

1

600

A Comparative Study of

Gã and Adangme

with special reference to the Verb

Mary Esther Kropp

Thesis submitted for the degree of
Doctor of Philosophy

University of London
1968



ProQuest Number: 10672639

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 10672639

Published by ProQuest LLC (2017). Copyright of the Dissertation is held by the Author.

All rights reserved.

This work is protected against unauthorized copying under Title 17, United States Code
Microform Edition © ProQuest LLC.

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

ABSTRACT

Two closely related languages, Gã and Adangme, are analyzed and compared, in respect of their phonologies and portions of their grammars involving the verb and its components. Synchronic, typological comparisons and also diachronic comparisons are made.

The work is in three sections. The first treats the phonology of each language and proposes a reconstruction of the proto-Gã-Adangme phonemic system on the basis of regular correspondences between the two systems. The second section describes, and discusses the diachronic significance of, the phonological and grammatical structure of the verbal base. The third section describes structures which involve the verbal base, namely the verb, the verbal group, and non-verb words which contain verbal bases. Conclusions are drawn concerning the structure of the verb and related structures in the proto-language, and the probable sources of typological differences in the modern languages.

In the final chapter conclusions of a general nature are drawn with respect to method and problems encountered, the influence of other languages on the development of Gã and Adangme, and the typology of the changes that are reconstructed in the main body of the thesis.

Acknowledgements

I would like to thank my supervisor, Dr David Dalby, for the great interest he has shown in this work, and for the very kind encouragement and criticism he has given me. I would also like to thank Professor Jack Berry and Professor Malcolm Guthrie for their assistance and encouragement in the early stages of the work. I am also grateful to several friends and colleagues who read and criticized parts of this thesis at various stages, particularly Dr E. O. Apronti, Dr L. Boadi, Miss L. Criper and Dr Joan Maw.

I wish to thank Dr J.F. Koster for his very kind efforts in helping with the preparation of computer programs, and also the staff of the computer room of the Physics Department of the University of Ghana for their practical assistance. I would also like to thank the technicians of the Geography Department of the University of Ghana, who drew the outline map.

I should like to thank all of my informants for their attention and interest. Special thanks are due to Mr. A. O. Doodu and Mr. Samuel Dzeagu, for their efforts as guides in the field. I would also like to thank Doodu Blatsfe of Manchie, for his great personal kindness and assistance.

I would like to thank Carole Kaldor and Paula Elder for coping with a very difficult job of typing.

Finally, I would like to thank the University of Ghana and its Institute of African Studies, where I was able to carry out this work under almost ideal conditions.

Symbols and Abbreviations

G	Gã
D	Adangme
A	Adã
K	Krobo
S	Shai
C	consonant
V	vowel
N	syllabic nasal consonant
C _x , V _x	the same consonant or vowel phoneme as the preceding one.
C _{1...n}	First to nth consonant position
V _{1...n}	First to nth vowel position
H	high tone
L	low tone
M	mid tone
đ	downstep
adj	adjective
adv	adverb
alv	alveolar
bil, bilab	bilabial

cf	"refer to"
cl	class
dent	dental
fn	footnote
imperf	imperfect (tense)
intent	intensive (direction)
iter	iterative
lab	labio-
l'd, lab'd	labialized
n	nominal, noun
nb	nominal base
neg	negative
ns	nominal stem
No	number
occur	occurrence(s)
op cit	work last mentioned
pal	palatal
part	particle
p'd, pal'd	palatalized
pg	page
pl, plur	plural
pp	pages
pron	pronoun

st	stative
suff	suffix
v	verbal, verb
vb	verbal base
vel	velar
vs	verbal stem
v'less	voiceless
v'd	voiced
:	'corresponds to', as, G <u>f</u> :D <u>p</u>
*	what follows is a reconstruction, either diachronic, i.e. belonging to a proposed proto-language, or synchronic, i.e. non-occurring
"..."	quotation marks surround citations of material in non-systematic transcriptions, from written or oral sources
<u>...</u>	underlined material is in systematic transcription
[...]	square brackets surround phonetically transcribed material
>	Material to the right is diachronically derived from the material on the left
→	Material to the right of the arrow may be regarded as synchronically derived from material to the left

/	group boundary
//	span boundary
+	positive, marked term of a binary system; concatenation
-	neutral, unmarked term of a binary system; non-occurrence
∅	absence of element; zero realization of an element

Contents

	Page
0. Introduction	10
Section I Phonology	
1. Synchronic Phonology	42
2. Diachronic Phonology	90
Section II The Structure of the Verbal Base	
3. The Phonology of the Verbal Base	146
4. The Morphology of the Verbal Base	169
Section III Verbal Constructions	
5. The Verbal Group	211
6. Verbal Bases in Non-Verbal Word Classes	263
7. Conclusions	293
Footnotes	310
Works Referred to	324

- 0. INTRODUCTION
 - 0.1 Scope and Aims of the Work.
 - 0.2 Theory and Method.
 - 0.3 History and Language Area.
 - 0.4 Sources
 - 0.4.1 Written
 - 0.4.2 Oral
 - 0.4.3 Statistical Data
 - 0.5 Grammatical Outline
 - 0.5.1 Clause
 - 0.5.2 Span
 - 0.5.3 Group
 - 0.5.4 Word
 - 0.5.5 Base
 - 0.5.6 Morpheme

INTRODUCTION

O.1 Scope and Aims of the Work.

In this thesis, the phonology and a portion of the grammar of the Gã and Adangme languages are analyzed and compared, first from the synchronic and secondly from the diachronic point of view. The work is in three sections. The first treats the phonology of each language, and the sound correspondences between them. The rest of the thesis concentrates on the structure and behaviour of a particular class of a particular unit, namely the verbal base. The second section describes, and discusses the diachronic significance of, the phonological and grammatical composition of the verbal base. The third describes the structures involving the verbal base, namely the verb word, the verbal group, and non-verb words which contain verbal bases.

Gã and Adangme are sufficiently closely related that the earlier existence of a proto-Gã -Adangme language is assumed, and sufficiently different from all the neighbouring languages that it may also be assumed that they are more closely related to each other than either is to any other language. This follows the standard classification, as in Westermann and Bryan, Greenberg, and Berry 1952. An important task of this thesis is to draw inferences about the phonology and grammar of the proto-language, and in

so doing, to reconstruct some of the changes that have occurred in the course of the emergence of the modern languages. Throughout, an attempt is made to link the typological similarities and divergences between the modern languages to historical sources, that is, to show at least some aspects of the historical basis of the observed synchronic situation.

At the same time, it is necessary to determine what historical conclusions may legitimately be drawn from the synchronic situation. It is hoped that decisions made in this regard may be of some significance for the general methodology of comparison for diachronic purposes, particularly as applied to West African languages. To these ends, it is necessary to find criteria on the basis of which borrowed elements in the languages concerned can be distinguished from elements inherited from a common source.

0.2 Theory and Method.

This thesis is not primarily intended to expound a particular linguistic theory, but in the interests of simplicity, convenience and consistency, certain theoretical attitudes have been adopted. In the synchronic dimension, two different approaches are used, at different levels. The phonological analysis is essentially post-Bloomfieldian phonemics, with excursions into feature analysis and statistical methods for purposes of typological comparison.

The grammatical analysis, on the other hand, is based on Halliday's Systemic model of grammatical descriptions, particularly as expounded in Ansre 1966 (2) and Bamgboṣe 1966 or rather, on those aspects of each exposition which seemed useful. The terminology employed and its application are set out in 0.5 below.

In the diachronic dimension, the model employed is the traditional model of historical linguistics, based on the comparative method and the method of internal reconstruction. Specifically, the model formalized in Hoenigswald 1960 is adopted. In the Preface to his book, Hoenigswald states as one of his purposes the "developing from the fundamental notions of synchronic linguistics the framework in which changes take their place" Since it is a stated aim of this thesis to relate findings in the diachronic dimension to the synchronic situation in Gã and Adangme, it is felt that the diachronic aspect of the work is best carried out on a model formulated with that relationship in mind.

In practice, this means that since the synchronic phonology of each language is formulated in phonemic terms, the proto-forms reconstructed are also composed of elements that must be treated in phonemic terms. Just as a phoneme may be said to be composed of a phonetically linked scatter of positional allophones, a proto-phoneme is reconstructed from a set of non-contrastive correspondences between

phonemes in the languages observed. Each established correspondence is treated as evidence of a positional allophone in the proto-language.

The relationship between synchronic and diachronic distribution may be represented schematically as follows. Symbols on different sides of a colon, which has its established meaning of signifying a correspondence, are to be taken as belonging to different languages. Lower case letters represent phones, and upper case letters represent phonemes. The particular letters are chosen arbitrarily. Subscript letters represent environments, allophonic or phonemic according to letter case, which also correspond across a colon.

Contrastive Distribution

Synchronic

$$\left. \begin{array}{l} p_a \\ q_a \end{array} \right\} \rightarrow \begin{array}{l} X \\ Y \end{array}$$

Diachronic

$$\left. \begin{array}{l} B_O:C_O \\ D_O:C_O \end{array} \right\} > \left. \begin{array}{l} *f_o \\ *g_o \end{array} \right\} \rightarrow \begin{array}{l} *W \\ *Z \end{array}$$

Complementary Distribution

Synchronic

$$\left. \begin{array}{l} p_a \\ q_e \end{array} \right\} \rightarrow X$$

Diachronic

$$\left. \begin{array}{l} B_O:C_O \\ D_U:C_U \\ \text{(and/or } B_O:C_U \\ \text{and/or } B_U:C_O) \end{array} \right\} > \left. \begin{array}{l} *f_o \\ *g_u \\ (*h_m \\ *j_n) \end{array} \right\} \rightarrow *W$$

According to this model, the morphological items reconstructed by the traditional comparative method are shapes composed of units in systems of phonemic contrasts. Systems of contrasts are reconstructed in a manner analogous with the construction of phonemic systems for observed languages. An even more important aspect of the model is that although the units reconstructed stand in a further, temporal, dimension of abstraction, they are nevertheless assumed to approximate units that in the past have existed as units at the same degree of abstraction as those constructed for directly observable languages. There seems to be no reason why an equally rigorous model of comparison for diachronic purposes could not be based on a different, non-phonemic, model of synchronic analysis.

The question of method in classification is not very important for this thesis, since only two languages are treated. However, some attempt will be made to define the historical process of the differentiation of Gã from Adangme, and the division of Adangme into dialects. On the model employed in this thesis, sub-classification is a direct product of the reconstruction of changes in the phonemic and grammatical systems. Two (or more) languages may be assigned to one sub-group if there is evidence that regular changes have occurred in them which

have not occurred in related languages, which are excluded from the sub-group. Of the many possible kinds of changes, Hoenigswald (1960, 13.4) remarks that sound changes, and grammatical syncretisms, that is, loss of distinction in two (or more) languages between corresponding pairs of grammatical morphemes, have generally proved to be the most reliable indications of a period of common development, during which the languages in question were essentially one. The more such changes can be shown to have occurred, the better the evidence for sub-grouping.

0.3 History and Language Area

Gã and Adangme are spoken in a geographically continuous area of southern Ghana, stretching about eighty miles along the coast west of the Volta river. (Map I). Accra, the capital of the country, is traditionally a Gã town, but in the cosmopolitan population of the modern city the Gãs are outnumbered. As the traditional language of the national capital, Gã and not Adangme is one of the Ghanaian languages officially used in publication, broadcasting and elementary education, but Adangme is the mother tongue of a larger number of people.¹

There is a persistent tradition of origin east of the Volta for the ethnic core of the Gã-Adangme peoples. Reindorf (1889, pg 21) and Azu (1926, pg 242) speak of emigration from a place called Sameh, somewhere to the east

or north-east, towards Dahomey and Nigeria. Reindorf mentions a place called Tetetutu in the same connection. Gã and Adangmes are said to have migrated, more or less together, as far as the east bank of the Volta, and then crossed it in groups. There is no tradition whatever of Gã-Adangme or all-Adangme or even all-Gã unity on the western side.

The Gãs went west in separate bands, some probably straight to the coast but others apparently first established themselves on the hills between the modern towns of Nsawam and Accra, and did not make the coastal towns their main headquarters until after the arrival of European traders. On the other hand, Reindorf (1889 pp. 19-20) also describes Gã traditions of emergence from the sea and of movement from the coast to the aforesaid hills. He interprets the sea-origin traditions, which are common to the entire coast, as evidence of migration from Benin, but it seems more likely that they are symbolic and have nothing to do with place of origin.

The Adãs apparently went directly to their modern home, while the Krobos and Shais stopped on their hills, which served until modern times as citadels, quite close to the original crossing point. The towns below did not become permanent headquarters until the people were forced out of the hills by the British in the early part

of this century. There seems to have been more continuous contact between Krobos and Shais than between any other two Gã-Adangme groups.

Reindorf seems to contradict some of this (Reindorf 1889, pg 21) when he lists as one of the aboriginal tribes of the coast the "Le" tribe, "speaking Adangme, the mother dialect of the Gã". The name "Le" appears in the place names lɛkpɔŋúnɔ̃ ('on Le hill', Adangme), on the coast near Adã, and legɔɔ ('Le hill', Gã), site of the University of Ghana. It is used of themselves to-day by the people of Ningo and Kpone areas (Sprigge).

It has been claimed² that the aborigines of the present Gã territory were "Kpeshi" people, speaking Obutu (Awutu, a Guan language now spoken immediately west of the Gã territory). The Gãs are said to have settled peaceably among them and to have eventually assimilated them. If so, this earlier population must have been very small, since otherwise the assimilation might have been expected to work in the other direction. The Awutu language is said to survive among the Gã only in Kple religious songs³.

It might be asked whether any influence of the Awutu language on Gã can be detected, in evidence of this supposed assimilation. Such evidence is extremely slim. The Gã verb táó 'want, search for' occurs in Awutu⁴, and

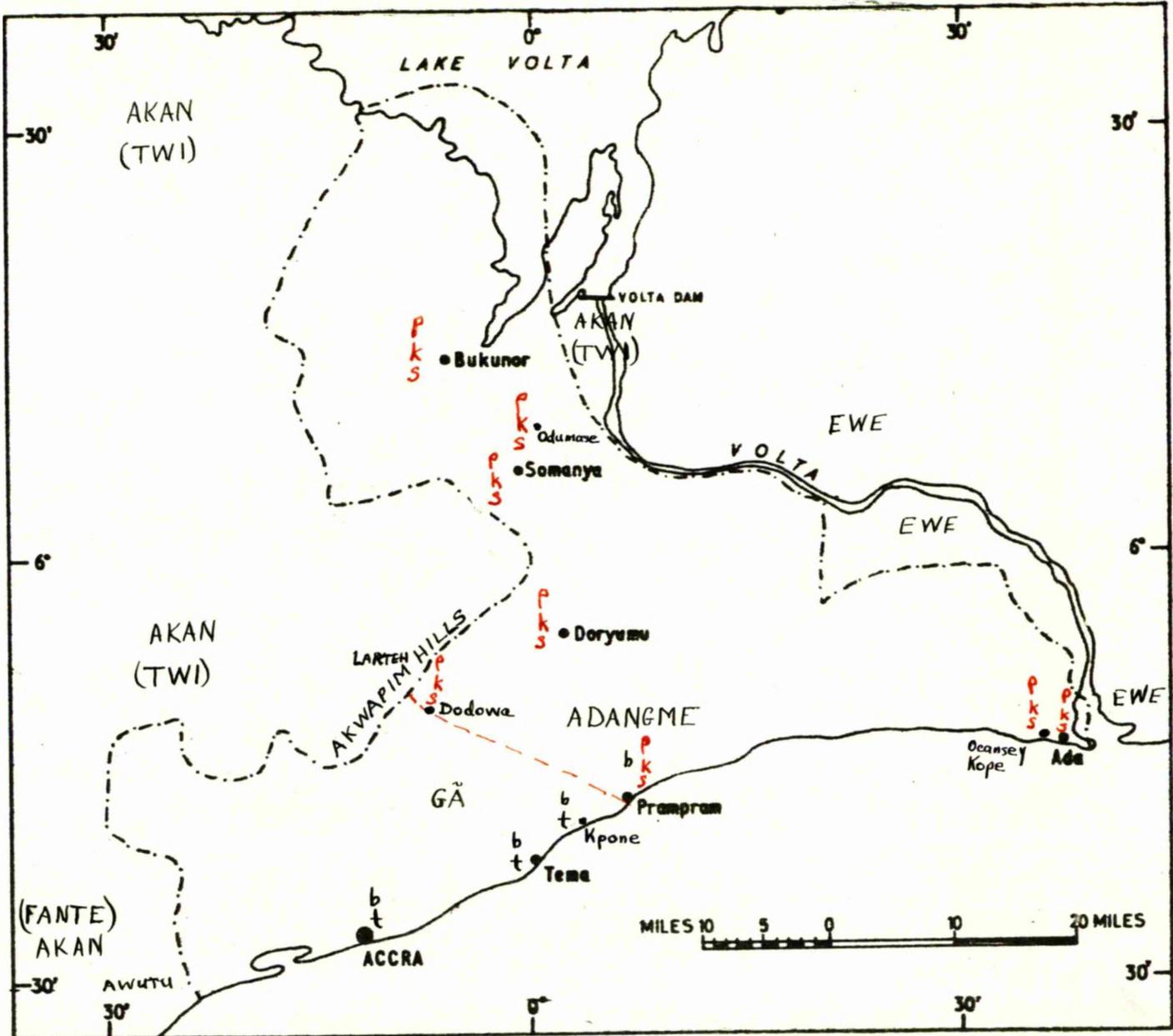
apparently nowhere else, although all other Gã verbs of this phonological type are borrowed from Twi (see 3.1.21). The word for 'plantain', Gã amãďăă, Adangme măďăă, măňăă, also occurs in Awutu but apparently nowhere else. The final tone pattern is typical of Akan, and not of Gã, nouns. The list of Awutu tenses (Frayzinger) is semantically identical with the Gã list as traditionally stated, i.e. Imperfect, Perfect, Habitual, Progressive, Future or Intentional and Future Indefinite or Conditional, which differs considerably from Adangme. But the morphemes involved in Awutu are totally different, phonologically and syntactically, from the Gã ones. Therefore this cannot be the explanation of the divergence between the verb systems of Gã and Adangme, except perhaps in terms of general semantic tendency. The Twi verb systems are actually phonologically closer to the Gã ones, although less close semantically (see 5.2.3.³⁴~~41~~). On the other hand, Awutu has certainly borrowed lexical items from Gã (Frayzinger pg 12).

At the present time, the major isogloss bundle dividing Gã and Adangme (Map I) runs from Dodowa in the interior, which is Adangme speaking in its older, eastern section and Gã speaking in its newer part, to Prampram on the coast. The Gã spoken in Kpone has many Adangme-like features, but is clearly essentially Gã. Apparently the town was once Adangme speaking.⁵

The entire Gã-Adangme area may be looked upon as a triangle, bounded (approximately) by the sea, the Volta, and the Akwapim ridge of hills. The people live along the sides of this triangle, leaving the centre, most of which is the driest area in all of Ghana, relatively empty. Any settlement towards the centre is an offshoot of one towards the edge, where the people repair on important ceremonial occasions. This pattern is even more pronounced if it is thought of in terms of the situation before 1900, when the permanent homes of the Shai and Krobo were all on the hills which lie along the north-western side of the triangle. Krobo, Adã and Gã occupy the three angles, but the Krobo have extended north-wards for farming purposes. It is not surprising that these three represent the linguistic as well as the geographical extremes.

