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The phonological systems of the Mbam languages of Cameroon with a focus on vowels and vowel harmony

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Conclusion

The goal of this study has been to give a comprehensive look at the complexities of the vowel and vowel-harmony systems of the genetically related Mbam languages. Of particular interest is the comparison and classification of these languages and what they reveal about language typological. Furthermore, the study of the microvariations found in the vowel system provides a greater understanding of the phonology of each language and the relevant parameters of variation between them. It also contributes to the understanding of vowel harmony in particular and phonology in general.

ATR harmony is found in all ten of the Mbam languages discussed in this study. While not unique, these languages are somewhat unusual in that a number of them have additional vowel-harmony processes which interact with ATR harmony, namely rounding harmony, fronting harmony and height harmony. Most of the Mbam languages have both ATR and rounding harmony, but there are some languages which only have ATR harmony, and some which have a third vowel-harmony process, either fronting harmony or height harmony.

Of particular interest is that the Mbam languages differ in the number of underlying and surface vowels and the scope of vowel harmony. It is likely that historically, the Mbam languages had ten contrastive vowels. Currently, seven to nine contrastive vowels are found.

6.1 Summary of the topics discussed in this study

This study has looked into various topics pertaining to the phonological systems of ten Mbam languages. In chapter one, we introduced the Mbam languages, considered the sociolinguistic context of the Mbam, presented the previous work done in these languages, and presented the types of data collected for this study.

Chapter two presented a phonological overview of each of the ten languages, discussing principally their consonant systems, vowel systems, vowel-harmony processes, hiatus-resolution processes and lexical tone. Of particular interest is that most of the Mbam languages have a mixture of two or three of the four types of vowel harmony found, namely, ATR, rounding, height and fronting harmony, of which ATR harmony is the most prevalent. In presenting the phonologies of these ten languages, the similarities and differences in the application of their vowel-harmony systems are emphasised.

Chapter three discussed in-depth the vowel-harmony processes of the Mbam languages. Included was a discussion of the acoustic characteristics of the vowels, in particular the high vowels; the correlation between the vowel inventory and vowel harmony and non-participating (neutral) vowels. In addition, the scope and domain of vowel harmony was examined, in particular the directionality in the spread of vowel harmony.

Various phonological issues in vowel harmony are considered in chapter 4, in particular how contrastive vowel features and vowel harmony are related. Dresher's (2009) contrastive-feature hierarchy of features and his Successive Division Algorithm are discussed in detail and applied to the vowel-harmony systems of the Mbam languages. Finally in chapter 5, we looked at various means of classifying the Mbam languages, looking at their sociolinguistic context, lexicostatistical, historical (lexical sound changes), and structural classifications.

6.2 The salient aspects of vowel harmony in the Mbam languages

The three most salient aspects of vowel harmony in the Mbam languages examined in chapter 3 of this study are the following:

- Non-participating (neutral) vowels and their behaviour in the vowel-harmony system
- Directionality in vowel harmony and
- The domain of vowel harmony

6.2.1 Non-participating (neutral) vowels

Non-participating or neutral vowels occur in all the types of vowel harmony found in the Mbam languages. They do not, however, behave in the same manner. As seen in this study, the fact that certain vowels are neutral can be attributed to their position in the contrastive feature hierarchy, but this hierarchy cannot explain why neutral vowels may be transparent or opaque. For example, certain rounding-neutral vowels are opaque in one language and transparent in the neighbouring language.

Given the generally accepted strict segmental locality of Optimality Theory, that "... no outputs are generated in which a single featural autosegment is associated with S1 and S3 but not an intervening segment S2" (Walker 2012: 585), it is possible that the height-transparent vowels, such as found in the rounding harmony of some of the Mbam languages, are affected by rounding but fail to produce salient acoustic consequences of harmony While clear evidence that transparent vowels are affected in Mbam rounding harmony has not yet been found, there are hints in slightly lowered frequencies of the first three formants that rounding may in fact have an effect on neutral vowels. More research, however, is needed to determine whether this subphonemic rounding has any real affect in determining whether these neutral vowels are transparent or opaque.

6.2.2 The role of domains and directionality in vowel harmony

The contrastive features of vowels may explain which of the various vowel-harmony processes occur and why, but it cannot explain the scope or direction of vowel harmony. The scope of vowel harmony is determined by the language-specific definition of the phonological word, which may not be the same as the grammatical or morphosyntactic word. These mismatches may indicate an historical residue of a strong phonological border. The existence of such a phonological border in the preverbal morphemes of at least some of the Mbam languages is not particularly surprising, considering that they are geographically and historically located between Bantu and the Southern Bantoid Grassfields languages, and share characteristics with both groups.

The domain of vowel harmony in all of the Mbam languages is the phonological word, which comprises at least one grammatical word and any associated clitics. A dominant vowel found within this phonological unit will spread throughout the unit unless blocked by an opaque neutral vowel. Vowel harmony in the Mbam languages is obligatory within the phonological word and between a clitic and its host.

Rounding harmony and ATR harmony do not spread identically. In the verb, rounding harmony is curtailed by three factors:

a. the presence and type of neutral vowels (opaque or transparent),
b. phonological word boundaries, and
c. the location of the harmony-dominant vowel(s).

