picture of the analysis as a whole.

A transformational grammar can be envisioned as a series of rules which produce all and only all the grammatical sentences of the language. The first component within this set of rules is called the phrase structure. The function of this component is to produce strings of symbols upon which the grammatical and phonological transformations can operate. The rules producing these strings of symbols reflect the hierarchical syntactic structure which is characteristic of the language. The transformational rules add, delete, or permute units within the string to (1) to give the string a more grammatical form, such as, for example, the assigning of allomorphs in specific environments, or (2) to create derived sentences, such as the transformation of an active to a passive sentence or the embedding of one sentence within another in the form of nominalizations, relative clauses, etc. The

¹This work was done in part while on a NDEA fellowship and in part while on a Foreign Area Fellowship. The author is needless to say very grateful to these organizations who are in no way responsible for any errors which may occur in this study.

²See, for example,

Delafosse, M., *LA LANGUE MANDINGUE ET SES DIALECTES (MALINGÉ, BAMBARA, DIOLA)* VOL. 1, INTRODUCTION, GRAMMAIRE, LEXIQUE FRANÇAIS-MANDINGUE, Librairie Orientaliste Geuthner, Paris, 1929.

Delafosse, Capitaine, *GRAMMAIRE ET MÉTHODE BAMBARA*, Charles-Lavuzelle & Cie, Paris, 1958.

Molin, R. P., *GRAMMAIRE BAMBARA*, Les Presses Missionnaires, Issy-Les Moulineaux, 1956.

The only published study of the grammar of this language complex which includes a study of the role of tone is E. C. Rowlands, *A GRAMMAR OF CAMBIAN MANDINGA*, School of Oriental and African Studies, London, 1959.

³Many of the tonal rules which follow are restatements of the analysis found in 'Tonemes and Tone Writing in Maninka', *STUDIES IN LINGUISTICS*, 7.1, 1949 by William E. Welmers, to whom this author is additionally grateful for help in the collection and analysis of the data. It is the above article that first brought out the fact that the scope of contrastive tone in this language complex is not the syllable as in many tone languages, but the word.

phonological transformations operate on the abstract phonological notation used to represent the lexical items, transforming this maximally generalized notation into a more delicate phonetic notation. This latter set of rules is used, for example, to specify the allophonic variants of the phonemes within defined contexts. The final output of these rules is a sentence which is both grammatically and phonologically acceptable to a native speaker of the language.

The rules with which this study is primarily concerned belong to the phonological component. Their function is to convert the abstract tonal phonemes of high and low into a more specific representation of the sentence pitch pattern. Not only does this appear to be the only way of presenting an explicit analysis of sentence pitch patterns in tone languages in general, but it is felt to be an accurate reflection of structural reality, since every sentence pitch pattern in a tone language is a direct result of the tones on the lexical items and of the rules which govern their combination.

For the sake of brevity, a very simple set of phrase structure rules is given below to illustrate a few basic structural patterns. No grammatical transformations will be presented in this study.

PS 1. $\# S \# \rightarrow \text{Noun Phrase} + \text{Predication}$

Phrase structure rule 1 states that a sentence is to be rewritten ($\rightarrow$) as a Noun phrase followed by a predication. The symbol ($\#$) designates sentence boundary.

PS 2. $\text{Noun Phrase} \rightarrow N (+ \text{Numl}) + D + \text{Numb}$

Rule 2 states that a noun phrase is rewritten as a noun (N) followed by an optional numeral (Numl) followed by a determiner (D), which is in turn followed by a designation of number (Numb), i.e. singular or plural.

PS 3. $N \rightarrow / \begin{array}{ll} \text{I}^{\text{muso}} & \text{'woman'} \\ \text{H}^{\text{so}} & \text{'house'} \\ \text{L}^{\text{so}} & \text{'horse'} \\ \text{H}^{\text{yiri}} & \text{'tree'} \end{array}$

Rule 3 states that a noun is to be rewritten as an either/or choice, represented by the slash following the arrow, of the listed items.

PS 4. $\text{Numl} \rightarrow / \begin{array}{ll} \text{H}^{\text{kelen}} & \text{'one'} \\ \text{L}^{\text{fila}} & \text{'two'} \end{array}$

PS 4. $D \rightarrow / \begin{array}{l} K \\ U \end{array}$

Rule 4 states that the determiner category is rewritten as a binary choice between known (K) and unknown (U). These terms are admittedly rather loose cover symbols which are in no way meant to accurately describe the semantics of the determiners. A partial statement of their usage will be given later in the study.