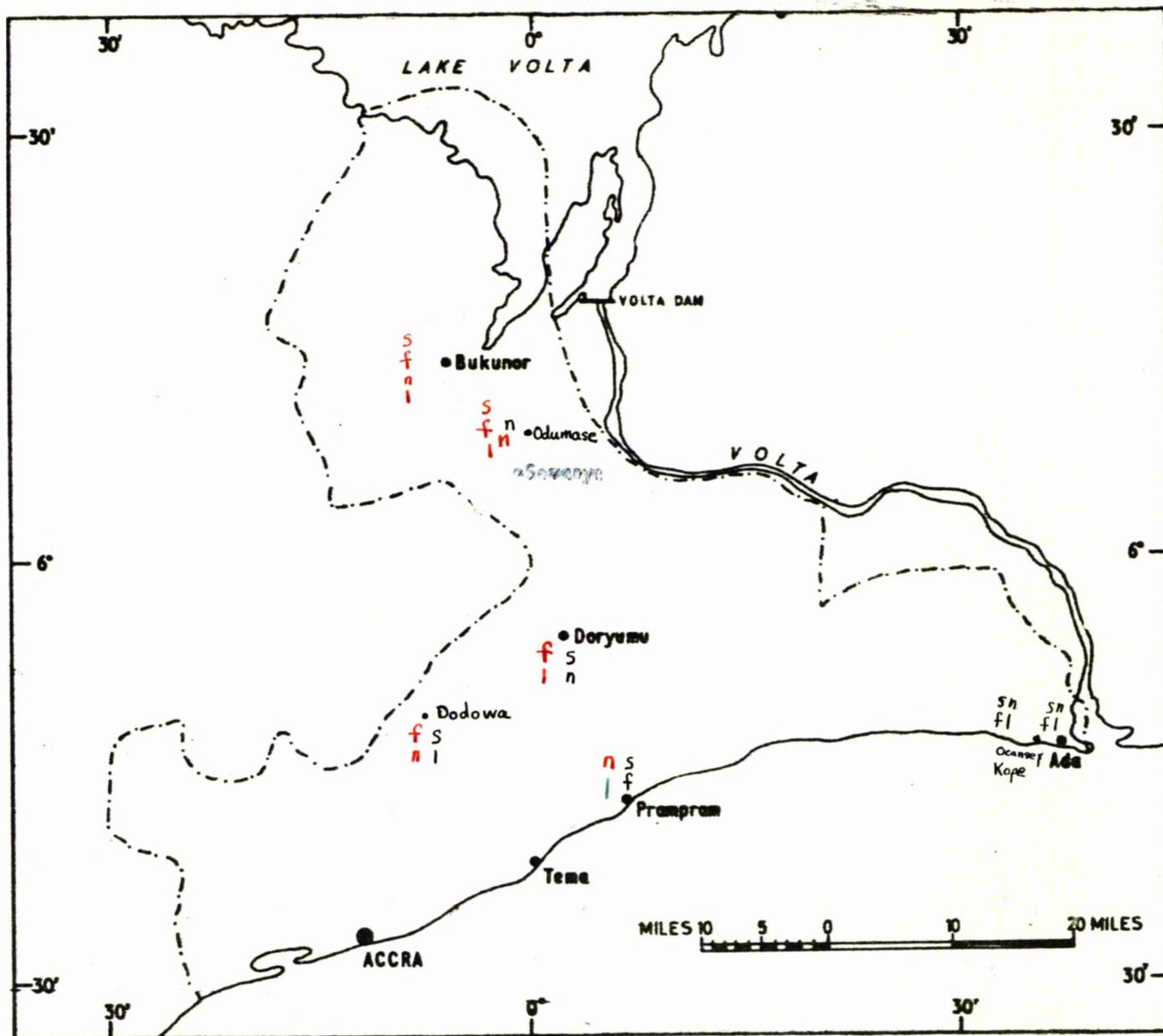
The generally recognized⁶ dialects of Adangme are Adã, Krobo, Shai, Osudoku, Ningo and Prampram. These are the officially established names, and will be used throughout this thesis. In Adangme the language is called daɲme, and the people daɲme-li. Krobo is klo, Shai is sɛ́, and Prampram is gbugblã. The term daɲme is sometimes used to refer to Adã speech, as distinct from other varieties of Adangme.

It appears that there are few if any features peculiar to Shai or Prampram. (Maps II, III). These



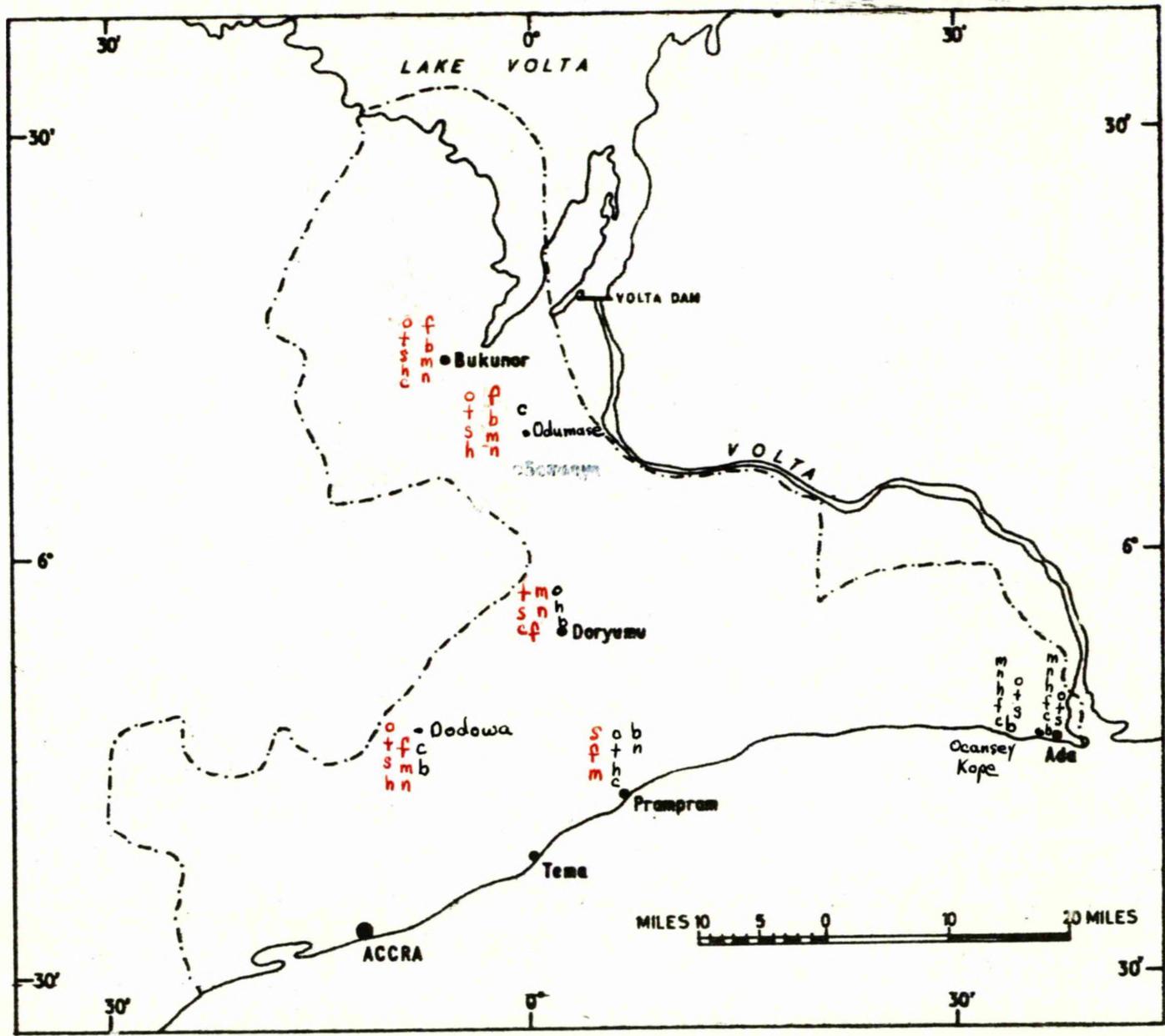
- Key:
- Features peculiar to Adangme.
 - p** : p in morphs where Gã has f.
 - k** : Negative verb has shape ko (not ka).
 - s** : Stative form occurs.
- Features peculiar to Gã
- b** : Word for 'pineapple' is blɔfɔŋmɛ.
 - t** : System of tenses occurs.
- Boundary

THE GÃ-ADANGME BOUNDARY
MAP I



DIALECTAL DIFFERENCES IN ADANGME - MORPHOLOGY AND LEXICON

MAP II



Key

	m	<u>mw</u>
In 'okro'	o	<u>o</u>
'today'	t	<u>t</u>
	h	<u>hw</u>
In 'soup'	s	<u>s</u>
'hunger'	h	<u>h</u>
'cough'	c	<u>c</u>
	w	<u>hw</u>
In 'foam'	f	<u>f</u>
	w	<u>h</u>
In 'honey'	b	<u>b</u>
'tomorrow'	m	<u>m</u>
	l	<u>n</u>
In 'navel'	n	<u>n</u>

DIALECTAL DIFFERENCES IN ADANGME - PHONOLOGY

MAP III

"dialects" appear to be characterized by combinations of Krobo and Adã features, best described in terms of inter-dialectal borrowing. Prampram is also distinguished by the presence of features otherwise peculiar to Gã. (Map I: . . .). For this reason, the thesis concentrates on Krobo and Adã. The author has no experience of Osudoku speech, but it appears that the people are closely related to the Krobo (Azu 1926, pg 263).

Although to some extent the transition from Gã to Adã may be regarded as a geographical continuum, certain differences, such as the correspondence Gã f: Adangme p, two phonemic tones in Gã corresponding to three in Adangme, and the use of the stative construction (6.1.3.2) may be regarded as diagnostic (Map I). Prampram is not simply a point on a continuum, probably because this area has in the past received numbers of immigrants from other parts of the Gã-Adangme territories.⁷

The histories of the various Gã and Adangme groups rarely mention each other, but at various times, Gã groups have assimilated Adangmes. A quarter in Teshie (Field pg 209) is said to be of Shai origin, and Osu was founded by people of Osudoku ('old Osu'). Perhaps as a result of this, the Gã spoken in these places is popularly supposed to be more conservative than that spoken in Accra, but

any actual borrowing seems to have been from Gã into Adangme.⁸ This borrowing is probably recent, and connected to the fact that Gã is used in Adangme schools.

Gã has been divided⁹ into three dialects, Teshie-Nungwa (and Tema?), Osu, and "a debased type of Gã spoken in Accra". Actually these differences are very slight, and do not affect the data treated in this thesis. An example of a difference is the verb meaning 'want, search for', which is táó, táá in Accra but túó in Teshie. Since the word is almost certainly borrowed, the latter form probably represents assimilation to Gã-Adangme vowel patterns. táá is also an assimilation, on a different model.

Map I shows the distribution of a small selection of the items that serve to distinguish Gã from Adangme. Map II displays some of the lexical items that are different in Krobo and Adã, and Map III shows the geographical distribution of some of the phonological differences.

External Contacts

Gã and Adangme are known to have assimilated considerable numbers of non-Gã-Adangme speakers at various times. The possibility of an assimilated population which formerly spoke Awutu has already been

mentioned. In Accra, the largest quarter is Otublohum, which consisted originally (Field 1940 pp. 148-9) of (Twi-speaking) Akwamu people, later joined by Denkeras. Several customs of the Otublohum, such as the type of girls' puberty rites performed and the reduced rôle of male circumcision, are evidence to-day of their Akan origins. Tema is also supposed to have been partly founded by Akwamu refugees (Field op.cit. pg 114), and similarly Nungua. One of the Teshie quarters is said to have been founded by Fante fishermen.

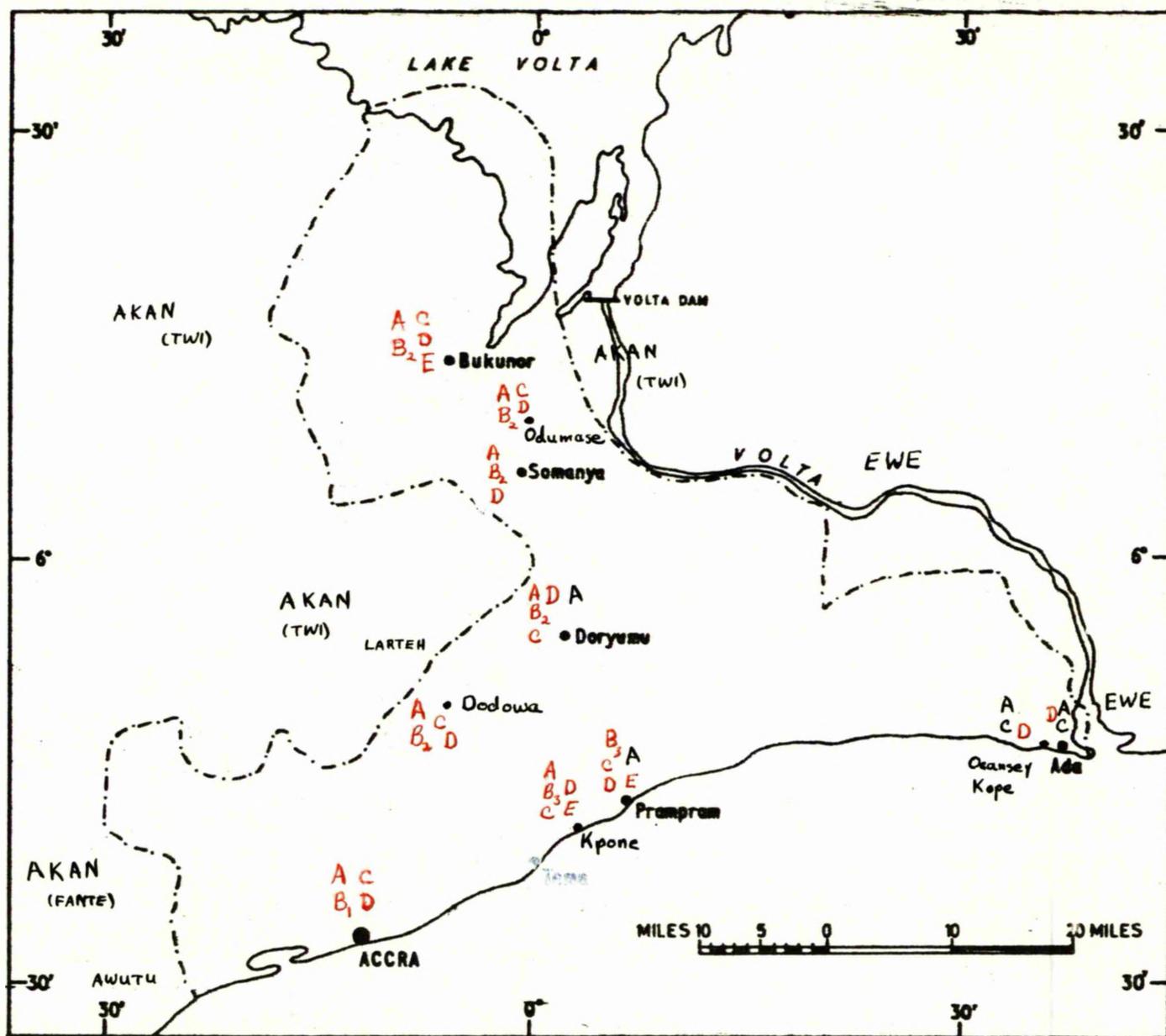
The Krobo have assimilated a number of Twi-speaking refugees, and also some Ewe groups. Both have left their mark on the customs of their hosts, although it seems that imported customs were sometimes forcibly suppressed in the interests of national unity (Azu 1926 pg 250). Adã is geographically isolated from Twi-speaking areas, but there are Akan family names in Adã, and at least one wě (clan) is of Ewe origin (Apronti 1967, pg 57).

Clearly there have been multiple opportunities for linguistic contact between Gã and Adangme and their neighbours. It is immediately obvious to the most casual observer that there has been a great deal of lexical borrowing. Gã, Adã and Krobo have all borrowed from both Twi and Ewe. Gã has borrowed the most from Twi and the least from Ewe, while Adã has borrowed the most

from Ewe and probably the least from Twi. It will be shown that there is reason to suspect foreign influence in grammar as well, particularly in Gã. From a geographical point of view, there appears to be an area of Twi influence and an area of Ewe influence, extending across the Gã-Adangme territory from different directions. It would be a mistake to try to draw a boundary between them, or even to show an area of overlap, because each actually extends over the entire area, growing progressively weaker the farther it gets from its own territory. It appears at the present time, however, that the Ewe influence has been weaker than the Twi, in that there are fewer Ewe words in Gã than there are Twi words in Adã.

The distribution of a small sample of Twi and Ewe loans is shown on Map IV.

Since the advent of Europeans on the coast, there has been considerable borrowing from European languages. Much of this borrowing consists of European names adopted for imported culture items, but this does not account for all of it. In Accra to-day, even the totally illiterate are familiar with some form of "Accra-English", and the author has heard elderly illiterate farmers utter such words as fɛ̀s, for 'first of all...', while speaking Gã. It would not be unusual for an illiterate



LOANS FROM AKAN AND EWE

MAP IV

Key

Akan (Twi) Items:

- A aklowá 'village'
- B₁ ɲkétie 'groundnut'
- B₂ akátē 'groundnut'
- B₃ kátie 'groundnut'
- C kentég 'basket'
- D Use of Akan day-names
- E k (notg) in 'bow+arrow' (kéé vs gée)

Ewe Items:

- A kɔpe 'village'
- C kusii 'basket'

woman to make such an utterance as e yús skááf for 'she puts on (uses) a head-tie (scarf)'. Neither final consonants nor the cluster sk normally occur in Gã. It appears that this kind of whole-sale borrowing decreases as one moves away from Accra, but no area is entirely immune to it.¹⁰ Borrowing from European languages seems so far to be lexical and phonological only.

0.4 Sources.

0.4.1 Written:

The data for this thesis was drawn from both written and oral sources. Modern written sources were mainly the works of Fr. Hugo Huber, D.A.Puplampu and Vincent Okunor. Such data was personally checked by the author, except where noted otherwise. The author was also privileged to have the use of a set of field notes made by Professor J. Berry.

Information on non-Gã-Adangme languages is almost entirely from written sources, mainly the works of Christaller, Westermann and Ansre. All Twi examples are from Christaller unless noted otherwise.