Only the second factor plays a role in curtailing the spread of rounding harmony between the noun and its prepositions, associative markers and coordinating conjunction. This mismatch between the scope of ATR harmony and that of rounding harmony may be the result of a change in the structure of the phonological noun word. The proclitics associated with the noun may be in the process of becoming independent grammatical words rather than proclitics, resulting in an increasingly irregular spread in vowel harmony. In all cases of mismatches, the spread of ATR harmony is more robust than that of rounding harmony.

If the lack of vowel-harmony spread to the preverbal morphemes is due to a residual historical phonological boundary, the tendency of vowel harmony to spread right-to-left has perhaps eroded the phonological boundaries within the morphosyntactic domain. If the preverbal morphemes are indeed morphosyntactic prefixes, then the anticipatory tendencies of vowel harmony, barring other impediments, will spread throughout the entire grammatical word, which is the case for Yangben, Mmala and Elip.

The strong morphosyntactic boundaries signalled by the SOV word order in Nen and the periphrastic tense constructions in Yambeta would be the most obvious and powerful blockages to the spread of vowel harmony in these languages. While Nen, despite strong morphosyntactic boundaries, does have anticipatory vowel harmony, its spread is less powerful, having the tendency to be optional, and is more gradient than the vowel-harmony spread of other Mbam languages with similar morphosyntactic boundaries, such as Gunu and Maande. At the other extreme, strong morphosyntactic boundaries prevent any anticipatory vowel-harmony spread in the preverbal morphemes, as is the case for Tuki, Baca and Mbure.

Much has been discussed elsewhere concerning directionality in vowel harmony as well as whether it is root-/stem-controlled or dominant-recessive. It is hoped that this study of the Mbam languages will contribute to the discussion. The Mbam languages have 7- to 9- vowel systems with an active and complex dominant-recessive vowel-harmony system. The vowel harmony of the Mbam languages shows strong evidence for bidirectionality due to the existence of a few dominant prefixes. Dominant prefixes occur in the two most robustly attested vowel-harmony types, ATR and rounding. While [ATR]-dominant prefixes occur in only two languages, and only in closed paradigms such as numerals, the rounding-dominant prefix in Mmala is a noun-class prefix and triggers rounding on the noun stem wherever conditions apply. There is also evidence that this noun-class prefix is also height-dominant in Mmala (as discussed in Section 3.2.2 above).

6.3 Relationship between vowel inventory and vowel harmony

While certain vowels in the Mbam languages are realised phonetically and acoustically as quite low, notably /ɪ/ and /ʊ/, they function *phonologically* as high vowels. It is not the phonetic make-up which determines what a phoneme is; instead, the phoneme is determined by its behaviour in the system, which is a function of its contrastive features (Dresher 2009: 72). As discussed in this study, only contrastive features are phonologically active, and thus capable of triggering vowel harmony. Following Dresher (2009), contrastive features are hierarchically ordered, and the differences in what types of vowel harmony occur are the function of which features are active and their position in the language-specific contrastive-feature hierarchy.

In Mbam rounding harmony in particular, the high back vowels /u/ and /ʊ/, although phonetically round, are not *contrastively* round. Roundness is a redundant feature for the high vowels and therefore inert and cannot trigger rounding harmony. The fact that /u/ and /ʊ/ do not participate in rounding harmony is phonetic evidence that the feature [round] is unspecified for the high vowels.

Dresher's (2009) contrastive-feature hierarchy also explains why languages with similar vowel inventories and even similar contrastive features may have rather different vowel-harmony processes. Within the feature hierarchy, certain features may apply only to a subset. The difference in order and to which subset each feature

in the hierarchy is applied makes the difference which vowel harmony type may occur. Furthermore, while vowel harmony *must* be triggered by a contrastive feature, the presence of a contrastive feature doesn't obligate the presence of vowel harmony.

6.4 Classification and interrelationship of the Mbam languages

The Mbam languages are generally situated between Bantu and the other Southern Bantoid languages, both geographically and genetically. They pattern sometimes with the northwestern Bantu languages and at other time with the nearest Bantoid languages.

This study has looked at several different ways to classify the Mbam languages internally, considering first what the various diachronic sound changes from proto-Mbam can reveal. Then we considered how the role of contact and various subsequent structural changes clarify the interrelationships between these languages. Finally we compared the basic lexicons of the languages and compared the various types (Nearest Neighbour, Furthest Neighbour and Branch Average) of lexical subclassifications to substantiate the historic and structural classifications.

Both the lexicostatistical, historical and structural comparisons show that, while the Mbam languages make up a cohesive unit, there are two subgroupings within it, although the division between these two groups varies somewhat depending on the type of classification.

If recent history is any indication, and as hinted also in the origin and migration stories of the populations, the Mbam region and the area around it underwent multiple population displacements. Migrations into and out of the Mbam area were frequent, and even people groups who today speak the same language, or dialects of the same language, consider themselves to have different origins. It is evident that many if not all of these people groups met, enslaved, and fought each other, intermarried, and in more than one case, joined each other to form a larger group, even if traces remain in the form of dialectal differences and individual sentiments. It is to be assumed that these contacts and mergings must have had an impact on the development of and changes in today's Mbam languages. With ever-increasing mobility and intercommunication, these groups are in closer contact with each other than ever before, and most people master more than one of their neighbouring languages.

Language contact can also explain why the languages at the extremities, such as Mbure and to a lesser extent Baca, while still evidently Mbam languages, show signs of borrowing from the larger and more prestigious Basaa to the south. This is most evident in the weakening of the vowel-harmony systems of these two languages.