PS 5. $K \rightarrow \begin{array}{ll} \text{L in env.} & \text{H} \\ \text{ø in env.} & \text{L} \end{array}$

Rule 5 states that the known determiner is rewritten as a low tone when preceding a high tone and zero when preceding a low tone. Note that the general effect is that if the item is determined the following morpheme will be on a lower level of pitch. This phenomenon will be more clearly illustrated in the tonal rules.

PS 6. $U \rightarrow \begin{array}{ll} \text{ø in env.} & \text{H} \\ \text{d}^{\text{3}} \text{ in env.} & \text{L} \end{array}$

Rule 6 states that the determiner used to state the unknown or unspecified nature of the noun is rewritten as zero when followed by a high tone and as the morpheme *dɔ̃* when followed by a low tone.

PS 7. Numb → Sing in env. kélen + D _____
 Plu in env. fila + D _____
 /Sing
 Plu

Rule seven states that number is to be rewritten as singular when preceded by the numeral one, plural when preceded by the numeral two, and as an either/or choice of singular vs. plural elsewhere.

PS 8. $\text{Sing} \rightarrow \mathfrak{g}$

Rule 8 states that the singular morpheme is to be rewritten as zero. Even though there is no segmental marker for singularity, it is nonetheless necessary to state the number of the noun in question for operations such as pronominalization.

PS 9. $\text{Plu} \rightarrow \mathfrak{s}$ in env. fila + D _____

Rule 9 states that the plural marker is rewritten as zero after the numeral two and as the morpheme *ù* elsewhere.

PS 10. Pred $\rightarrow$ Aux + / (NP) + V_{Loc}

Rule 10 states that a predication is to be rewritten as an auxiliary followed by an either/or choice of an optional noun phrase followed by a verb, or as a locative.

Hbe in env. _____ Loc _____

PS 11. Aux $\rightarrow$ Completive

Rule 11 indicates that the auxiliary is rewritten as *bé* when occurring before a locative, and as completive elsewhere.

PS 12. Completive $\rightarrow$ Hye in env. _____ NP
 -la in env. _____ V

Rule 12 states that the completive auxiliary is represented by *yé* when preceding a noun phrase, i.e. in transitive constructions, and by the suffix *-la* when preceding the verb, i.e. in intransitive constructions. A simple permutation transformation moves the suffix to its position after the verb.

PS 13. V → /^Hye 'see'
J_{san} 'sell'
H_{bo} 'go/take out'

PS 14. Loc → / NP + PP
I_{yan} 'here'

Rule 14 states that a locative is rewritten as either a noun phrase plus a post position or as the pro-locative *văn*.

PS 15. PP $\rightarrow$ /^{III}la 'on, at'
Lfe 'by'

It must be stressed that the above rules are not meant to be illustrative of Bambara phrase structure as a whole, but they are sufficient to give the reader a good structural knowledge of the examples which follow.

Given a deletion transformation which erases all of the zero markers in the phrase structure, the following strings can be produced by the above rules:

- (a) # $^L\text{muso} + ^H\text{be} + ^L\text{yan}$ # 'a woman is here'
 (b) # $^L\text{muso} + ^L + ^H\text{be} + ^L\text{yan}$ # 'the woman is here'
 (c) # $^L\text{muso} + ^L\text{fila} + ^H\text{be} + ^L\text{yan}$ # 'two women are here'
 (d) # $^H\text{yiri} + ^L\text{fila} + ^H\text{be} + ^L\text{yan}$ # 'two trees are here'
 (e) # $^L\text{muso} + ^H\text{ye} + ^L\text{so} + ^H\text{ye}$ # 'a woman saw a horse'
 (f) # $^L\text{muso} + ^H\text{ye} + ^L\text{so} + ^L + ^H\text{ye}$ # 'a woman saw the horse'
 (g) # $^L\text{muso} + ^L + ^H\text{ye} + ^L\text{so} + ^L\text{do} + ^L\text{san}$ # 'the woman bought a horse'
 (h) # $^L\text{muso} + ^L + ^H\text{ye} + ^L\text{so} + ^L\text{san}$ # 'the woman bought the horse'
 (i) # $^L\text{muso} + ^H\text{be} + ^H\text{yiri} + ^H\text{la}$ # 'a woman is in a tree'
 (j) # $^L\text{muso} + ^H\text{be} + ^H\text{yiri} + ^L + ^H\text{la}$ # 'a woman is in the tree'
 (k) # $^L\text{so} + ^H\text{be} + ^H\text{so} + ^L\text{fe}$ # 'a horse is by the house'
 (l) # $^L\text{so} + ^L + ^H\text{be} + ^H\text{so} + ^L\text{do} + ^L\text{fe}$ # 'the horse is by a horse'
 (m) # $^L\text{so} + ^L\text{fila} + ^H\text{be} + ^H\text{yan}$ # 'two horses are here'
 (n) # $^L\text{muso} + ^L + ^H\text{bo-la}$ # 'the woman left'
 (o) # $^L\text{muso} + ^H\text{bo-la}$ # 'a woman left'
 (p) # $^H\text{yiri} + ^H\text{bo-la}$ # 'a tree has been uprooted'
 (q) # $^H\text{yiri} + ^L + ^H\text{bo-la}$ # 'the tree has been uprooted'