There are a few sources for earlier stages of Gã. Christian Proppen's grammar of Gã, published in 1764, is the earliest, and is especially valuable because it was written by a speaker of the language, possibly a native speaker. Probably for this reason, it is much

more consistent in spelling than the word lists of European travellers, and probably more reliable in general. It appears to make all the necessary phonemic distinctions, with the exceptions of tone and possibly the distinction between the half-close and half-open back vowels. The next grammar of Gã to be written was Zimmerman's, published in 1858. Apart from obsolete or obsolescent vocabulary, this work reveals only that, although a number of sound changes have taken place in Gã since Protten's time, virtually all had occurred by Zimmerman's time.

Zimmerman's work also has an Adangme appendix, based on the language spoken at Kpone. This is the main evidence that Kpone was once Adangme-speaking. To-day, it is essentially Gã. In 1858, it seems to have had a language more like Adangme than Gã, but with many non-Adangme features. The only known earlier sample of Adangme is Bowdich's (1819) short word list which he claims is the Prampram language. It is not certain whether Bowdich himself ever visited there, and it is very unlikely that his informant was a Gbugblã or any other kind of Adangme. The list he gives appears to be much contaminated by other languages, and for comparative purposes is quite useless.¹¹

In the last few decades, a number of books have been published in Gã, written by Gãs. Very little has been

published in Adangme, and only the writings of D.A. Puplampu and of T.N. Accam have been drawn upon.

0.4.2 Oral

The bulk of the data was gathered orally, from informants and from tape-recorded texts which were transcribed and translated by the author with the aid of informants.

Informants were:

Adangme: 1. Samuel Dzeagu, university student. Of an Adã family now living in Adã, but he was born in Teshie and learned Gã first.

2. C.N.B. Lartey and his brother - university students. Born and lived in Bukunor, Manya Krobo. Moved to Accra about age 14.

3. Samuel Portuphi, university student. Born and lived in Adã but went to school in Somanya (Yilo Krobo).

4. Eric Tetteh, messenger, about eighteen years old, elementary education. Born and spent most of his life in Odumase (Manya Krobo).

Since both Adã informants were somewhat suspect on account of their mixed background, the data obtained from them was supplemented by recordings of stories and speeches by schoolboys in Adã who were also born there, fishermen near Adã, and an elderly farmer near Adã. It was impossible to avoid English-speaking Adangme

informants who were bilingual in Gã, because Gã is used in all Adangme elementary schools.

- Gã:
1. Korley Collison, medical student.
 2. James Kotey, meter reader, about 28 years old, elementary education.
 3. Alexander Ofei Doodu, clerk, nineteen years old, middle school and commercial education.

All these came from Central Accra, i.e. west of Post Office Square. A number of recordings were made of the family of A.O. Doodu, who belong to Adzok Okãí Wè, of the Atúkpai district (fãŋ) of the Otúblòhúm quarter (akútŋ), and are resident most of the time in Manchie, a farming settlement about three miles north-west of Mayélà, its parent village, a section of which in turn belongs to Otublohum. A few recordings were also made of Teshie people farming at Manchie.

0.4.3 Statistical Data.

Sections I and II, especially the statistical parts, are based on a random sample of free morphemes, 1695 in Gã and 1821 in Adangme. A few bound alternants, e.g. pre-verb pronoun forms, and items whose mono-morphemic status is debatable, such as bases of shapes $CVLV_x$ and CVV_x (4.2, f.c.) were included. This data was punched onto cards and processed on an IBM 1620 computer. This work could not have been accomplished without considerable

assistance from Dr. J.F. Koster of the Physics Department, University of Ghana, for which the author is grateful. Printouts of the programs developed, of the output, and of the data arranged in alphabetical order, have been deposited with the Director of the Institute of African Studies, University of Ghana.

For purposes of counting, Adangme has been treated as a single unit, except where otherwise noted. Differences in phoneme inventory between Adã and Krobo are negligible. When an item has been found in both with phonological variants, both variants have been included. Actually, phonological alternations between Adã and Krobo involve mainly the rarer consonants, so that it is unlikely that the difference between relative frequencies of Adangme phonemes as given in Chapter I and those which might be found for a particular idiolect would be significant. Some of the lexical items included as general Adangme were found in one dialect but not in the other. The occurrence of an item in a dialect can be positively verified by finding it in the speech of a native speaker of that dialect, but its total absence is not verifiable in the same way, since there is always the possibility that not finding it is due to accident or an insufficiently exhaustive search. It was felt therefore that separate counts for Adã and

and Krobo based on vocabulary differences would be unjustified. To ensure a balance between the two dialects, however, a somewhat larger sample was used than in Gã, and the phoneme frequency scores were standardized for purposes of comparison.

The two samples consisted of the following classes of mono-morphemic words and bases:

	Gã	Adangme
Nouns (including personal names)	982	1100
Verbal Bases	566	585
Adjectives, adverbs and conjunctions	147	136
Total	1695	1821

0.5 Grammatical Outline

The outline that follows defines the grammatical units of Gã and Adangme to the extent necessary for the description of the various appearances of verbs and verb stems. On this very general level, there is little difference between the two languages. That is, they are analyzable in terms of the same kinds of grammatical units, which are arranged in generally similar ways. It will be useful, particularly for the discussions of rank-shifting in 6.2.2. and of recursion in 5.4, to set up a unit of rank intermediate between Clause and Group,

called Span. The span is the highest unit with which this thesis is actually concerned.

0.5.1 Clause

For a study of the verb, the only type of clause that is relevant (because it always contains a verb) has the following places: $\pm S \pm P \pm C$

+S +P +C: G gbékĕbi lĕ/ḍzò foi/oyá

child the/ran away/quickly

'The child ran away quickly'

D yo/sí è bí ò/pé

woman/left her child the/just

'The woman only left her child'

+S +P -C: G gbékĕbi lĕ /ḍzò foi

'The child ran away'

D yo/sí è bí ò 'The woman left her child'

-S +P +C: G a bɔ m̄dɛŋ /âahũnũ

'They tried again and again'

they made effort/repeatedly

D ā ba ɣ/huluu ò

'They remained a long time'

they came were/a long time

-S +P -C: G e ba 'He came'

D ko ó-bā 'Don't come!'

0.5.2 Span

The subject position (S) of the clause is realized by a span of one place: NG.

+NG:	G	<u>tʃú</u> - <u>í</u> <u>agbo</u> - <u>í</u> <u>lé</u> <u>fěě</u>	'All the big rooms'
		rooms-plur. big-plur. the all	
	D	<u>e</u> <u>bí</u> <u>ò</u> - <u>mě</u>	'his children'
		his child the-plur.	

The predicate span (at P) has two places:

		+VG	+NG	
+VG +NG:	G	<u>amε</u> <u>tá</u> / <u>ʃí</u>		'They sat down'
	D	<u>o</u> <u>peé</u> / <u>nokó</u>		'You did something'
+VG -NG:	G	<u>o</u> <u>nū</u>		'You heard'
	D	<u>bā</u>		'Come!'

The complement (at C) is realized by a span of one place: DG.

0.5.3 Group

The places NG in the subject and the predicate spans are realized by the nominal group. The nominal group in Adangme has been described in detail by Apranti.¹² The nominal group in Gã differs somewhat from the Adangme in details, but it is only necessary to note here that in both languages NG includes the following places:

		+N	+A	
+N +A:	G	<u>nūū</u> <u>agbo</u>		'big man'
	D	<u>nyū</u> - <u>mū</u> <u>agbo</u>		'big man'

Place VG in the predicate is realized by a verbal group, which will be described in both languages in detail in Chapter 5. Its places are somewhat different in the two languages, but basically it may be said to have three places:

+Pn +DV +IV

where DV is repeatable. -

+Pn +DV +IV:	G <u>e</u> <u>ba</u> <u>dzo</u>	'He came and danced'
	D <u>e</u> <u>ko</u> <u>do</u>	'He would have danced'
-Pn +DV +IV:	G <u>ka</u> <u>á-dzò</u>	'Don't dance!'
	D <u>ko</u> <u>ó-dò</u>	'Don't dance!'
+Pn -DV +IV:	G <u>e</u> <u>dzo</u>	'He danced'
	D <u>e</u> <u>do</u>	'He danced'
-Pn -DV +IV:	G <u>dzo-ó</u>	'Dance!'
	D <u>do</u>	'Dance!'

Place DG (in C) is realized by an adverbial group, of one place, D.

+D:	G <u>pépepe</u>	'exactly'
	D <u>gbelégbèlégbélé</u>	
		'never'

0.5.4 Word

The classes of word include: the noun, which occurs at N in NG, the adjective, occurring at A in NG, the adverb, occurring at D in DG, the verb, at DV and at IV in VG, and the pronoun, at Pn in VG.

For the purposes of this thesis, only the verb, the noun, and a sub-class of the adjective need be described here. In both languages, these types of word have two places each.

Verb: +vb ± gb

gb can occur either before or after vb.

+vb +gb:	G	<u>lá</u> - <u>á</u> [!]	'sing' (habitual)
+gb +vb:	D	<u>á-</u> <u>bā</u>	'come' (intensive)
+vb -gb:	G	<u>lá</u>	'sing' (imperfect, neutral)
	D	<u>bā</u>	'come' (neutral)

The verb word will be described in detail in Chapter 5.

Noun: +nb ±gb

+nb +gb:	G	<u>lɛ</u> - <u>lɛ</u>	'canoe'
		<u>tʃú</u> - <u>i</u> [!]	'rooms'
	D	<u>lɛ̄</u> - <u>hĩ</u>	'canoes'
+nb -gb:	G	<u>tʃú</u>	'room'
	D	<u>lɛ̄</u>	'canoe'

Adjective: some Gã and most Adangme adjectives have the following places:

+nb ±gb

+nb +gb:	G	<u>mɛmɛ</u> - <u>dzi</u> [!]	'old' (plur)
	D	<u>agbo</u> - <u>hĩ</u>	'big' (plur)
+nb -gb:	G	<u>mómo</u>	'old'
	D	<u>agbo</u>	'big'

0.5.5 Base

Three general classes of base are involved in the word classes defined: nominal, verbal and grammatical bases. Non-grammatical bases are classed together as lexical bases. There are two sub-classes of nominal base. One occurs at nb in the noun, and one occurs at nb in the adjective. The first (nb_1) has two places in Gã but one in Adangme. The second (nb_2) has only one place.

nb_1 : +pref +ns:

+pref +ns: G a-talé 'dress'

-pref +ns: G tʃú 'room'

D lɛ̄ 'canoe'

nb_2 : +ns: G mómo 'old'

D agbo 'big'

The verbal base also has two major sub-classes.

vb_2 , occurring in DV, has only one place:

+vs: G ba, ya, ke, ka

D bã, ya, kē, pí, tʃa

The other (vb_1) occurs at vb in IV. It has two places in Adangme, and three in Gã. These are described in Chapter 4.

+vs +ext ₁ +ext ₂ :	G	<u>ká</u> - <u>mǎ</u> - <u>i</u>	'turn fufu' (different lots, in groups)
+vs -ext ₁ +ext ₂ :	G	<u>gbó</u> - <u>i</u>	'die' (several, separately)
+vs +ext ₁ +ext ₂ :	G	<u>bú</u> - <u>mǎ</u>	'lie down' (several)
		<u>f</u> - <u>l</u>	'cut' (several)
	D	<u>sa</u> - <u>á</u>	'repair'
+vs -ext ₁ -ext ₂ :	G	<u>fo</u>	'cut'
		<u>sole</u>	'worship'
	D	<u>kpalé</u>	'go back'
		<u>dā</u>	'be straight'

Grammatical bases in the word classes mentioned fall into two sub-classes. One occurs at gb in the verb, and will be described in detail in Chapter 5. The other occurs at gb in nouns and adjectives. Each sub-class of grammatical base has one place only.

0.5.6 Morpheme

Morphemes fall into two main classes; free and bound. Two major sub-classes of free morpheme require definition here.

The nominal stem is divisible into two sub-classes, ns₁ which occurs at ns in nb₁, and ns₂ which occurs at ns in nb₂.

ns ₁ :	G and D	<u>bí</u>	'child'
ns ₂ :	G and D	<u>mómo</u>	'old'

The verbal stem also has two sub-classes. vs_1 realizes vs in vb_1 , and vs_2 realizes vs in vb_2 . vs_2 consists of a closed system of morphemes, but vs_1 is an open set.

The place in both sub-classes of grammatical base is realized by small closed systems of morphemes. In the sub-class occurring with nominal bases, there are suffixes expressing the singular/plural opposition. The sub-class occurring with verbal bases is realized by sets of morphemes which are described in Chapter 5, as grammatical particles.

In terms of this outline, the present work is mainly concerned with the verbal stem (morpheme class), the verbal base, the verb (word class), the verbal group, and the predicate span.

Section I P H O N O L O G Y

1. Synchronic Phonology

1.0 Introduction

1.1 The Syllable

1.1.1 Syllabic Shape

1.1.2 Consonant Clusters

1.1.3 Morph Shape

1.2 Consonants

1.2.1 The Phonemes

1.2.1.1 The Consonants of Gã

1.2.1.11 Restrictions on Distribution

1.2.1.2 The Consonants of Adangme

1.2.1.21 Restrictions on Distribution

1.2.2 Systems Comparisons

1.2.2.1 Contrastive Systems

1.2.2.2 Matrix Density

1.2.2.3 Distribution of Features

1.2.2.31 Range of Applicability

1.2.2.32 Index of Exploitation

1.2.3 Frequency Comparison

1.2.3.1 Rank and System

1.2.3.2 Frequency Skewing

1.2.3.3 Frequency Correlation and Sound Change

1.3 Vowels

1.3.1 System

1.3.2 Frequency

1.3.2.1 Rank and System

1.3.2.2 Frequency Skewing

1.3.2.3 Frequency Correlation

1.4 Tone

1.4.1 The Tone Group

1.4.2 The Intervals

1.4.2.1 Gã

1.4.2.11 Ascending Intervals

1.4.2.12 Descending Intervals

1.4.2.13 Level Pitch Sequences

1.4.2.2 Adangme

1.4.2.21 Ascending Intervals

1.4.2.22 Descending Intervals

1.4.2.23 Level Pitch Sequences

1.4.3 The Phonemes

1.4.4 Tone Alternations

1.4.4.1 High-Fall / High

1.4.4.2 Gã: downstep-High / Low

1.4.4.3 Adangme: Mid / Low

1.4.4.4 Adangme: downstep-High / Mid

1.4.4.5 Occurrence of Sequences

1.4.5 Tone and Word Class

1.4.6 Conclusions

1.0 Introduction

In this chapter the phonological systems of Gã and Adangme are described and analyzed, demonstrating the theoretical basis of the transcription used in subsequent chapters, and typological comparisons between the phonologies of the two languages are made. In Section II, some of the characteristics of the phonological systems will be compared with the phonological characteristics of verbal bases in particular, and the diachronic implications of the comparison are investigated. The treatment in this chapter has therefore been guided in part by considerations of what is relevant to the structure of the verbal base.

1.1 The Syllable

1.1.1 Syllabic shape

The following syllable types are found:

	Gã		Adangme	
CV	<u>bo</u>	'cloth'	<u>bo</u>	'cloth'
V	<u>a-mě</u>	'they'	<u>a</u>	'they'
N	<u>ɔkpáí</u>	'libation'	<u>kané-mí</u>	'reading'
CV	<u>akplɔ</u>	'spear'	<u>hwlí</u>	'paddle' (vb)

A morpheme may have any of these shapes.

In both languages, the syllable is the tone bearing unit.

1.1.2 Consonant Clusters

Gã is considered not to have phonological clusters, despite the fact that there are forms which in normal pronunciation might be considered to contain phonetic clusters, and in the established orthography are spelled as such.

e gblé 'he opened it'

Such forms can be analyzed as CVCV_x in which the tones are identical:

e gblé

for the following reasons:

Phonetic:

- a) l is always voiced, whether the preceding C is voiced or voiceless.
- b) l has length, whether the tones are the same or different.

Phonological:

- a) l and V may differ in tone, and therefore two tone bearing units are potentially present. Since there is usually some length on l, it seems best to say that two tone bearing units are always present.
- b) There are no cases of contrast between CLV and CVLV_x. Therefore any CLV can be analyzed as CVlV_x. In speech these are two alternative pronunciations, CVlV_x being more emphatic.

e sele, e sle 'he swam'

Alternation between CVCV and CCV only occurs if the second C is l.

In Adangme, as in Gã, there is no contrast between ClV and CVlV_x, where tone is level throughout. In many idiolects these are alternative pronunciations. Consequently, cluster containing syllables can be divided into two.

Phonetically, Adangme ClV is slightly different from Gã. C cannot be a palatalized consonant. If C is voiceless, l is sometimes voiceless also. If C is h, the result is a lightly aspirated, voiceless lateral phone [ɬ], e.g. in

e hla 'he searched' [e ɬ a]

which does not occur in Gã. If C carries labialization, the feature extends over the whole of CV, so that hwili 'paddle' (vb) may be pronounced [h^wɬ^wɪ], [h^wɪlɪ], [ɬúɪ] or [hlúɪ], but not [húɪ].¹

As in Gã, in forms of shape ClV in which l and V are at different pitches, l always has slight length and voice. There is no contrast with CVlV_x, and the stretch may be considered disyllabic.

Therefore, in both languages all ClV will be transcribed CVlV_x, and ClV type syllables eliminated.

1.1.3 Morph Shape

In both languages, CV is the most common syllable shape and a very common morph shape. In both languages a very high percentage of verb stems are CV. Noun stems are CV or polysyllabic.² Morphs of shapes V and N are in both languages mainly grammatical affixes, and grammatical affixes are almost all monosyllabic.

The data samples contained the following distribution of CV monosyllabic forms:

	Gã		Adangme	
	No. CV	% of total	No. CV	% of total
Nouns	89	9	212	19
Verbs ³	309	55	375	64
other	114	10	52	38
<hr/>				
Total	412	24%	639	35%

Of the polysyllabic items, at least 250 monomorphemic nouns in Gã, almost 30% of the sample, and about 90 (14%) in Adangme, are of probably foreign origin (from Akan, Ewe, or European languages). It is not likely that any of the CV nouns are borrowed, although a number of other CV items, mainly adverbs (e.g. those beginning with p, Gã pé, pó) probably are.

The proportion of CV in the morpheme inventory as a whole is somewhat higher in Adangme than in Gã. The

percentage of CV shapes in the verbs is also higher, but in both languages it is remarkably high as compared with the other classes. The very small class (probably less than ten items) of conjunctions in each language is composed mainly of monosyllables.

1.2 Consonants

1.2.1 The Phonemes

1.2.11 The Consonants of Gã

		lab-			l'd-		l'd-	lab
		bil	dent	alv	pal	pal	vel	vel
Stop	v'less	p		t			k	kw
	v'd	b		d			g	gw
								gb
Affricate	v'less			tʃ		tʃw		
	v'd			dʒ		dʒw		
Fricative	v'less	f	s	ʃ		ʃw	h	hw
	v'd	v	z					
Approximant								
nasal	m		n	ny		ŋ	ŋw	ŋm
oral	w		l	y		yw		

Remarks:

1. l has several allophones, all alveolar. [l] is a clear voiced lateral, and occurs initially in morphemes and intervocalically. Between two nasal vowels, [l̥], a nasal lateral, occurs. An alveolar fricative [ʃ] occurs

after t and d, and [ɹ], an alveolar flap, occurs after other consonants, but both are in free variation with [l].⁴

2. w and the labialized palatal yw are very nearly in complementary distribution, yw occurring before front vowels and w before back, but in a few forms they contrast before front vowels:

ywiéè 'speak' ywɛ 'cohabit' ywe 'palm nut'
awí 'wickedness' wɛsɛwɛsɛ 'rough, arid' we 'household'

awí is probably borrowed from Twi a-wí 'theft'. Otherwise, yw occurs mainly before i but w never does. There is a tendency in speech for the syllable ywi to become yu, especially when followed by a vowel, e.g.

e ywiéè 'he spoke' → e yuéè

3. The phonetic difference between l and ɹ may be considered parallel to the difference between g and ʃ.

4. The labio-velars appear to this observer to utilize two air-streams, velaric ingressive and pulmonic egressive, as Ladefoged described for Yoruba, and not pulmonic egressive only, as is said to be the case in some Guan languages. (Ladefoged 1964, pg 8).

5. Nasal consonants tend to have an oral plosive release before oral vowels.

1.2.1.11 Restrictions on Consonant Distribution

Restrictions, on the consonant-vowel sequences affect mainly the labialized consonants.

1. None of the labialized consonants occurs before back vowels, except kw which occurs before o and ɔ, and kw̥ which occurs before ɔ.
2. kw, gw, tʃw, hw and ɲw do not occur before i or ĩ.
3. y, yw and w do not occur before nasal vowels. Neither do gw, dʒw, ɲw, hw, or z.
4. Among the rarer phonemes, gw and hw occur only before a. ɲw occurs only before a and ɛ. yw is atypical in that it does not occur before a, which is by far the most frequent and generally distributed vowel.

Within monosyllabic words, the restrictions are extended:

1. No monosyllabic word begins with hw or y.
2. dʒw, tʃw, ɲw and z occur in monosyllables only before a.
3. l, dʒ, as well as w, yw, and y, do not occur before nasal vowels.
4. The only monosyllabic words beginning with p are the adverbs pé 'quite, just' and pó 'very, even, quite', which are almost certainly loans from Akan.

Remarks:

1. Adangme l has been thoroughly described by Apronti (Apronti 1967 4.2.5, 4.2.65). The allophones are similar to the Gã ones, but the lateral and fricative are not in free variation except when occurring after s. It is possible that the amount of free variation differs among individuals.

2. yw tends in speech to be realized as wi in Adã, but yu in Krobo, e.g.

e ywa 'he broke it' → Adã [ewia], Krobo [eyua].

3. The palatalized and labialized consonants are often lengthened. When i and u precede another vowel within the morpheme they tend to be shortened, so there is not necessarily a difference in length between

pyɛ 'remain' and piɛ 'join'

In Gã there is a contrast between Cw and CV, as for instance ɔwɔ 'elephant' but ɔwɔ 'suck', but no such contrast has been found in Adangme.

hw and hy are voiceless approximants with very slight local friction.

4. As in Gã, the labio-velars appear to this observer to utilize two air-streams. According to Apronti, however, (Apronti 4.2.2, pg 57) "the pulmonic airstream is the only one used in Adangme plosive articulations".

1.2.1.21 Restrictions on Consonant Distribution

More or less as in Gã, restrictions on consonant-vowel distribution mostly involve nasal vowels, back vowels and the labialized and palatalized consonants. This is no doubt in part due to the extreme rarity of some of the consonants.

1. Palatalized consonants do not occur before back vowels, except that hy, fy and zy occur before ɔ, and hy occurs before ɔ̃.
2. Labialized consonants do not occur before the close and half-close back vowels, except for tʃw which in a very few items occurs before the half-close o.
3. As in Gã, y and yw do not occur before nasal vowels, and in monosyllabic words this is also true of l and w.
4. As in Gã, kw does not occur before i, but kw, tʃ, and ɲm all occur before i, and ɲm before ĩ.
5. Unlike Gã, there are monosyllabic words beginning with hw and v, but none begin with nw. No monosyllabic verb begins with v, by, zy, tw, sw, or nw.
6. The following consonants occur before one vowel only: nyw before a (in monosyllabic verbs also tʃw), ty before ã (in monosyllabic words also sy), gby before ɛ, and dw before ɔ.

1.2.2 Systems Comparisons⁵

1.2.2. Contrastive Systems

1. In both languages the possibilities of combination of

place and mode of articulation are, as in most languages, by no means totally realized. In both languages, there is no contrast between labio-dental and bilabial articulation, since all the labio-dentals are fricatives and none of the bilabials are. Similarly, there is no contrast between the Affricate and the Stop modes of articulation, since all affricates are palatals or labialized palatals and no stops are. In Adangme, affrication does not contrast with fricativity either, since Adangme has no \int , but, since the affricates are not also continuants, they may be considered phonetically closer to the stops.

2. In both languages, the set of consonants can be reduced to a set of nine primary consonants. These represent the points of intersection on a matrix of three vertical rows, i.e. three primary places of articulation, and three horizontal rows, representing three primary modes of articulation. The non-primary consonants are derived from the primary ones by addition of features, of voice and nasality and affrication on the horizontal axis, and velarity, palatality and labiality on the vertical axis.

a) Voice and Nasality. None of the stops, affricates or fricatives are nasal. In these series there is a contrast between voice and voicelessness. There are cases of a voiceless consonant having no voiced correspondent,

particularly in the fricatives, but none of a voiced item with no corresponding voiceless item. In the approximants, there is a contrast between nasality and oralness, but all are voiced. There are nasal consonants with no oral counterpart, but not vice-versa, except that Gã has 'yw' but no 'nyw'.

Since only continuants are nasal and all continuants are voiced, it is possible to treat the voiced-voiceless contrast and the oral-nasal contrast as aspects of a single phenomenon, which I have termed production. Oralness is then functionally equivalent to voicing, and non-production is primary.

b) Gã and Adangme are typologically identical as regards the horizontal axis of the consonant matrix. On the vertical axis, a typological difference is created between the two systems by the different ranges of application of the feature of palatalization. In Gã, the palatal affricates tʃ and tʃw may be treated as respectively t plus palatalization, and t plus palatalization plus labialization. Similarly for d, dʒ, dʒw, and l, ɲ, ɲw; s, ʃ, ʃw. Then labialization is only present in an alveolar consonant when palatalization (with affrication) is also present, and a palatal series and an affricate order can be eliminated from the set of primary consonants.

In Adangme, on the other hand, there are also ty and tw. Therefore, in Adangme affrication cannot be treated

as an automatic feature of palatalized post-dental stops. However, palatalization can be treated as an automatic feature of affrication.

c) Organization of consonants in both languages is simplified if the labio-velars are related to the labials rather than the velars. Ladefoged offers some evidence of the phonetic validity of this association (Ladefoged 1967 pg 12)⁶.

For Gã, velarization of labials (producing kp, gb, nm) and labialization, which applies to the other articulatory orders (producing e.g. tʃw, kw) can be treated as conditioned variants of a single phenomenon, which I have termed inversion. This is impossible in Adangme, where the range of application of labialization is wider. In Adangme, that is, we get kp and kw, but also pw. Similarly, gb and gw, and also bw. Therefore, velarization must be treated as a feature distinct from and contrasting with labialization.

d) In accordance with the discussion above, the classification of Gã consonants may be revised as follows:⁷

	Labial		Post-Dental			Velar	
	* <u>S</u>	<u>I</u>	<u>S</u>	<u>P</u>	<u>I</u>	<u>S</u>	<u>I</u>
Stops							
non-prod.	p	kp	t	tʃ	tʃw	k	kw
produced	b	gb	d	dʒ	dʒw	g	gw
Fricatives							
non-prod.	f		s	ʃ	ʃw	h	hw
produced	v		z				
Approximants							
non-prod.	m	ɲm	n	ny		ŋ	ŋw
produced	w		l	y	yw		

e) In Adangme, the consonants are reduced to three primary orders by treating velarization and palatalization accompanied by affrication as functionally identical, and not velarization and labialization, as was done for Gã. Since the consonants having velarization (if labial) or affricated palatalization (if post-dental) have a stronger plosive release than the others, this composite feature I have termed emphasis, and the consonants carrying it emphatics. The rest of the consonants are then derived by addition of either labialization or (unaffricated) palatalization. There are no absolute rules governing the distribution of these features, except that emphatic post-dentals, which are already palatalized, cannot be further palatalized. There is no audible affrication on the non-produced emphatic post-dental approximants but they

are included in the emphatics to account for the nw/nyw contrast.

	<u>Labial</u>				<u>Post-Dental</u>				<u>Velar</u>			
	<u>Simple</u>		<u>Emphatic</u>		<u>Simple</u>		<u>Emphatic</u>		<u>Simple</u>			
	<u>l̥</u>	<u>p̥</u>		<u>p̥</u>	<u>l̥</u>	<u>p̥</u>		<u>l̥</u>	<u>l̥</u>	<u>p̥</u>		
Stop												
non-prod.	p	pw	py	kp	t̥	tw	ty	t̥	t̥w	k	kw	
produced	b	bw	by	gb	gby	d	dw	d̥	d̥w	g	gw	
Fricative												
non-prod.	f		fy		s	sw	sy			h	hw	hy
produced	v		vy		z		zy					
Approximant												
non-prod.	m	mw	my	ɣm	n	nw		ny	nyw	ŋ	ɣw	
produced	w				l	lw		y	yw			

The Gã consonants can of course be fitted into the same framework. The major differences between the two systems are that in Gã but not in Adangme, velarization and labialization can be conveniently grouped into a single feature. In Gã only, palatalization and affrication are automatic features of labialized post-dentals, so that Gã can be analyzed in terms of primitive features (the three orders), and additive secondary features (sub-orders), while Adangme also requires additive tertiary features (sub-sub-orders). Analysis of Gã in terms of three degrees of order is therefore acceptable but slightly less economical.

Analysis of Adangme in terms of only two degrees of order would be impossible without expanding the number of features treated as primitive. In the following chart, the Gã system is re-analyzed in such a way as to make it typologically comparable to Adangme. The composition and number of orders and series⁸, but the Post-Dental and Velar Inverted sub-orders of the first chart are re-analyzed as sub-sub-orders.

	<u>Labial</u>		<u>Post-Dental</u>			<u>Velar</u>	
	<u>Simple</u>	<u>Emphatic</u>	<u>Simple</u>	<u>Emphatic</u>	<u>l'd</u>	<u>Simple</u>	<u>l'd</u>
Stops							
non-prod.	p	kp	t	tʃ	tʃw	k	kw
produced	b	gb	d	dʒ	dʒw	g	gw
Fricatives							
non-prod.	f		s	ʃ	ʃw	h	hw
produced	v		z				
Approximants							
non-prod.	m	ɲm	n	ny		ŋ	ɲw
produced	w		l	y	yw		

1.2.2.2 Matrix Density

On the basis of these classifications⁸ we calculate the degree to which the potentialities of each system are realized within each language. If the phoneme chart is thought of as a grid on which places are created by the intersection of series and orders, then some places are

filled, i.e. realized by a consonant, and others are not. The ratio of the number of actual consonant phonemes to the number allowed by the system of intersections represents the density to which the articulatory matrix is filled and the consonant-forming possibilities exploited. It turns out that the density of the Gã system is rather higher than that of Adangme, which allows more possibilities.

	No. C	No. Possible C	Ratio
Gã	32	42	76%
Adangme	49	78	63%

For both languages, the stops are by far the most fully exploited series, and the fricatives the least. All series are more fully exploited in Gã than in Adangme.

	<u>Stops</u>			<u>Fricatives</u>			<u>Approximants</u>		
	No. C	No. Poss.	Ratio	No. C	No. Poss.	Ratio	No. C	No. Poss.	Ratio
Gã	14	14	100%	8	14	57%	10	14	71%
Adangme	24	26	92%	12	26	46%	15	26	58%

1.2.2.3 Distribution of Features

The basic set of nine primary consonants (p, t, k, f, s, h, m, n, ŋ) is the same in both languages. Therefore, the differences between the phoneme charts, including the differences in matrix density, are the results of

differences in distribution of additive features. These differences are measured and compared by means of two statistical indexes.

1.2.2.31 Range of Applicability

The degree to which a feature is applicable in a system is measured by a) the proportion of the number of orders displaying it to the total number of orders. b) the proportion of the number of articulatory series displaying it to the total series. The average between these two figures I have called the index of applicability. The calculations are based on the total number of sub-sub-orders.

The range of applicability of production, as well as of both its alternants voice and oralness, is slightly wider in Gã than in Adangme. This is largely because the Adangme palatalized velar sub-order has only one member, hy, which is unproduced, and several other labial and palatal sub-sub-orders which Gã does not have and which have nasal members with no oral counterparts.

	Incidence in Orders		Incidence in Series		Index	
	Gã	Adangme	Gã	Adangme	Gã	Adangme
Voice	100%	92%	66%	66%	83%	79%
oralness	60%	38%	33%	33%	46%	36%
prod'ion	100%	92%	100%	100%	100%	96%

Comparing the features which are added to orders according to the analysis which employs the emphasis feature, the following figures are obtained. The figures for emphasis are based on a total of three orders, while those for labialization and palatalization are found for a total of five sub-orders.

	Incidence in Orders		Incidence in Series Index			
	Gã	Adangme	Gã	Adangme	Gã	Adangme
emphasis	66%	66%	100%	66%	88%	66%
labializa'n	40%	80%	100%	100%	70%	90%
palat'ation	-	80%	-	100%	-	90%

The higher applicability of emphasis in Gã is due to the fact that there are fricative emphatic consonants in Gã (ʃ, ʃw) but not in Adangme. On this analysis, labialization and palatalization are evenly and very widely distributed in Adangme, but in Gã palatalization does not occur at all and labialization is restricted.

If Gã consonants are analysed by inversion and palatalization, the following figures may be obtained:

	Orders	Series	Index
inversion	100%	100%	100%
palatal'ion	33%	100%	66%

This palatalization is of course phonetically a different phenomenon from that quoted above, which does not occur in Gã at all. Inversion reflects a greater generalization about Gã consonants than emphasis does,

as reflected in the figures for each. As a result, the scope of the second feature is more restricted.

1.2.2.32 Index of Exploitation

Within the range of applicability of each feature an index of exploitation of it is obtained by finding the ratio of the number of phonemes actually bearing a feature to the number of systematically potential bearers of it.

The number of systematically potential bearers of a feature in the case of features added to series (production) consists of the number of series having at least one ^{me} number that carries it, multiplied by the number of sub-sub-orders which have at least one ^{me} number carrying the feature. In the case of features added to orders, it is the number of sub-series multiplied by the number of orders (in the case of emphasis) or sub-orders which have at least one member that carries it.

	Voice Production	Emphasis	Labialization	Palatalization	
Gã	64%	57%	66%	66%	-
Adangme	62%	55%	46%	66%	42%

There is no point in including oralness in the comparison, since it occurs in one series only and therefore has an index of 100. In both languages, addition of oralness to voice results in a lowered score for exploitation of production, because oralness has a lower range of application. The feature is exploited to about the same degree in both languages.

Emphasis and labialization are exploited equally in Gã, within their quite different ranges of application. Within identical ranges of application, Adangme exploits labialization more fully than palatalization. Within a very much smaller range of application, Gã exploits labialization to the same degree as Adangme does.

To conclude, Gã and Adangme do not differ significantly in the application and exploitation of voice, oralness, or therefore, production. There is a major difference in the presence in one language only of palatalization, but, despite its very high range of applicability, it is the least thoroughly exploited feature of Adangme. The higher scores for emphasis in Gã are due to the presence in that language only of fricative emphatics, in both sub-sub-orders.

The indices of exploitation for Gã according to analysis in terms of inversion are:

Inversion - 61%

Palatalization - 83%

Within its peculiar range of application (one order but every series), palatalization of this type is quite heavily exploited, as compared to the figures for exploitation of features on the previous table.

1.2.3 Frequency Comparison

In 2.2 the sets of consonants have been compared as

overlapping matrices of contrasting features. In this section, the sets of filled matrix places, i.e. of consonants, will be compared according to the frequency of occurrence of individual consonant phonemes in a random sample of the morphs of each language.

The sample of morphs was 1695 for Gã, 1821 for Adangme (see 0.4.3). The number of times each phoneme occurred in the sample was counted. In order to arrive at comparable figures in each language, the frequency of each phoneme was standardized⁹ with respect to the number of morphemes in the sample and the number of phonemes in the language.

In the chart below the phonemes of each language are listed according to relative frequency of occurrence. The number of occurrences in the sample and the standardized frequencies are also listed.

The number of times a phoneme occurs is not the same as the number of morphemes that phoneme occurs in, as a phoneme occasionally occurs twice in one morpheme.

Rank	Phoneme		No. of Occurrences		Standard Frequency	
	G	D	G	D	G	D
1	l	l	407	421	3.04	4.09
2	k	k	348	320	2.46	2.89
3	t		247		1.47	
		s		225		1.82
4	b		232		1.32	
		t		214		1.70
5	ŋ		202		1.02	
		m		203		1.58
6	m		185		.85	
		b		176		1.28
7	n		169		.70	
		d		153		1.02
8	s		164		.65	
		n		133		.79
9	d		148		.49	
		kp		166		.60
10	f		143		.44	
		p		105		.48
11	kp		123		.24	
		tʃ		99		.41
12	ʃ		98		.00*	
		h		92		.33
13	t		90		-.83	
		f		82		.22
14	dʒ		76		-.22	
		gb		81		.21
15	gb		69		-.29	
		dʒ		71		.10
16	h,p		67		-.31	
		ŋ		70		.08
17		g		67		.05
18	w	w	64	63	-.34	.01*

Rank	Phoneme		No. of Occurrences		Standard Frequency	
	G	D	G	D	G	D
19	g		50		-.48	
		y		48		-.16
20	ŋm		40		-.58	
		ny		47		-.17
21	ny, y		36		-.62	
		ŋm		42		-.23
22		z		34		-.32
23	kw		24		-.74	
		hw		32		-.34
24	ʃw		21		-.76	
		kw		30		-.37
25	tʃw		14		-.83	
		hy		15		-.53
26	dʒw		8		-.89	
27	yw		7		-.89	
		v		13		-.56
28	v		5		-.92	
		bw		9		-.60
29	z		4		-.93	
		pw		8		-.61
30	ŋw, gw		3		-.94	
		fɣ		7		-.62
31		gw, my, ŋw		6		-.64
32	hw		2		-.95	
34		tʃw, sw, sy		5		-.65
37		py, lw		4		-.66
39		yw, vy, dʒw, gby				
		zy, tw		3		-.68
45		nw, dw, by		2		-.68
48		ty, nyw		1		-.69

Average Number of Occurrences: Gã 94 Adangme 64

*: closest to standard score.