In addition to these sentences, two derived sentences will be added to complete the examples:

- (r) # $^L\text{so} + ^H\text{fin} + ^L + ^H\text{be} + ^L\text{yan}$ # 'the black horse is here'
 (s) # $^L\text{so} + ^H\text{fin} + ^H\text{be} + ^L\text{yan}$ # 'a black horse is here'

Both of these sentences are derived by the embedding of the sentence sò 'ká fin' 'the horse is black' into the respective sentences sò 'bé yàn' 'the horse is here' and sò 'bé yàn' 'a horse is here'.

The next set of rules are those which convert the maximally generalized tonal contrast of high vs. low into a more specific characterization of the sentence pitch pattern. It is through these rules that one will see the effect of the various forms of determiners on the pitch pattern.

T 1. # $^L\text{CV} + ^L \rightarrow \# ^L + ^H\text{CV} + ^L$

Tonal rule 1 states that a monosyllabic morpheme (CV) with low tone, following a sentence boundary and preceding any morpheme with low tone will have a rising pitch. Since the high point of this rise constitutes the peak in the sentence pitch pattern, the rise is symbolized as the sequence of low and high tones (L + H).

Example:

- (m) $^L\text{so} + ^L\text{fila} \dots \rightarrow ^L + ^H\text{so} + ^L\text{fila}$

T 2. $^L\text{CVCV} + ^L \rightarrow ^L\text{CV}^H\text{CV} + ^L$

T 2 states that a final syllable of a low tone polysyllabic morpheme ($^L\text{CVCV}$) is re-written as high, when followed by a low tone morpheme.

- (c) $^L\text{muso} + ^L\text{fila} \dots \rightarrow ^L\text{mu}^H\text{so} + ^L\text{fila}$

T 3. $^H\text{CV}(\text{CV}) + ^L\text{CV}(\text{CV}) \rightarrow ^H\text{CV}(\text{CV}) + \text{PT-2CV}(\text{CV})$

T 3 states that a mono- or polysyllabic morpheme (CV(CV)) with low tone will descend approximately two pitch points from a preceding high tone morpheme. The actual

interval involved in this descent is relative to a number of factors which will not be treated in this paper, such as for example, the pitch range of the individual speaker and his emotional state at the time of utterance. The letters P'T are used to signify preceding tone.

Example:

- (d) ${}^H\text{yiri} + {}^L\text{fila} \dots \rightarrow {}^H\text{yiri} + {}^{PT-2}\text{fila} \dots$
 $T' + {}^{PT-2}\text{CV} + {}^H\text{CV} \rightarrow {}^{PT-2}\text{CV} + {}^H\text{CV}$

The above rule states that a high tone morpheme following a monosyllabic already lowered low (PT-2), will be rewritten as preceding tone (PT). This rule operates at conversational speed. When the speaker is repeating a sentence more slowly, this rule would be replaced by rule 7. It is nonetheless important to note that in certain environments, consecutive low and high tone morphemes can occur on the same level of pitch.