1.2.3.1 Rank and System

By the analysis of 1.2.2 above, consonants may be graded into three sets. Primary consonants are those which carry no additive features other than production. Secondary consonants are those which carry emphasis, and tertiary consonants are those which are palatalized or labialized. If the standard score for each set of consonants is 0, it appears that in both languages no consonant with a higher than standard score for frequency (ranks over 12 in Gã, ranks 17 and up in Adangme) is tertiary. In Gã, only one, at 11, is secondary, but in Adangme all the secondary consonants except ŋm have a higher than standard score. The ten most frequent consonants in Gã and the eight most frequent in Adangme are all primary. But primary consonants v and z are of very low frequency in both. All the tertiary consonants rank below 22, and v and z are the only non-tertiary ones at these ranks. Adangme z appears to have considerably higher frequency than Gã z, but it is nevertheless only one rank above the tertiary consonants. In both languages, therefore, as a general tendency, the most frequent consonants tend to be primary, least frequent to be tertiary.

1.2.3.2 Frequency Skewing

In both languages, the frequencies of phonemes in morphemes are heavily skewed. That is, a small

proportion of the available phonemes account for a large proportion of the occurrences of consonants in the sample. The first rank phoneme l is extremely high. Only second, third and fourth rank phonemes have more than half as many occurrences. In Gã, the total number of occurrences of all thirty-two consonants is a little more than 3,000, but the six most frequent consonants alone account for more than 1,500. In Adangme the total for forty-nine consonants is only slightly higher, 3,148, but here also just six consonants account for half the occurrences.

Also, less than one third of the phonemes have higher than standard score for frequency, in both languages.

1.2.3.3 Frequency Correlation and Sound Change

For the phonemes of types which occur in both languages, the correlation coefficient¹⁰ between their standardized frequencies is 0,93. If the scores in each language were identical except for differences attributable statistically to accident, such as size of sample and number of consonants, the coefficient would be 1.00. Therefore most differences as regards score and rank of these phonemes are likely to be due to chance, that is, accidental features of the sample. It would seem that any sound changes that may have occurred have left little trace in the statistical distribution of primary and secondary phonemes.

Nevertheless, there are a few surface differences which are of interest. Gã f is the only non-tertiary phoneme with a frequency not lower than standard which is of a type which is not shared. It regularly corresponds (2.2.1.2) to Adangme s, which is five ranks higher than Gã s with a standard frequency difference of 1.17. Gã f and Adangme p correspond (2.2.1.1), and they also share the same rank and are extremely close in standard frequency, whereas Gã p, which is not a reflex of a proto-phoneme, is of below standard frequency. ŋ in both languages is above standard frequency, but much higher in Gã. ŋ occurs morph-finally in Gã, but not in Adangme (see 3.1.2.2).

1.3. Vowels

1.3.1 System

The vowels of Gã and Adangme are schematically identical. There are seven oral vowels and five nasal vowels.

The nasal vowels may be paired with the oral vowels of nearest articulation. Apronti (pg 27) adduces instrumental evidence to show that in Adangme a nasal vowel is closer, and in the case of front vowels and ã fronter, than the oral member of a pair. This is also true of Gã nasal vowels.¹¹

	Front	Central	Back
close	i ĭ		u ũ
half-close	e		o
half-open	ɛ ě		ɔ ǔ
open		a ǎ	

Oral and nasal vowels contrast after nasal consonants.

	Gã	<u>ma</u>	'fasten'	<u>mã</u>	'build'
Adangme	<u>na</u>		man's name	<u>nã</u>	'see'

Every vowel phoneme carries phonemic tone, and is the nucleus of a syllable (see 1.4. below).

1.3.2 Frequency

Frequencies of the twelve vowels were found and standardized in the same manner as for consonants.

Rank	Phoneme		No. Occurrences		Standardized Frequency	
	G	D	G	D	G.	D
1	a	a	1060	919	2.77	2.76
2	o	o	531	467	.82	.75
3	i		406		.36	
		ɔ		383		.38
4	e	e	367	356	.22	.26
5	ɔ		309		.01	
		ĩ		330		.14
6	ɛ	ɛ	289	296	-.04*	-.01*
7	u	u	290	238	-.06	-.26
8	ǎ	ǎ	147	226	-.59	-.32

Rank	Phoneme		No. Occurrences		Standardized Frequency	
	G	D	G	D	G	D
9	ɔ̃	ɔ̃	109	102	-.73	-.87
10	ĩ		62		-.90	
		ẽ		95		-.90
11	ũ	ũ	61	87	-.91	-.93
12	ẽ		49		-.95	
'		ĩ		71		-1.00

* first score below standard score (0).

1.3.2.1 Rank and System

All the oral vowels are in both languages clearly more frequent than the nasal vowels. Except that a is the most frequent oral vowel, by a large margin, and ã is the most frequent nasal, the frequency of nasal vowels seems to be unrelated to the frequency of the corresponding oral vowels. Also there is no apparent relationship between articulation, - openness or closeness, and frequency.

1.3.2.2 Frequency Skewing

Vowel frequency is skewed in both languages, but not nearly as strongly as with the consonants. One quarter of the vowels account for half of the occurrences of vowels. Also, the standard score for each set occurs almost half way down the list.

1.3.2.3 Frequency Correlation

In one language the relative rank of i and ɔ, and of ĩ and ẽ, are the reverse of their relative ranks in the other. Otherwise, frequency ranking is the same. The correlation coefficient for the two sets is .99. As far as statistics of occurrence in morphemes are concerned the two vowel systems may be considered the same.

1.4 Tone

1.4.1 The Tone Group

The description that follows defines, and is true within the limits of, the tone group. The tone group is co-extensive with various types of grammatical stretches, including the minimal utterance and the clause.

1.4.2 The Intervals

As indicated above (1.1.1) every syllable in both Gã and Adangme carries phonemic tone. An analysis of the tone systems must therefore account for the pitch contour of strings of one or more syllables.

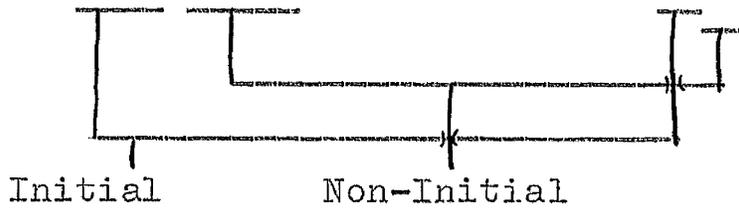
1.4.2.1 Gã

1.4.2.11 Ascending Intervals

In Gã, there is just one significant ascending interval of pitch between two syllables. An ascending interval that occurs group-initially both starts and ends higher than a non-initial interval.

e bi lɛ pɛ

[- -] 'he asked him at once'



Since there is only one contrastive ascending interval, a succession of two or more progressively ascending intervals, i.e. a tone sequence of the type *[- -] does not arise. Any ascending intervals succeeding the first are progressively shorter, the lower pitch level remaining constant., [- - -] . This gives the effect known as 'downdrift'.

1.4.2.12 Descending Intervals

There are two minimally contrastive descending intervals which differ in the pitch of the final syllable but not in the pitch of the first. In the larger interval, the final pitch falls slightly when it is group-final.

e bu [- -] 'he has put it on'

e bu [-] 'it is plentiful'

Two or more progressively descending intervals do occur:

e bi lɛ [- -] 'he has asked him'

gbekɛ-bi-i lɛhã lɛyɛliko [- - -]

child-person-plur the gave him yam one ..

'the children gave him a certain yam'

Morphs which occur in a series such as the last are apt to have different pitches relative to each other if their order

tʃɛ gbo [-̄] 'a father died'

yo gbo [-̄] 'a woman died'

In discursive speech, however, there is only one ascending interval.

tʃɛ gbo, yo gbo [-̄] 'a father died, a woman died'

In discursive speech, there is no contrastive variation in the end point of the interval, and consequently there is, as in Gã no sequence of two or more progressively ascending intervals. In deliberate speech, on the other hand, a Krobo informant consistently and unself-consciously produced series of two progressively ascending intervals, e.g.

e se mu [-̄] 'it is dirty'

In discursive speech, the same utterance has the pitch contour [-̄-̄].

1.4.2.22 Descending Intervals

In a two-syllable sequence there are three possible descending intervals, one more than in Gã; two contrastive end points and two contrastive starting points.

tʃɛ nũ [-̄] 'a father drank'

wɔ ye [-̄] 'a god ate'

wɔ nũ [-̄] 'a god drank'

An ascending interval can follow two types of descending interval. Both are shorter than the largest of the three above.

tʃɛ nũ pɛ [- -] 'a father just drank'

wɔ nũ pɛ [- -] 'a god just drank'

but not

* wɔ nũ pɛ [- -]

wɔ ye pɛ [- -] 'a god just ate'

but not

* wɔ ye pɛ [- -]

1.4.2.23 Level Pitch Sequences

Whereas Gã has two contrastive levels of level pitch sequences, Adangme has three. As in Gã at the lowest level a syllable in group-final position has falling pitch.

wɔ bi [-] 'a god asked'

yo nũ [-] 'a woman heard'

yo nũ [-] 'a woman drank'

There are also three levels of monosyllabic utterance:

mã [-] 'dough' mã [-] 'herring'

mã [] 'nation'

1.4.3 The Phonemes

The facts described in 1.4.2 can be accounted for in terms of two tone phonemes in Gã; high, marked', and low, unmarked or \, three in Adangme; high, marked ; mid, marked -, and low, \ or unmarked, and downstep, marked ', which is a phonemic tonal juncture phenomenon.

In both languages, a high tone is always higher than any following non-high tone. If downstep intervenes between two high tones, the second is lower than the first. A high tone is also lower than a preceding high tone if one or more non-high tones intervene. This kind of lowered high tone is also accounted for by downstep, but since it is completely automatic it will not be marked. Otherwise, two successive high tones are at the same pitch level.

In Gã, a group-initial low tone immediately succeeded by a high tone is somewhat higher than all succeeding low tones. Otherwise, the low tones in a group are all at the same pitch. They are level except for a group-final low tone, which has a short fall from low to extra-low.

The Adangme mid tone is higher than any low tone in the group but lower than any high tone preceded by down-step. The high-mid interval is greater than the mid-low interval. The mid tone is slightly raised when group-initial before a high tone, which may result in an exception to the rule that a mid tone is lower than any high tone in the group. Mid tones are always level.

In this thesis, tones^{are} transcribed as follows: The first high tone is marked ' . Subsequent tone of a series on the same pitch are unmarked. The first downstepped high tone is marked ' , and subsequent tones at the same

pitch are unmarked. If a low tone is group-initial it is unmarked, and following tones at the same level are also unmarked, but if it is the first of a series of low tones and is not group-initial it is marked ` . In Adangme, a group-initial mid tone that immediately precedes a high tone is unmarked. If it is not group-initial or if it is initial and followed by non-high tones it is marked -, and subsequent tones at the same level are unmarked.

The examples of 1.4.2 may now be rewritten:

Gã: 1.4.2.11	<u>e</u> <u>bí</u> <u>lè</u> <u>pé</u>	
1.4.2.12	<u>é</u> <u>bù</u>	<u>é</u> <u>bù</u>
	<u>é</u> <u>bí</u> <u>lè</u>	
	<u>gbéké</u> - <u>bi-i</u> <u>hã</u> <u>lè</u> <u>yelè</u> <u>ko</u>	
	<u>bí-i</u> <u>lè</u> <u>hã</u> <u>gbeké</u> <u>ko</u> <u>yelè</u>	
	<u>é</u> <u>bù</u> <u>tʃɔ̄</u>	<u>é</u> <u>bù</u> <u>tʃɔ̄</u>
1.4.2.13	<u>é</u> <u>bu</u>	<u>e</u> <u>bu</u>
	<u>gbé</u>	<u>gbɛ</u>

Adangme:

1.4.2.21	<u>tʃɛ̄</u> <u>gbó</u>	<u>yò</u> <u>gbó</u>
	<u>tʃɛ</u> <u>gbó</u>	<u>yo</u> <u>gbó</u>
	<u>è</u> <u>sé</u> <u>mú</u>	<u>ɛ</u> <u>se</u> <u>mú</u>

1.4.2.22 tʃē nũ
 wó yē
 wó nũ
 tʃē nũ pé
 wó nũ pé (but not * wínũ pé)
 wó yé pé (but not * wó yē pé)

1.4.2.23 wó bi
 yō nũ
 yó nũ
 má mā mã

1.4.4 Tone Alternations

1.4.4.1 High-fall / High

In Gã and in Krobo, a few syllables have a falling tone in group-final position. The fall may be regarded as a sequence of two tone phonemes, which may be either high-downstep-high (occurs in Gã only) or high-low. When the syllable is not group final it has high tone. Adangme syllables that have a falling tone in Krobo have a level high tone in Adã. In this thesis, vowels with falling tone are treated as two vowels, and therefore two syllables.

Gã: baáá 'crocodile' vs baá lé 'the crocodile'
 e héè 'he bought it' e hé kò 'he bought one'
 Krobo: e kanéè (Adã e kané) 'he counted'
 e kané wómí-hĩ 'he counted books'

1.4.4.2 Gã: downstepped High / Low

In Gã, most syllables which have downstepped high tone if they follow a high tone and are at the same time either group-final or followed by a high tone, have low tone when a low tone follows or precedes. As far as is known, the only syllables which invariably have downstepped high tone occur morph-medially, and are thereby insulated from the effects of the tone of any following morphs.

Thus:

Downstepped high	-	e <u>tsí</u> nè ¹	'he sneezed'
		e <u>tsí</u> nè ¹ <u>tsɔ̃</u>	'he sneezed too much'
		e <u>tá</u> <u>sí</u> ¹	'he sat down'
		e <u>tá</u> <u>sí</u> ¹ <u>pɛ</u>	'he just sat down'
Low -		e <u>tsí</u> nè ¹ <u>waa</u>	'he sneezed hard'
		e <u>tá</u> <u>lè</u> <u>sí</u>	'he seated him'
		e <u>tá</u> <u>lɛ</u> <u>sí</u> <u>pɛ</u>	'he just seated him'
		e <u>tá</u> <u>sí</u> <u>oyá</u>	'he sat down quickly'

A string of such syllables all have low tone, i.e., each has the environmental effect of a low tone, not a high tone:

e káne¹ 'he read' gbéle-mɔ̃¹ 'opening'

hé-í 'places'

but káne-mɔ̃-í 'readings'

This alternation occurs mainly in rapid speech. Slow or deliberate speech may preserve all the high tones,

i.e.

káne-mǎ-í 'readings'

These syllables will be marked in citation forma with the downstep mark, to distinguish them from syllables which are always low.

tʃíne 'sneeze' ʃí 'down, lower part'

The determiner lé, and the homophonous clause marker, have this alternation between low and downstepped high tone, but they are unique in being invariably preceded by a high tone. If the preceding syllable normally has low tone that syllable becomes high, preceded by downstep if it follows a high tone.

<u>obíʃí</u>	'rat'	<u>obíʃí</u> <u>lé</u>	'the rat'
<u>tʃé</u>	'father'	<u>mí</u> <u>tʃé</u> <u>lé</u>	'my father'
<u>ʃíá</u>	'house'	<u>ʃíá</u> <u>lé</u>	'the house'
<u>mí</u> <u>ba</u>	'I came'	<u>be</u> <u>ní</u> <u>mí</u> <u>bá</u> <u>lé</u>	'when I came...'

1.4.4.3 Adangme: Mid / Low

In Adangme the tone sequence low-mid does not occur in discursive speech, although a Krobo informant often produced it in deliberate speech (1.4.2.21 above). Any syllable or syllable string that would otherwise have low tone has mid tone when followed by a mid. Thus:

<u>yo</u> <u>ba</u>	'woman begged'	but	<u>yǒ</u> <u>ba</u>	'woman came'
<u>e</u> <u>yo</u>	'his wife'	but	<u>e</u> <u>tʃé</u>	'his father'
<u>e</u> <u>bǎní</u> <u>bǎle</u> - <u>mí</u>	'he began to go around'			
but <u>e</u> <u>bǎní</u>	'he began'		<u>e</u> <u>bǎle</u>	'he went around'

Syllables which elsewhere have low tone have mid tone when occurring between two high tones, and in discursive speech when occurring group-initially before a high tone. Thus:

ẃ ǹ 'a god drank' but ẃ ǹ tʃ́ 'a god drank too much'

e yo 'his wife' but é bí 'his child'

1.4.4.4 Adangme: downstepped High / Mid

At least in discursive speech, mid tone syllables in Adangme have downstepped high tone when occurring between two high tones.

lá-h́ 'songs' a ko lá la-h́ we 'they would not have sung'

but i lá la-h́ h́ ã 'I sang songs to him'

1.4.4.5 Occurrence of Sequences

The result of these alternations is to restrict the number of potential sequential combinations of tone phonemes (not including downstep) that actually occur.

It may be seen that Adangme with more units also has ^{more} many different two and three tone sequences ^{than} as in Gã.

	Adangme	Gã
2 tones: potential	9	4
occurring	7	3
3 tones: potential	27	8
occurring	16	6

1.4.5 Tone and Word Class

Monosyllabic words of any class can have any tone:

Gã:		High		Low
Noun	<u>mí</u>	'die, marble'	<u>gbɛ</u>	'road'
Verb	<u>lá</u>	'sing'	<u>la</u>	'dream'
Adverb	<u>pé</u>	'at once'	<u>kpo</u>	'emphatic'
Conjunction	<u>fi</u>	'but'	<u>dza</u>	'unless'

Apparently all adjectives are polysyllabic. The following have a monosyllabic stem with a suffix of length:

fěě 'all' voo 'deep'.

Adangme:		High		Low		Mid
Noun	<u>má</u>	'dough'	<u>mã</u>	'nâtion'	<u>mã̄</u>	'herring'
Verb	<u>sá</u>	'snatch'	<u>sa</u>	'sieve'	<u>sã̄</u>	'rot'
Adverb	<u>mó</u>	'already'	<u>sa</u>	'formerly'	<u>kě̄</u>	'at last'
Conjunction	<u>ké</u>	'if'	<u>lɛ</u>	'and'	<u>kě̄</u>	'and'

As in Gã, I have not found an Adangme adjective that is not either reduplicated or lengthened: mómo 'old', vĩĩ 'gloomy, depressed', gāgaa 'long'.

Disyllabic, monomorphemic words are rare among adverbs and conjunctions. An adjective with a stem of shape CVCV is usually reduplicated or lengthened. In almost all cases, both syllables have the same tone, e.g.

Gã	<u>basaa</u> , <u>basabasa</u>	'reckless'
	<u>kányaa</u> , <u>kányakanya</u>	'thin'
Adangme	<u>bánee</u>	'aloof'
	<u>fútuu</u>	'white'
	<u>bədəbədə</u>	'soft'

In nouns and verbs, on the other hand, all possible combinations of high and low tone occur, but in Adangme mid tone is very restricted. In verbs, mid tone only occurs in stems of syllabic shape CVlV_x, where both syllables have the same tone. In nouns, High - mid occurs, as well as Mid-mid. Mid-low does not occur, and low-mid is in any case impossible. Mid-high has not been noted. It would contrast with low-high only when following a mid tone.

<u>Nouns</u>	Gã		Adangme	
H H	<u>hwáne</u>	'argument'	<u>kpógo</u>	'boiled food'
L L	<u>gbefi</u>	'fate'	<u>dika</u>	name of a god
M M	-		<u>dzēme</u>	'an antelope skin bag'
H L	<u>gbéké</u>	'child'	<u>dúkù</u>	'kerchief'
H M	-		<u>dzíd₃ḿ</u>	'sheep'
L H	<u>boká</u>	'east'	<u>denmé</u>	'toil'
<u>Verbs</u>				
H H	<u>téle</u>	'carry'	<u>kádi</u>	'mark'
L L	<u>sele</u>	'swim'	<u>sole</u>	'worship'
M M	-		<u>dála</u>	'share'
L H	<u>mádzé</u>	'send'	<u>kané</u>	'read, count'
H L	<u>téke</u>	'step over'	<u>hwányá</u>	'wave, shake'

The only word class with many monomorphemic members of more than two syllables is the noun. In nouns of more than two tone-bearing units, a final ascending interval or rising tone almost always betrays a foreign origin. This kind of tone pattern in nouns is typical of Akan and Ewe, but hardly occurs in native nouns that are not morphologically complex. Many European loans may be considered for this reason to have come into Gã and Adangme via Fante or Twi.

Gã	<u>abaawá</u>	'maidservant'	Twi	<u>abaa-wá</u>
	<u>abúíí</u>	'needle'	Ewe	<u>abuí'</u>
	<u>abólòó</u>	'a starchy food'	"	<u>abólò</u>
			Twi	<u>abódòó</u>
	<u>abálaá</u>	'sail'	Fante	<u>abrádaá</u>
			Portuguese	'vela'
Adangme	<u>abaya</u> , <u>abayaá</u>	'broom'	Ewe	<u>abayà'</u>

1.4.6 Conclusions

The obvious difference in the basic tonal data is that there are more contrastive possibilities in Adangme. Gã has only one rising interval (1.4.2.11); Adangme has two (1.4.2.21). Gã has two contrastive single pitch levels of utterance; Adangme has three. As a result, Gã is analyzed in terms of two tones, Adangme in terms of three. But the potential variety in pattern of the

tone group, especially that created by the extra tone phoneme of Adangme, is limited by the rules of tone alternation.

Phonetically it seems that the high tone, low tone and effects of downstep are the same in the two languages, and that Gã simply lacks the mid tone. However, the relationship between Adangme mid tone and downstepped high tone is very much like that between Gã low tone and downstepped high. High tone preceded by downstep is assimilated to a following low in Gã (1.4.42), a following mid in Adangme (1.4.4.4). Following a non-high tone it becomes low in Gã, but mid in Adangme. Syllables displaying this alternation affect each other as mid-toned syllables in Adangme, low toned in Gã.

It may be said that in both there is a clear and typologically corresponding distinction between high and non-high tone. The functions of non-high tone are performed in Gã by one phoneme, low, but in Adangme by two.

	Gã	Adangme
high	H	H
non-high	L	M
		L

In Adangme, low tone alternates with mid in almost exactly the same environments as those in which mid alternates with downstepped high. These two alternations

may therefore be regarded as part of a general up-stepping of non-high tones in the vicinity of high tones.

In neither language is there ever loss of contrast between a high and a following non-high.

Downstep is not entirely automatic in Gã, and its phonemic status is well attested by such pairs as

kofí la 'Kofi sang' kofí là 'Kofi dreamed'

In Adangme, morph-final and morph-initial downstepped high tones, like mid tones produced by up-stepping of low tones, are always automatic alternants of mid tones.

But there is a phonemic tone difference between e.g.

kofí ye no 'Kofi ate' and kofí yē mã, 'Kofi ate herring'.

It is clear that Gã and Adangme are what has been termed terraced level languages.¹³ The Gã system is typologically practically indistinguishable from the Twi system, which has been described by a number of observers.¹⁴ Although the most recent and authoritative analysis of Ewe tone¹⁵ is in terms of two tone phonemes, it is interesting that in that language phonetic mid tone is an allophone of low tone. The mid tone alternant of non-high tone occurs under partially similar conditions to those producing upstepping of low tone in Adangme, namely, before high and other mid tones. It is possible therefore that the difference between Gã and Adangme is

to some extent paralleled by a difference between their respective closest influential neighbours, Twi (indeed all Akan) and Ewe.

The only other language in the published literature which has been analyzed as a terraced level language with three tones and downstep is Yala (Ikom), spoken in Eastern Nigeria (Armstrong 1968). It seems that this system is really more different from the Adangme system that is the Gã system with two tones. In both Adangme and Yala (Ikom), downdrift is produced by downstepping after non-high tones (Armstrong op. cit. 5.2) and the pitch interval between high and mid is greater than the interval between mid and low. But in Yala (Ikom) it appears that downstepped high tones are not upstepped mid tones, but normal post-low tone high tones, the conditioning low tone having been lost through contraction of syllables (Armstrong op. cit. pg 52). Also, Yala has downstep between mid tones, which Adangme does not. In Yala, as there is no automatic assimilation of low to mid, or mid to high, there are more possible sequential combinations of tones than in Adangme (Armstrong op. cit. 8.0.2 pg 56).

2. Diachronic Phonology

2.0 Introduction

2.1 Tone

2.1.1 Correspondences

2.1.2 Reconstruction

2.2 Consonants

2.2.1 Correspondences

2.2.1.1 Primary Consonants - Labial Post-Dental Velar

2.2.1.1.1 Preliminary Grouping

2.2.1.2 Secondary Consonants

2.2.1.2.1 Preliminary Grouping

2.2.1.3 Tertiary Consonants

2.2.1.3.1 Preliminary Grouping

2.2.2 Reconstruction

2.2.2.1 Primary Consonants - Labial Post-Dental Velar

2.2.2.2 Secondary Consonants - Labial Post-Dental

2.2.2.3 Tertiary Consonants - Labialized - Labial Post-Dental Velar Palatalized - Labial Velar

2.2.2.4 Summary

2.3 Vowels

2.3.1 Correspondences

2.3.1.1 Correspondences between Like Vowels

2.3.1.2 Correspondences between Unlike Vowels

2.3.1.2.1 Gã Front Vowel, Adangme Front Vowel

2.3.1.2.2 Gã Front Vowel, Adangme Back Vowel

2.3.1.2.3 Gã Back Vowel, Adangme Front Vowel

2.3.1.2.4 Vowel Clusters with u.

2.3.2 Reconstruction

2.3.2.1 Simple Correspondences

2.3.2.2 Complex Correspondences

2.3.2.21 Gã Front Vowel, Adangme Front Vowel

2.3.2.22 Gã Front Vowel, Adangme Back Vowel

2.3.2.23 Gã Back Vowel, Adangme Front Vowel

2.3.2.24 Vowel Clusters with u.

2.3.2.3 Observations

2.4 Second Syllables

2.4.1 Consonant Loss

2.4.1.1 In Gã

2.4.1.2 In Adangme

2.4.2 Alternating Syllables

2.4.2.1 Syllable Types

2.4.2.2 Observations and Conclusions

2.4.3 Diffusion of Labialization

2.5 The Evidence for Nominal Prefixes

2.5.1 Vocalic

2.5.2 Nasal

2.0 Introduction

In this chapter the correspondences between Gã and Adangme phonemes are demonstrated and described, and a reconstruction of the phonemic system of proto-Gã-Adangme is proposed.

The findings of this chapter are based on the correspondences found in CV-shaped morphs of free morphemes, and to some extent on the first syllable of polysyllabic morphs. Second syllables present special problems, which differ somewhat according to morpheme class and involve the reconstruction of obsolete morphological systems. A few of the more obvious problems of polysyllabic nominal stems are touched upon in sections 2.4 and 2.5 of this chapter. A full discussion of the polysyllabic verbal stem is reserved for Section II.

2.1 Tone

As described in Chapter 1 (1.4.6) there is one important difference between the tone systems of Gã and Adangme, namely that Gã has one contrastive non-high tone, but Adangme has two. Therefore a basic problem for the diachronic comparison of Gã and Adangme is to determine the historical basis of this difference. The possibilities are two: either the parent system had three contrastive tones, which have been reduced to two in Gã, or it had two, which have split into three in Adangme.

2.1.1 Correspondences

The tonal correspondences on CV morphs are straightforward, and follow the typological patterns. Gã high tone corresponds to Adangme high, and Gã low corresponds to Adangme low and also to Adangme mid, e.g.:

G H : D H	G	<u>bí</u>	D	<u>bí</u>	'child' ns
		<u>bí</u>		<u>bí</u>	'ask' vs
		<u>gbó</u>		<u>gbó</u>	'die' vs
		<u>hé</u>		<u>hé</u>	'place' ns
		<u>tó</u>		<u>tó</u>	'be wrong' vs
		<u>dú</u>		<u>dú</u>	'plant' vs
G L : D L	G	<u>ba</u>	D	<u>ba</u>	'beg' vs
		<u>gbɔ</u>		<u>bwɔ</u>	'stranger' ns
		<u>ke</u>		<u>ke</u>	'present' vs
		<u>fo</u>		<u>po</u>	'cut' vs
G L : D M	G	<u>ba</u>	D	<u>bā</u>	'come' vs
		<u>gbɔ</u>		<u>bwā</u>	'grow old' vs
		<u>bo</u>		<u>bō</u>	'(grass) cloth' ns
		<u>nū</u>		<u>nyū</u>	'water' ns

Gã forms in which a series of high-low or high-downstep-high tones on identical vowels alternates with high tone (1.4.4.12) correspond to Adangme forms with high tone:

G	<u>hée</u>	D	<u>hé</u>	'buy, sell, acquire' v
	<u>tʃǎ-ǎǎ</u>		<u>tʃǎ-ǎ</u>	'teach, show' v (4.2.1.1, 4.2.2.1)
	<u>kaáa'</u>		<u>kaá-wi'</u>	'crab' n

A number of polysyllabic forms appear to display a correspondence of tones and syllables of the types G CVCV̄ : D CVCV̄. Many of these have plausible sources in Akan:

G adéka D daká 'box' n Twi adáká
púsèè pusé 'plantain fibre' n mposaé

Others have no known foreign source, but are analyzed as containing different verbal extensions, e.g.

G tʃíne D tʃíné 'sneeze' v (4.2.1.8, 4.2.2.7)
gbólé gbólé 'rub' v (4.2.2.4, 4.2.3.2)

2.1.2 Reconstruction

The correspondence G L : D L clearly contrasts with the correspondence G L : D M :

G ba : D ba 'beg' vs but G ba : D bā 'come' vs
gbɔ : bwɔ 'stranger' ns gbɔ : bw̄ɔ 'grow old' vs

There is also contrast between the correspondences G H : D H and G L : D M:

G tʃé : D tʃé 'call' vs but G tʃɛ : D tʃɛ̄ 'father' ns
and there is a contrast between G H : D H and G L : D L:
G tũ : D tũ 'gun' ns but G tũ : D tũ 'jump' vs

On the basis of these three oppositions, three contrasting tonal units are posited for proto-Gã-Adamgme which may be reconstructed as *H, *M, and *L, the reflexes of which are respectively G H : D H, G L : D M, and G L : D L. The two non-high tones of the proto-language appear to have merged in Gã.

At this point there is no direct evidence for reconstruction of a proto-Gã-Adangme downstep. There are apparently no syllables in which Gã downstepped high tone corresponds to Adangme downstepped high.

In the modern languages both Gã low tone and Adangme mid alternated with downstepped high tone (1.4.4.2, 1.4.4.4). It is likely therefore that in the proto-language mid tone alternated with downstepped high, and that when the distinction between low and mid was lost in Gã, the alternation was extended to non-highs that had their origin in proto-Gã-Adangme low tone. Final syllables with the correspondence G d H : D L may therefore be reconstructed with *L, e.g.

G tʃáké D tʃákè 'change' * G -D tʃákè

2.2. Consonants

2.2.1 Correspondences

2.2.1.1 Primary Consonants

Most of the Gã primary consonants correspond to the primary consonant of the same type in Adangme. This includes all of the very high frequency consonants (1.2.3). Most of the correspondences are well attested, and occur with all corresponding like vowels.

Labial

G <u>b</u> : D <u>b</u>	G <u>bí</u>	D <u>bí</u>	'ask' v
	<u>be</u>	<u>be</u>	'time' n
	<u>bɛ-le</u>	<u>bɛ̄</u>	'horn' n
	<u>bú</u> (<u>ʃí</u>)	<u>bú</u> (<u>sí</u>)	'capsize' v
	<u>bo</u>	<u>bō</u>	'(grass) cloth' n
	<u>bɔ</u>	<u>bɔ̄</u>	'create' v
	<u>ba</u>	<u>bā</u>	'come' v
	<u>ba</u>	<u>ba</u>	'beg' v

No Adangme phoneme corresponds to Gã p.

G v : D v v is a slightly/^{more}common phoneme type in Adangme than in Gã (1.2.3.1) but many of the examples in both languages appear to be loans from Ewe. All the examples of the correspondence v:v are ideophones, and it is possible that they too are Ewe loans.

G <u>vĩĩ</u>	D <u>vĩĩ</u>	'dull, quiet' adj	Ewe <u>vĩĩ</u>
<u>veveeve</u>	<u>veveeve</u>	'very' adj	
<u>voo</u>	<u>voo</u>	'deep' adj	<u>voo</u>
	(<u>vũ</u>	'well' n	<u>vũ</u>
	<u>avutó</u>	'bat' n	<u>avutó</u>)

G f : D f

G <u>fĩ</u>	D <u>fĩ̄</u>	'tie, bind' v	G <u>fũ</u>	D <u>fũ</u>	'smell, sniff' v
<u>fã</u>	<u>fã</u>	'piece' n	<u>fɔ̄</u>	<u>fɔ̄</u>	'wash(things)' v
<u>fɔ̄</u>	<u>fɔ̄</u>	'throw' v	<u>fɔ̄</u>	<u>fɔ̄</u>	'bring forth' v

Gã f also forms a correspondence series with Adangme p:

G	<u>fe</u>	D	<u>pe</u>	'surpass' v	G	<u>fú</u>	D	<u>pú</u>	'moulder' v
	<u>fé</u>		<u>pé</u>	'burst' v		<u>fũ</u>		<u>pũ</u>	'bury' v
	<u>fa</u>		<u>pa</u>	'lend' v		<u>fo</u>		<u>po</u>	'cut' v
	<u>fa</u>		<u>pa</u>	'drink soup' v		<u>fo</u>		<u>po</u>	'do frequently; get wet' v

There is only one example of a possible correspondence

Gã f : Adangme v:

G	<u>yaa-fó-nú</u>	'tears'	D	<u>vó-nyũ/vó-mũ</u>	n
---	------------------	---------	---	---------------------	---

G w : D w This correspondence is well attested, except before G i : D i and G ɛ : D ɛ.

G	<u>we</u>	D	<u>wē</u>	'house' n	G	<u>wo</u>	D	<u>wo</u>	'wear' v
	<u>wa-la</u>		<u>wāla</u>	'life' n		<u>wɔ</u>		<u>wɔ</u>	'we' pron.
	<u>wu</u>		<u>wū</u>	'fight' v					

There is also a rather complicated set of correspondence series, in which Gã w corresponds to Adangme hw, w and h, with dialectal variation in Adangme:

G w : A h̄ : K hw. This series occurs only before G ɔ : D ɔ.

G	<u>wɔ-lɔ</u>	A	<u>h̄ɔ-lɔ-mí</u>	K	<u>hwɔ-mí</u>	'cough' n
			<u>hwɔlé</u>		<u>hwɔlé</u>	'drop' v

G w : A hw : K hw This series occurs before the vowels

G ɔ : D ɔ and G á : D a, and G o : D e.

G	<u>wa-mɔ</u>	A	<u>hwā-la</u>	K	<u>hwā-la</u>	'scratch' v
	<u>wó</u>		<u>hwé</u>		<u>hwé</u>	'lift up' v
	<u>wɔ</u>		<u>hwɔ</u>		<u>hwɔ</u>	'hoot at' v

G w : A w : K hw

G	<u>wó</u> - <u>nǎ</u> ¹	A	<u>wó</u> - <u>nyǔ</u>	K	<u>hwé</u> - <u>nyǔ</u>	'soūp' n
	<u>wɔ</u>		<u>wɔ</u>		<u>hwɔ</u>	'sleep' v

G w : A w : K h

G	<u>wo</u>	A	<u>wo</u>	K	<u>ho</u>	'honey' n
	<u>wɔ̀</u>		<u>wɔ̀</u>		<u>hú̀</u>	'tomorrow' adv

G w : A h : K h

G	<u>wu</u>	A	<u>hu</u> - <u>no</u>	K	<u>hu</u> - <u>no</u>	'husband' n
---	-----------	---	-----------------------	---	-----------------------	-------------

G m : D m

G	<u>mǐ</u>	D	<u>mǐ</u>	'swallow' v.	G	<u>mǐ</u>	D	<u>mǐ</u>	'I' pron
	<u>mǎ</u>		<u>mǎ</u>	'put' v		<u>mǔ</u>		<u>mǔ</u>	'breathe' v
	<u>mómo</u>		<u>mómo</u>	'old' adj		<u>omǔ</u>		<u>omǔ</u>	'rice' n

Post-dentalG d : D d

This correspondence occurs in all environments except with close front vowels.

G	<u>dɛ</u> - <u>ŋ</u>	D	<u>dɛ</u> - <u>m</u>	'hand (palm)' n	G	<u>dǎ</u> - <u>ǎ</u>	D	<u>dǎ</u>	'liquor' n
	<u>dǔ</u> ¹		<u>dǔ</u>	'plant, sow' v		<u>dɔ</u>		<u>dɔ</u>	'hurt; get hot' v
	<u>dɔ</u>		<u>dɔ</u>	'bend, twist' v		<u>dokú</u>		<u>dokú</u>	'scar' n

G t : D t

This correspondence occurs in all environments.

G	<u>tí</u>	D	<u>tí</u>	'be thick' v	G	<u>te</u> (<u>sí</u>)D	<u>te</u> (<u>sí</u>)	'get up' v
	<u>té</u>		<u>té</u>	'stumble' v		<u>tá</u>	<u>tá</u>	'patch' v

G	<u>tũ</u>	D	<u>tũ</u>	'jump' v	G	<u>to</u>	D	<u>tō</u>	'keep, preserve' v
	<u>ṭũ</u>		<u>ṭũ</u>	'be wrong' v		<u>ṭo</u>		<u>ṭo</u>	'satisfy; exhaust' v

There is a single example of a possible correspondence

G t : D ty:

G	<u>ṭã</u>	D	<u>tyã</u>	'narrate' v
---	------------	---	------------	-------------

G s : D s

This correspondence does not occur
before front vowels.

G	<u>sa</u>	D	<u>sa</u>	'be suitable' v	G	<u>s̄o</u>	D	<u>s̄o</u>	'forge' v
	<u>sa</u>		<u>sa</u>	'give enemy' v		<u>so</u>		<u>so</u>	'catch, dip up' v
	<u>su</u>		<u>sū</u>	'light lamp' v		<u>so-o</u>		<u>so</u>	'Thursday' n

Gã z does not correspond to any Adangme phoneme

G l : D l

Like G w : D w, this correspondence
does not occur before nasal vowels.