Example:

- (c) ${}^L\text{muso} + {}^H\text{ye} + {}^{PT-2}\text{so} + {}^H\text{ye} \rightarrow {}^L\text{muso} + {}^H\text{ye} + {}^{PT-2}\text{so} + {}^{PT}\text{ye}$
 $T\ 5. \# X {}^H\text{CV} \rightarrow X {}^{PP}\text{CV}$
 X is a variable which may be null, but does not include ${}^H\text{CV}$.

T 5 states that the first high tone in a sentence is to be rewritten as the pitch peak (PP), even if the high is part of a rising tone.

Examples:

- (c) ${}^L\text{mu}{}^H\text{so} + {}^{PT-2}\text{fila} \dots \rightarrow {}^L\text{mu}{}^{PP}\text{so} + {}^{PT-2}\text{fila}$
 (d) ${}^H\text{yiri} + {}^L\text{fila} \dots \rightarrow {}^{PT}\text{yiri} + {}^{PT-2}\text{fila}$
 (m) ${}^L + {}^H\text{so} + {}^{PT-2}\text{fila} \dots \rightarrow {}^L + {}^{PP}\text{so} + {}^{PT-2}\text{fila}$
 $T\ 6. \# L \rightarrow {}^{PT-2}$

This rule states that a sentence initial low will be rewritten as pitch peak (PP) minus two.

Examples:

- (c) $\# {}^L\text{mu}{}^{PP}\text{so} + {}^{PT-2}\text{fila} \dots \rightarrow \# {}^{PT-2}\text{mu}{}^{PP}\text{so} + {}^{PT-2}\text{fila}$
 (m) $\# L + {}^{PP}\text{so} + {}^{PT-2}\text{fila} \dots \rightarrow {}^{PT-2} + {}^{PP}\text{so} + {}^{PT-2}\text{fila}$
 $T\ 7. \begin{matrix} [{}^{PT-2}] \\ L \end{matrix} \text{ CV (CV) (+) HCV} \rightarrow \begin{matrix} [{}^{PT-2}] \\ L \end{matrix} \text{ CV(CV) (+) } {}^{PT+1}\text{CV}$

Rule 7 states that a high syllable following a low or lowered (PT-2) syllable will rise approximately one pitch point. It is this rule in combination with Rule 3 that establishes the characteristic downdrift of the Bambara pitch pattern, i.e. low tones drop two levels while high tones rise only one.

Example:

- (d) ${}^{PP}\text{yiri} + {}^{PT-2}\text{fila} + {}^H\text{be} \dots \rightarrow {}^{PP}\text{yiri} + {}^{PT-2}\text{fila} + {}^{PT+1}\text{be} \dots$
 $T\ 8. {}^{PT-2}\text{CV} + {}^L\text{CV} \rightarrow {}^{PT-2}\text{CV} + {}^{PT+1}\text{CV}$

This rule indicates that a low morpheme following an already lowered low morpheme will be one pitch level lower than the preceding tone.

Example:

- (h) ${}^{PT-2}\text{mu}{}^{PP}\text{so} + {}^{PT-2} + {}^{PT}\text{ye} + {}^{PT-2}\text{so} + {}^L\text{san}$
 becomes
 ${}^{PT-2}\text{mu}{}^{PP}\text{so} + {}^{PT-2} + {}^{PT}\text{ye} + {}^{PT-2}\text{so} + {}^{PT-1}\text{san}$
 $T\ 9. \begin{matrix} L \\ / H / \end{matrix} \text{ CV} \rightarrow {}^{PT}\text{CV}$

Rule 9 states that all syllables whether low, high or unmarked, that have not been affected by one of the preceding rules, are to be rewritten as preceding tone.

Example:

- (a) $PT^{-2}mu\sigma + PPbe + PT^{-2}yan \rightarrow PP^{-2}muPT\sigma + PPbe \dots$

T 10. $XCV (+) PT \rightarrow YCV \rightarrow XCV (+) X \pm YCV$

Both X and Y are variables. The latter may be null.

This rule is the one which actually assigns the preceding tone to the syllables marked with PT. It is also this rule which eventually assigns numerical values to the tones of the syllables in which the pitch peak is the starting point.

Example:

- (c) $PT^{-2}muPT\sigma + PT^{-2}fiPTla + PT^{-1}be + PT^{-2}yan$
becomes
 $PP^{-2}muPT\sigma + PP^{-2}fiPP^{-2}la + PP^{-1}be + PP^{-2}yan$

The final tone rule is one which deletes all tonal markers not assigned to a segmental syllable. Thus, for example:

- (b) $PT^{-2}muPT\sigma + PT^{-2} + PP^{-2}be + PP^{-4}yan$
is rewritten
 $PP^{-2}muPP\sigma + PP^{-2}be + PP^{-4}yan$
(q) $PTyiPPri + PP^{-2} + PT^{-2}bo PT^{-2}ra$
is rewritten
 $PTyiPPri + PP^{-2}bo PP^{-2}ra$

It is to be noted therefore that the low tone representation of the determiner has the effect of a step down on the pitch pattern.⁴ Since all low tones have a step-down effect on the pitch pattern, it is thus quite reasonable to represent the determiner with a low tone.

The examples (a) through (r) are rewritten below in a more traditional orthography in which the symbol ' represents high tone and the symbol ` represents low tone. Each example will be followed by a graphic representation of the pitch pattern which is taken from pitch meter recordings done at the University of California, Los Angeles phonetics laboratory.

- | | |
|------------------------|-----------------|
| (a) mùso bé yàn | [- - ' _] |
| (b) mùso `bé yàn | [- - ' _] |
| (c) mùso fíla bé yàn | [- ' - - ' _] |
| (d) yíri fíla bé yàn | [' - - - ' _] |
| (e) mùso yé sò yé | [- - ' - -] |
| (f) mùso yé sò `yé | [- - ' - _] |
| (g) mùso `yé sò dò sán | [- ' - - ' _] |
| (h) mùso `yé sò sán | [- ' - - _] |
| (i) mùso bé yíri lá | [- - - - -] |
| (j) mùso bé yíri `lá | [- - - - -] |
| (k) sò bé sò fè | [- - - -] |

⁴The first suggestion that a step-down should be considered in Bambara is to be found in E. Sterick's Foreign Service Institute teaching materials, currently being prepared for publication.

(l) sò 'bé só dǝ fɛ	[/ - - - _]
(m) sò fɛla bɛ yàn	[/ - - - _]
(n) mùso 'bóla	[_ - - -]
(o) mùso bóla	[- - - -]
(p) yíri bóla	[- - - -]
(q) yíri 'bóla	[- - - -]
(r) sò fín 'bé yàn	[- - - _]
(s) sò fín bɛ yàn	[- - - -]

In conclusion, one can classify the tonal system of Bambara as a two tone contrast in which the low tones condition a descent in the pitch pattern. To this extent, Bambara tone is similar to that of Hausa. In addition, Bambara has a syntactic class of determiners which under certain conditions are representable by a low tone which brings about a step-down in the pitch pattern. In this respect Bambara could be called a terrace-level language, but there seems to be little efficacy to be gained in attempting to analyse the step-down by the more traditional phonemic approach of setting up an additional tonal phoneme to account for the phenomenon.

This study has been concerned with the structural realization of the determiners and, as a result, has had little to say concerning their usage. Most of the rules which govern the selection of the determiners, i.e. the selection between known and unknown, do not have a place in current grammatical theory due to their semantic rather than grammatical nature. Nonetheless, in hopes of adding more clarity to the study, a few of the situations in which the noun will be marked known are as follows:

1. When the noun referred to has already been introduced in a preceding sentence, e.g. *mùso dǝ dǝna ní à dɛn 'yé. mùso 'bóla* 'A woman entered with her child. The woman left'.
2. When the noun is a unique member of a set, such as *néne* 'cold', *sándyɪ* 'rain', etc., e.g. *néne 'bóla* 'the cold has come out'.
3. When the noun is used as a generalization for the entire set, e.g. *wùlu 'yé téli nyúman yé* 'a dog is a good friend'.
4. In the Bambara of Ségou, possessed nouns are also followed by the determiner, e.g. *í ká só 'bé mín* 'where is your house?' In the Bambara of the northern Ivory Coast, a contrast was found between the above sentence and *í ká só bɛ mín* 'where is a house of yours?'.

The majority of data upon which this study is based was collected during informant sessions with Seydou Bamba from Touba in the Ivory Coast. The analysis has been confirmed by subsequent work with Coulibaly Kokè from Ségou in Mali and also with Moulaye Demba Kida from the same city. Many of the grammatical and tonal rules given above also hold for speakers from Sikasso and Bougouni, but sufficient data is lacking to permit the inclusion of these dialects within the system as described.