G	<u>l̄l̄l̄i</u>	D	<u>l̄l̄l̄e</u>	'tongue' n	G	<u>lú</u>	D	<u>lú</u>	'be stupid' v
	<u>le</u>		<u>le</u>	'know' v		<u>lo</u>		<u>lo</u>	'weave' v
	<u>lé</u>		<u>lé</u>	'gather firewood' v					
	<u>lá</u>		<u>lá</u>	'sing' v		<u>-l̄o</u>		<u>-l̄o</u>	agentive suffix

G n : D n

G	<u>n̄ne</u>	D	<u>n̄ne</u>	'arm' n	G	<u>nũ</u>	D	<u>nũ</u>	'hear' v
	<u>nã-ne</u>		<u>nã-ne</u>	'leg' n		<u>nũ</u>		<u>nũ</u>	'drink' v
	<u>ne</u>		<u>ne</u>	'rain' v		<u>n̄o</u>		<u>n̄o</u>	'fight' v
	<u>nã</u>		<u>nã</u>	'see, notice' v		<u>nó</u>		<u>nó</u>	'thing' n

G n : D ny This correspondence apparently only occurs before G a : D a, and G ũ : D ũ.

G na-a D nya 'mouth' n G nũ-ũ D nyũ-mũ 'man(vir)' n
nũ nyũ 'water' n

Velars The four velar primary consonants of Gã correspond to the consonants of the same types in Adangme.

G g : D g This correspondence is not well attested, and does not occur before front vowels.

G ga D ga 'ring' n
gãĩ A gẽlẽĩ 'bow and arrow' (Krobo kẽĩ) n
gúgũ D gúgwũ/gúgũ 'nose' n

G k : D k This correspondence is reasonably well attested.

G ke D ke 'give gift' v G kũ D kũ 'break' v
kẽ kẽ 'take' v kũ kũ 'bite' v
ka ka attempt' v ko kō 'one, a' adj

G h : D h

G hĩ D hĩ 'be good' v G hũ D hũ 'cultivate' v
hé hé 'place' n ho hō 'pass by' v
he hē 'fish with throw net' v
há há 'give' v ho ho 'platt' v

$G \underline{u} : D \underline{u}$ and $G \underline{ɔ} : D \underline{ɔ}$, and there is no such correspondence as $*G \underline{p} : D \underline{p}$. Therefore another contrasting unit is proposed.

There are two correspondences between a Gã primary and an Adangme secondary consonant. $G \underline{n} : D \underline{ny}$ contrasts with $G \underline{n} : D \underline{n}$ (before $\underline{u} : \underline{ũ}$) and therefore necessitates another contrasting unit. $G \underline{h} : A \underline{h} : \underline{hw}$ occurs only before nasal vowels and therefore contrasts with $G \underline{h} : D \underline{h}$ but not $G \underline{w} : D \underline{w}$, \underline{h} or \underline{hw} .

The correspondences involving $G \underline{w}$, and \underline{hw} (tertiary) or \underline{h} (primary) in one or both of Adã and Krobo, taken as a group contrast with both $G \underline{w} : D \underline{w}$ and $G \underline{h} : D \underline{h}$. Among themselves, $G \underline{w} : D \underline{h}$ does not contrast with any of the others, and possibly also $G \underline{w} : A \underline{w} : D \underline{h}$ does not. $G \underline{w} : A \underline{h} : D \underline{hw}$, $G \underline{w} : A \underline{hw} : K \underline{hw}$, and $G \underline{w} : A \underline{w} : K \underline{hw}$ all occur before $G \underline{ɔ} : D \underline{ɔ}$. A maximum of three contrasting units will be required to account for these apparently conflicting series.

This leaves the following group of eighteen contrasting correspondence groups. Non-contrastive groups are bracketed. Dubious correspondences are in parentheses. Correspondences are quoted in the order $G : D$ or $G : A : K$.

f : p t : t
b : b d : d
f : f s : s

k : k
g : g
h : h

$\left. \begin{array}{l} \underline{w} : \underline{h} : \underline{hw} \\ \underline{w} : \underline{h} : \underline{h} \\ \underline{w} : \underline{w} : \underline{h} \\ \underline{h} : \underline{h} : \underline{hw} \\ \underline{w} : \underline{hw} : \underline{hw} \\ \underline{w} : \underline{w} : \underline{hw} \end{array} \right\}$

$\left(\begin{array}{l} \underline{v} : \underline{v} \\ \underline{f} : \underline{v} \end{array} \right)$

m : m n : n n : ny ŋ : ŋ
w : w l : l

2.2.1.2 Secondary Consonants

The Gã secondary consonants (emphatics) except ɟ correspond to Adangme consonants of the same type. kp, tɟ and ny correspond to other consonants in only a few examples. The other secondary consonants are a little more complicated. The Gã emphatic consonants correspond to the Adangme consonants of the same type, and also to the simple consonant of the same series and usually also the labialized simple one as well. There is some dialectal variation in Adangme.

LabialsG gb : D gbG gbe D gbe 'kill⁴' v G gbũ D gbũ 'pierce' vgbɛ gbɛ 'scatter' v gbó gbó 'die' vgba gba 'split, strike' vG gb : D bG gbɛ D bɔ̄-lɔ 'way, path, road' nG gb : D byG gbɛ́i D byɛ̄ 'name' nG gb : D bwG gbé D bwé 'pot' nG gb : A bw : K bG gbɔ A bwɔ̄ K bɔ̄ 'grow old' vgbɔ nu-bwɔ̄ ni-bɔ̄ 'stranger' nbwɔ̄-mí bɔ̄,mí 'hair' vG kp : D kpG kpi-ŋ D kpi 'cane rat' n G kpo-nɔ̄ D kpo-nɔ̄ 'court-yard' nkpé kpé 'chew' v kpɛ kpɛ̄ 'sew' vkpá kpá 'go bald' v kpɔ̄ kpɔ̄ 'bump' nG ŋm : D ŋmG ŋmā D ŋmā 'write, scratch' vŋmɛ̄ ŋmɛ̄ 'weigh' v G ŋmo-ŋ D ŋmo 'louse' nŋmɛ ŋmɛ 'palm nut' n ŋmɔ̄ ŋmɔ̄ 'farm' n

G ŋm : D mw

G ŋmɔ̃ D mwɔ̃ 'laugh' v

G ŋm : A m : K mw

G éŋmɔ̃mi A mɔ̃mwí K mwɔ̃mí 'okro' n

ŋmé-ne mɔ̃-nɔ̃ mwé-nɔ̃ 'to-day' adv

There is another example of general Adangme mw in A and K mwɔ̃ 'blood' (Gã la), and a trace of morphophonemic alternation between m and mw in both dialects, as in mwɔ̃ 'blossom' v, mɔ̃mɔ̃ 'flower' n.

Post-Dental

G dʒ : D dʒ This correspondence has not been noted before G o:D o and G ɛ : D ɛ

G <u>dʒí</u>	D <u>dʒí</u>	'be' (identity)	G <u>dʒu</u>	D <u>dʒū</u>	'steal' v
<u>dʒe</u>	<u>dʒe</u>	'resemble' v	<u>dʒá</u>	<u>dʒá</u>	'unless' conj
			<u>dʒɔ</u>	<u>dʒɔ̃</u>	'be pleasant; rejoice' v

G dʒ : D dw

G dʒɔ (naa) D dwɔ (nya) 'sharpen' v

G dʒ : D d̥ This correspondence occurs before all the back vowels but has not been noted before G i : D i and G ɛ : D ɛ.

G <u>dʒe-ŋ</u>	D <u>d̥e-mí</u>	'python' n	G <u>dʒu</u>	D <u>dū</u>	'bathe' v
<u>dʒa</u>	<u>da</u>	'be straight' v			
<u>dʒo</u>	<u>do</u>	'dance' v	<u>dʒɔ</u>	<u>dɔ</u>	'spring, stream, wet valley' n
<u>dʒo-óó</u>	<u>duó</u>	'be bitter' v			

There is also one example of Gã d̥z : D d̥zw, in
 G d̥za-la 'price', d̥za-a-no 'market', D d̥zwā 'price' n,
 'sell' v. This is suggestively similar to G d̥za 'divide'
 D dā-la 'share'. However, it is equally likely that the
 items are borrowed from Asante dwa.

G tʃ : D tʃ

G tʃí D tʃí 'prepare' (certain foods) v

tʃé tʃé 'call' v G tʃũ D tʃũ 'work' v

tʃá tʃá 'cure' v tʃo tʃo 'tree' n

tʃɔ tʃɔ 'dip up' v

Two other pairs with Gã tʃ are very similar, but
 isolated.

G tʃ : D t G tʃatʃũ D tatũ 'ant' n

G tʃ : D tʃw tʃa D tʃwa 'dig' v

Gã ʃ corresponds to the Adangme primary consonants
s and z, and to related tertiaries.

G ʃ : D s This correspondence does not occur
 before back vowels except G ɔ : D ɔ

G ʃí D sí 'below;
 ground' n G ʃa D sa 'winnow, seive' v

ʃí sí 'fry, roast' v ʃá sá 'pass wind' v

ʃɛ sɛ 'arrive' v ʃɔ sɔ 'Wednesday' n

G ʃ : D sw This occurs in only one item.

G ʃwɔ D swɔ 'elephant' n

G ʃ : D z This is not well attested, and does not occur before back vowels.

G ʃi-kpɔ̀-ò K zi-gbá 'earth' v
ʃa-mɔ̃ 'urinate' D zā-mĩ 'urine' v

G ʃ : D zy

G ʃia D zyá 'sand' n

The correspondence Gã ʃ : Adangme sy occurs only in loans from Twi:

G ʃadebóa D syadebóa 'hedgehog' Twi siade-bóa
abonsán abosyám 'devil' ɔ-bonsam

Otherwise, Adangme sy has no correspondence in Gã.

G y : D y

G yi- D yi 'head' n G yó D yó 'realize' v
ye yē 'eat' v yɔ-ɔ yɔ 'beans' n
yɛ yɛ 'fetch' v ya ya 'go' v

G y : D h

G yí D hí 'fill' v G yi D hi 'beat' v

G y : D hy

G ya D hyā 'travell' v G yé D hyó 'whiten' v

G ny : D ny has not been found with close and half-close vowels.

G <u>nyɛ</u>	D <u>nyɛ</u>	'press' v	G <u>nyɔ</u>	D <u>nyɔ</u>	'fall, sink' v
<u>nyẽ</u>	<u>nyẽ</u>	'you' plur. pn	<u>ényɔ̃</u>	<u>ényɔ̃</u>	'two' adj
<u>nyã</u>	<u>nyã</u>	'excrete' v	<u>nyá</u>	<u>nyá</u>	'rejoice' v

G ny : D n occurs before the back half-close vowel.

G -nyo D -no suffix referring to persons, as in

G blɔ́fó-nyò D bafó-nò 'European' n

2.2.1.21 Preliminary Grouping

Before G o : D o, all the correspondences between secondary consonants of the same type occur except ny : ny and dʒ : dʒ. All including ny : ny and dʒ : dʒ but except ɲm : ɲm occur before a:a. All of them also contrast with the correspondences between like primary consonants. Therefore, for each of these correspondences a unit of phonemic contrast is posited.

G ny : D n does not contrast with G ny : D ny, nor does G n : D ny (2.2.1.1 Post-Dentals). G ny : D n and G n : D ny also do not contrast, since the first occurs only before G o : D o and the second before G ã : D a and G ũ : D ũ. Therefore only one contrastive unit in the proto-language is required to account for all of these.

Gã dʒ : Adangme dʒ contrasts with G dʒ : D d, before G e : D e, G a : D a and G u : D u. G dʒ : D dw, does not contrast with G dʒ : D dʒ, but contrasts with

G dz : D d before G ɔ : D ɔ. Therefore the correspondences G dz : D dz, dw, imply only one contrastive unit in the proto-language, contrasting with the unit posited from G dz : D d.

G gb : D bw, G gb : D b, G gb : D by and G gb : A bw : K b do not contrast with each other. G gb : D bw contrasts with G gb : D gb: and with G b : D b. G gb : A bw : K b also contrasts with G b : D b. Therefore the set G gb : D bw, b, by necessitates the setting up of one more contrastive unit. Under somewhat similar conditions, G ɲm : D mw contrasts with G ɲm : D ɲm but is in complimentary distribution with G ɲm : A m : K mw and another phonemic unit is therefore posited.

Gã ʃ : D s and G ʃ : D sw do not contrast, nor do G ʃ : D z and G ʃ : D zy, but G ʃ : D s and G ʃ : D z contrast in the environment G a : D a. In this environment they also contrast with G s : D s. Three contrasting units are posited, of which the reflexes are G s : D s, G ʃ : D s, sw, and G ʃ : D z, zy.

Gã ɣ : Adangme h and G ɣ : D hy both contrast with G ɣ : D ɣ but not with each other. G ɣ : D h also contrasts with G h : D h. Therefore one more contrastive entity is proposed, of which the reflexes are G ɣ : D h, hy.

2.2.1.3 Tertiary Consonants

Correspondences with Gã tertiary consonants are somewhat complex, and all involve Adangme tertiary consonants. There are no correspondences in Adangme to the Gã consonants tʃw,¹ gw, and hw, and correspondence to Gã kw is doubtful. In other words, the well-attended⁺ correspondences involve Post-Dental (and emphatic) tertiary consonants.

Correspondences to Gã ʃw are complicated.

G ʃw : D pw

G <u>ʃwɛ</u>	D <u>pyɛ</u>	'remain' v	G <u>ʃwá</u>	D <u>pyá</u>	'blame' v
<u>ʃwa né</u>	<u>pyaní</u>	'afternoon' n	<u>ʃwéi</u>	<u>pyé</u>	'rag' n

G ʃw : D pw

G ʃwi-éè (*ʃwé-^{42.1.1}) D pwé 'spill, fall' v

(G ʃ : D pw

G ʃɔ̃ D pwɛ̃ 'mould(pot) ' v)

G ʃw : D fy

G <u>ʃwé</u>	D <u>fyé</u>	'play' v	G <u>ʃwɔ̃</u> , <u>ʃwɔ̃</u>	D <u>fyɔ̃</u>	'thigh' n
<u>ʃwá</u>	<u>fyá</u>	'comb' v	<u>ʃwã</u>	<u>fyã</u>	'boast' v

G ʃw : D vye G ʃwe D vye 'vomit' v

Gã dʒ does not correspond to Adangme dʒw.

G dʒw : D yw

G <u>édʒwè</u>	D <u>éywè</u>	'four' adj
<u>dʒwa</u>	<u>ywa</u>	'break' v

G dʒw : A dw : K d. This correspondence occurs only once in the data and would be therefore insignificant, except that in the vowel correspondence and in the correspondence Gã emphatic: Adã labialized simple: Krobo simple it parallels other correspondences to Gã emphatic consonants.

G dʒwéí A dwó-mí K dʒ-mí 'rubbish' n

Correspondences to Gã yw are rare.

G yw : D w

G ywi-éè D wé-é 'grind'

(*ywé - 4.2.1.1)

G yw : D hw

G ywí-li D hwíli 'paddle' v

G kw : D kw

G kwə D kwə 'go up' v Twi kɔ 'go'

2.2.1.31 Preliminary Grouping

Gã ʃw:D py and Gã ʃw:D fy contrast, before G ɛ:D ɛ. G ʃw:D pw, G ʃ:D pw, G ʃw:D vy do not contrast with these two or with each other. On grounds of phonetic similarity, G ʃw,ʃ:D py, pw may be considered reflexes of one contrastive unit, and G ʃw:D fy, vy of another.

G dʒw:D yw does not contrast with G dʒw:A dw : K d nor does G dʒ:D d. G dʒw:D yw does contrast with G ʃw:D py and G ʃw:D fy, and with the correspondences involving dʒ or d in either language.

Gã yw:D w and G yw:D hw do not contrast. Neither contrasts with G dzw:D yw, or d, dw, G w:D hw, or G w:D w. G w:D w and G dzw:D yw, d, dw do contrast. A contrastive entity with reflexes G w, yw:D w, hw is posited, another with reflexes G dzw:D yw, and another with reflexes G dz:D d, G dzw:D dw, and G dzw:D d.

The set of re-grouped correspondences is now as follows:

$$\begin{array}{l}
 \underline{f}:\underline{p} \quad \left\{ \begin{array}{l} \underline{f}w:\underline{py} \\ \underline{f}w:\underline{pw} \\ \underline{f}:\underline{pw} \end{array} \right\} \quad \underline{kp}:\underline{kp} \quad \underline{t}:\underline{t} \quad \underline{t}f:\underline{t}f \quad (\underline{t}f:\underline{t}) \quad \underline{k}:\underline{k} \quad (\underline{kw}:\underline{kw}) \\
 \\
 \underline{b}:\underline{b} \quad \left\{ \begin{array}{l} \underline{gb}:\underline{bw}:\underline{bw} \\ \underline{gb}:\underline{b}:\underline{b} \\ \underline{gb}:\underline{by}:\underline{by} \\ \underline{gb}:\underline{bw}:\underline{b} \end{array} \right\} \quad \underline{gb}:\underline{gb} \quad \underline{d}:\underline{d} \quad \left\{ \begin{array}{l} \underline{dz}:\underline{dz} \\ \underline{dz}:\underline{dw} \end{array} \right\} \quad \left\{ \begin{array}{l} \underline{dz}:\underline{d}:\underline{d} \\ \underline{dz}:\underline{dw}:\underline{d} \end{array} \right\} \quad \underline{g}:\underline{g} \\
 \\
 \underline{f}:\underline{f} \quad \left\{ \begin{array}{l} \underline{f}w:\underline{fy} \\ \underline{f}w:\underline{vy} \\ \underline{f}:\underline{v} \end{array} \right\} \quad \underline{s}:\underline{s} \quad \left\{ \begin{array}{l} \underline{f}:\underline{s} \\ \underline{f}:\underline{sw} \end{array} \right\} \quad \underline{h}:\underline{h} \quad \left\{ \begin{array}{l} \underline{yw}:\underline{hw}:\underline{hw} \\ \underline{w}:\underline{h}:\underline{hw} \\ \underline{w}:\underline{h}:\underline{h} \\ \underline{w}:\underline{w}:\underline{h} \\ \underline{h}:\underline{h}:\underline{hw} \\ \underline{w}:\underline{hw}:\underline{hw} \\ \underline{w}:\underline{w}:\underline{hw} \end{array} \right\} \quad \left\{ \begin{array}{l} \underline{y}:\underline{hy} \\ \underline{y}:\underline{h} \end{array} \right\} \\
 \\
 \left\{ \begin{array}{l} \underline{v}:\underline{v} \\ \underline{f}:\underline{v} \end{array} \right\} \quad \left\{ \begin{array}{l} \underline{f}w:\underline{vy} \\ \underline{f}:\underline{z} \\ \underline{f}:\underline{zy} \end{array} \right\} \\
 \\
 \underline{m}:\underline{m} \quad \left\{ \begin{array}{l} \underline{m}m:\underline{mw}:\underline{mw} \\ \underline{m}m:\underline{m}:\underline{mw} \end{array} \right\} \quad \underline{m}m:\underline{m}m \quad \underline{n}:\underline{n} \quad \left\{ \begin{array}{l} \underline{ny}:\underline{ny} \\ \underline{ny}:\underline{n} \\ \underline{n}:\underline{ny} \end{array} \right\} \quad \underline{n}:\underline{n} \\
 \\
 \left\{ \begin{array}{l} \underline{w}:\underline{w} \\ \underline{yw}:\underline{w} \end{array} \right\} \quad \underline{l}:\underline{l} \quad \underline{y}:\underline{y} \quad \underline{dzw}:\underline{yw}
 \end{array}$$

2.2.2 Reconstruction

2.2.2.1 Reconstructed Primary Consonants

Fourteen primary consonants for proto-Gã-Adangme can be reconstructed with considerable certainty, and two more are possible but dubious.

Labial *b > G b:D b

 *p > G f:D p

 *f > G f:D f

 *v > G v:D v, G f:D v. This reconstruction

is doubtful because the correspondences are poorly attested. If the examples that are similar to Ewe forms (voo, vii) are loans but veveve is not, and G f:D v is genuine, it is possible that there has been a shift of *v to Gã f before back vowels.

 *m > G m:D m

 *w > G w:D w, G yw:D w (before Gɛ).

Post-Dentals

 *t > G t:D t

 *d > G d:D d This correspondence has been

found to occur before front vowels in only one example, G dɛ-n:D dɛ-m 'palm of hand'. It will be demonstrated below (2.5.2) that the stem morph of ni-ne 'hand, arm' (in both languages) is reconstructable as *-di-. The occurrence of *d in both ni-ne and dɛ- gives rise to a suspicion that the difference in the vowels may have

to do with an obsolete morphophonemic alternation. ɛ also occurs in Gã nɛ-kú-tsò 'elbow' (*-dɛ-kú-tsò). It is possible, therefore, that at an earlier stage in the separate development of both languages, this correspondence was more widely distributed before front vowels than it is now.

*s > G s:D s, G ʃ:D s. It has been noted that G s:D s occurs only before back vowels and a. The correspondence G ʃ:D s also appears before back vowels. However, there is evidence in Protten that there has been a shift in Gã of *s to ʃ before i. He clearly makes a distinction between ʃ and s before back vowels, spelling ʃ with "Z" or "zi". Thus:

Protten	Modern Gã	
"Zio"	<u>ʃ</u> ɔ	'Wednesday'
"So"	<u>s</u> o-o	'Thursday'
"Zia"	<u>é</u> - <u>ʃ</u> à	'evil'
"sande"	<u>s</u> ane	'thing'

However, every item which in modern Gã has ʃ corresponding to Adangme s or z before i:i is spelled "s":

Protten	Modern Gã	
"sippong"	<u>ʃ</u> i- <u>kp</u> ó- <u>ɔ̃</u>	'earth'
"si"	<u>ʃ</u> i	'but'
"osiannai"	ó <u>ʃ</u> ĩ- <u>na</u> - <u>i</u>	'your doors'

It is therefore proposed that proto-Gã-Adangme *s occurred before G i:D i, but that in Gã it has merged in this environment with ʃ. The change probably did not take place before other front vowels, in view of the following example:

Prottten	Modern Gã	Modern Adangme	
"sae"	<u>se</u> - <u>ε</u>	<u>se</u>	'after;back'

*z > G ʃ:D z It is true that there are a few examples of a possible correspondence G z:D z, but they are an ideophone (zánn, zónn 'tall slim and ugly' in both languages) and a verb Gã za, zao Adangme za 'snatch'. It is shown in Chapter 3 (3.1.2.11) that Cao is probably not a proto-Gã-Adangme verb-shape.

However, it has been shown that G ʃ:D z contrasts with G ʃ:D s before G i:D i, and also before G a:D a. It is therefore likely that there was a proto-Gã-Adangme

*z, which in Prottten's time had already merged with *ʃ. Prottten uses the letter "z" both in items which correspond to modern Adangme z and in those which correspond to modern Adangme s ("Zio", Gã ʃ:D s). *z is reconstructable only before G i:D i and G a:D a.

*n > G n:D n

*l > G l:D l

Velar All of these reconstructions are attested by one correspondence each. All seem secure, with the possible exception of *g.

*k > G k:D k

*g > G g:D g

*h > G h:D h

*ŋ > G ŋ:D ŋ.

2.2.2.2 Reconstructed Secondary Consonants

Labial *gb > G gb:D gb

*kp > G kp:D kp

*ŋm > G ŋm:D ŋm

Post-Dental

*dʒ > G dʒ:D d

*tʃ > G tʃ:D tʃ

*ʃ > G ʃ:D s (except G ʃi:D si; see 2.2.2.1
Post-Dentals)

*ny > G ny:D ny, G n:D ny, G ny:D n

It seemsthat *ny has lost its emphatic quality in both languages but in different circumstances. In Gã it became n before long geminated vowels and ũ, but in Adangme the same phonetic change occurred before o. (but see 2.4.2)

*y > G y:D y

was lost in both languages except before G ɛ:D ɔ.

* yw > G dʒw: D yw

Velar

* hw > G w:D h, hw, G w:A w: K hw, G w:A w:ʔ h
G yw:D hw, G h: A h:K hw

In the examples attesting these correspondences, Krobo has h before u and o, and hw elsewhere. Gã has yw before i, h before nasal vowels, and w elsewhere. The problem is Adã, which has w, hw and h before ɔ corresponding to ɔ in each of the others and is like Krobo in some examples but like Gã in others. Adã h before ɔ may be accounted for by the presence of a second syllable -lV_x. In every other case where Adã is different from Krobo it is like Gã. The following reconstructed series of events is suggested:

1. In all Adangme, *hw became h before u and o. That this occurred in Adã before ɔ is suggested by an alternative form for 'soup', hó-nmũ.

2. In Adã *hw became h before ɔ when followed by a second syllable -lV_x.

3. Meanwhile, in Gã *hw became w in all environments except before i, where it became yw, and before nasal vowels, where it became h.

4. In many but not all morphemes which show reflexes of *hw plus a back vowel, Adã borrowed the

Gã items. This serves to explain the irregularities of the vowels as well as of the consonants. The distribution of some of the reflexes of *hw is displayed on Map II (0.3).

Palatalized

Labial *py > G ʃw:D py
 *fy > G ʃw:D fy
 *vy > G ʃw:D vy

Since G ʃw:D vy does not contrast with G ʃw:D fy, it is possible that the former represents acquisition of voice by Adangme vy before e. This is outside what seems to be the normal pattern of change in these languages, and it has already been suggested that there might have been a shift of *v to f in Gã. The weakly attested G ʃw: D pw and G ʃ:D pw appear to have some relation to these correspondences. It is suggested that together these correspondences permit reconstruction of the following events in Gã:

1. When *v shifted to f, *vy merged with *fy.
2. When *p merged with *f, *py merged with *fy² and *pw with *fw.
3. *fy shifted to ʃwu before back vowels and ʃw elsewhere, while *fw shifted to ʃ before back vowels and ʃw elsewhere.

On this scheme, another labialized consonant *pw is reconstructed.

Velar *hy > G y:D hy, h

It is suggested that a phoneme *hy lost palatalization in Adangme before i, but in Gã lost the fricative quality in all environments.

2.2.2.4 Summary

The following set of reconstructed consonants has been proposed:

*p	*pw	*py	*kp	*t		*tʃ	*k	*kw?
*b	*bw		*gb	*d	*dw	*dʒ	*g	
*f		*fy		*s		*ʃ	*h	*hw *hy
*v?		*vy		*z				
*m	*mw		*ɟm	*n		*ny	*ŋ	
*w				*l	*yw	*y		

The following changes are thought to have taken place: in Gã:

1. *p and *y merged with *f producing f.
2. *z and *s before i merged with *ʃ, producing ʃ.
3. *py, *pw, *fy, *vy merged into ʃw.
4. *dw and *yw merged in dʒw.
5. *w and *hw merged into yw before i. Since modern Gã yw is not a reflex of *yw, this change would have taken place later than that of *yw to dʒw.

6. *hw and *hy both lost fricativity; and merged with *w into w (except before i - see 4) and *y^{into y}/respectively.
7. *h and *hw merged before nasal vowels, in h.
8. *bw, *mw and *dw each merged with the nearest secondary consonant into gb, om and dz respectively.
9. *ny in a few environments merged with *n into n.

in Adangme:

1. Post-Dental secondary consonants merged with the nearest primary in some cases. *dz became d and *ʃ became s in all environments. *ny became n in only one (G o:D o).
2. Tertiary consonants *hw, *hy, *bw, *mw, *dw merged with the nearest primary consonant in some environments only, and in the case of the last three, not all dialects.
3. In Adã, labialization was extended in two-syllable morphemes.

It appears that the changes in Gã have been both more complicated and more numerous. In both languages, primary consonants, the most frequent, have been the least affected by sound change.

2.3. Vowels2.3.1 Correspondences2.3.1.1 Correspondences between Like Vowels

Each vowel in Gã corresponds to a vowel of the same type in Adangme. These correspondences are well attested.

G a : D a

G <u>ba</u>	D <u>bā</u>	'come' v	G <u>fa</u>	D <u>pa</u>	'lend' v
<u>gbá</u>	<u>gbā</u>	'strike' v	<u>dza</u>	<u>da</u>	'be straight' v
<u>tá</u>	<u>tā</u>	'patch' v			
<u>ba-a</u>	<u>bā</u>	'leaf' n	<u>fa-a</u>	<u>pa</u>	'river' n

G u : D u

G <u>bú</u>	D <u>bū</u>	'cover' v	G <u>dzu</u>	D <u>dzū</u>	'steal' v
<u>dzu</u>	<u>dū</u>	'bathe' v			

G o : D o

G <u>bo</u>	D <u>bo</u>	'listen' v	G <u>fo</u>	D <u>po</u>	'cut' v
<u>dzo</u>	<u>do</u>	'dance' v	<u>to</u>	<u>tō</u>	'keep' v
<u>lo-o</u>	<u>lo</u>	'fish' n	<u>o-o</u>	<u>o</u>	'salt' n

G ɔ : D ɔ

G <u>bɔ</u>	D <u>bɔ</u>	'create' v	G <u>dɔɔ</u>	D <u>dɔɔ</u>	'wear out' v
<u>tɔ</u>	<u>tɔ</u>	'tire; satisfy' v			
<u>yɔ-ɔ</u>	<u>yɔ</u>	'beans' n	G <u>yɔ-ɔ</u>	D <u>yɔ</u>	'Maxwell's duiker' n

G i:D i

G bí D bí 'ask' v G tí D tí 'be thick' v
dzí dzí 'be (identity)' v

G e:D e

G be D bē 'be cooked' v G fe D pe 'surpass' v
gbe gbe 'kill' v dze dze 'leave' v
té(fi) té(si) 'arise' v

G ɛ:D ɛ

D gbɛ D gbɛ 'scatter' v G fɛ D pɛ 'burst' v
dzɛ dzɛ 'abuse' v tɛ tɛ 'stone' n

G ã:D ã

G fã D fã 'defend' v G hã D hã 'give' v
kã kã 'swear' v sã sã 'break
wind' v
dã-ã dã 'drinks' n

G ũ:D ũ

G dũ D dũ 'get stuck' v G fũ D pũ 'bury' v
hũ hũ 'cultivate' v tũ tũ 'jump' v
nũ-ũ nyũ-mũ 'man' n

G õ:D õ

G fõ fõ 'throw' G sõ D sõ 'forge' v
tõ tõ 'be wrong' v

G i:D ĩ

G hĩ D hĩ 'be good' v G ʃĩ D sĩ 'abandon' v
tʃĩ tʃĩ 'prepare (certain foods)' v

G ẽ:D ẽ

G kẽ D kẽ 'take' v G tʃẽ D tʃẽ 'spin' vb

2.3.1.2 Correspondences between Unlike Vowels2.3.1.21 Gã Front Vowel, Adangme Front Vowel

A front vowel in Gã in a few examples corresponds to the Adangme front vowel that is one degree closer.

G e:D ĩ

G fe-e D fĩ 'excrement' nG gbe-e D gbĩ 'voice' n

G ɛ:D e

G ke-ɛ̀ D ké 'say' v (cf 4. G sɛ-ɛ D sē 'back, behind' n
2.1.1)

2.3.1.22 Gã Front Vowel, Adangme Back Vowel

A Gã front vowel sometimes corresponds to an Adangme back vowel of the same degree of closeness.

G e:D o

G té-le D tó-lo 'carry' v

G ɛ:D ɔ

G gbɛ D bɔ̄-lo 'path' n G yɛ D hyɔ 'be white' v
lé-mɔ̄ lɔ 'lick' v dzwɛ̄ ɪ dwɔ̄-mĩ 'rubbish' n

2.2.1.23 Gã Back Vowel, Adangme Front Vowel

A Gã back vowel may correspond to an Adangme front vowel of the same degree of openness.

G o:D eG wó D hwé 'lift up' v G wó-nú D hwé-nyū 'soup' nG ɔ̃:D ẽG ʃɔ̃ D pwẽ 'mould(pot' v2.3.1.24 Vowel Clusters with u

Adangme ú corresponds to Gã ú, and Gã u, uo correspond to Adangme ɔ and o respectively

G <u>wú</u>	K <u>hú</u>	A <u>wú</u>	'tomorrow'
<u>wuo</u>	D* <u>hw</u>	K <u>hɔ</u> :A <u>wɔ</u>	'found'
<u>wuo</u>	A <u>w</u>		'sea'

2.3.2 Reconstruction2.3.2.1 Simple Correspondences

Since each pair of like vowels belongs to a correspondence series (2.3.1.1), and each series contrasts with all the others, twelve vowel proto-phonemes are reconstructed. It is probable that these twelve vowels of the proto-language were phonetically similar to their modern reflexes.

2.3.2.2 Complex Correspondences

2.3.2.21 Gã Front Vowel, Adangme Front Vowel

The correspondences G e : D i and G ε : D e only occur where the Gã vowel is followed by a suffix consisting of gemination of that vowel (2.3.1.21). There are no correspondences between front vowels of like type, in which the Gã vowel occurs followed by a suffix of this kind. It is a possible hypothesis therefore that G ee and G εε respectively represent *ii and *ee. A shift *i to G e would entail loss of nasality, since there is no nasal counterpart of G e.

2.3.2.22 Gã Front Vowel, Adangme Back Vowel

The correspondences G e : D o and G ε : D ɔ contrast with the correspondences between like vowels of the same types. Yet there is not sufficient evidence here for the reconstruction of two additional vowels for the proto-language. It is probably significant that all but one of the examples (2.3.1.22) occur in at least one of the languages in the first syllable of a disyllabic word. It is possible that these correspondences are relics of morphophonemic alternants, the conditioning factors of which have been lost, and of which each language preserves only one (cf. discussion of *d. 2.2.2.1).

2.3.2.23 Gã Back Vowel, Adangme Front Vowel

The correspondences Go:De and G ẽ:D ě (2.3.1.23) occur only after the labialized consonants hw and pw respectively. In Adangme, o does not occur after hw, nor does ẽ (or ɔ) after pw. These correspondences may be accounted for on a hypothesis of dissimilation, whereby *hwo > D hwe, and *pwõ > D pwě.

2.3.2.24 Vowel Clusters with u

In Adangme, uo and uɔ do not occur after hw or w. It is possible therefore that hwõ and wo (2.3.1.24) are reflexes of /G-D ^{proto-}*hwuɔ and *wuo. There is support for this in the fact that ^{the language} of the Adangme-speaking Togo community of Se-Zogbadzi, the founders of which left the Adangme territory in the eighteenth century (Sprigge), has wuo for 'sea'.³

The word for 'tomorrow' is reconstructed as *hwõõ, on the hypothesis that in Gã and Adã *hwɔ > wɔ (2.2.2.3), but in Krobo *hwɔ > hu, if it was followed by a vowel of a different tone.

2.3.2.3 Observations

The vast majority of examples of correspondences between vowels lead to a straightforward reconstruction of seven oral and five nasal consonants in proto-Gã-Adangme. However, there are a few, less well attested

correspondences which leave problems, particularly those between Gã back and Adangme front vowels. In respect to the latter, the possibility of an old morphophonemic alternation was suggested (2.3.2.21, see also 2.2.2.1). In modern Gã, there is morphophonemic alternation between front and back vowels in some nominals (2.4.2.1, -V_x). It should be noted, too, that the reconstruction of primary and secondary consonant contrasts depends almost entirely on occurrences before back vowels (2.2.1.11, 2.2.1.21). Further investigation, particularly into alternant forms in nominals, might show that shifts in vowels from front to back articulation have taken place. It may be noted that in both languages, the most frequent (1.3.2.1) vowel type, a, is not involved in any of the correspondences that point to possible changes in the vowel systems.

2.4 Second Syllables

2.4.1 Loss of Medial Consonants

2.4.1.1 In Gã

There are a few items in which ^ø/in Gã corresponds to n in Adangme.

G <u>bǎí</u>	D <u>bǎní</u>	'begin' v
<u>fǎí</u>	<u>pǎní</u>	'vein, tendon' n
<u>kpǎí</u>	<u>kpǎní</u>	'beard, chin' n

It seems that in Gã *n was lost between * ã, *ã̃, *ẽ̃, and *ĩ̃.

2.4.1.2 In Adangme

There are a few Adangme items in which \emptyset corresponds to Gã m.

G <u>énùmõ</u>	D <u>énwõ̃</u>	'five' adj
<u>sùmõ̃</u>	<u>swõ̃</u>	'love, like' v

It appears that Adangme *m was lost in the environment *u - õ̃.

2.4.2 Alternating Syllables

There are a number of nouns which correspond in the first syllable, but not in the second. Most of these second syllables are analyzable as singular suffixes in Gã, but not in Adangme.

2.4.2.1 Syllable Types

-mí

This syllable occurs in a few nouns of both languages, most of which are names of body parts. In most cases of -mí in Gã, no cognate item could be found in Adangme. In others, Adangme has -mí but the Gã form corresponds in the preceding syllable only.

G <u>gbemí</u>	'vagina'
(viz. <u>gbei</u>	'penis')
<u>lamí</u>	'cocks's comb'

G	<u>mumí</u>		'elephant's trunk'	
	<u>hǎ́é</u>	D	<u>hě́mi</u>	'face'
	<u>leí</u>		<u>he-lémi</u>	'tail'
	<u>wo-lo</u>		<u>womí</u>	'hide, skin; book'
	<u>ɔwālā́mí</u>			'star'
	<u>osalamí</u>		<u>hwālā́mí</u>	'moon'
	<u>éɔmɔ́mí</u>	K	<u>mwómí</u>	'okro'

-i

bases

A number of Gã nominal/(but not members of any other base class) of shape CVi correspond in the penultimate syllable to Adangme nominal bases with a penultimate syllable of shape CV. The tone of the Adangme form corresponds to the tone of Gã i, unless the Gã vowels are ai. In that case the corresponding Adangme vowel is e, with tone corresponding to the tones of both Gã syllables.

	G	<u>fai</u>	D	<u>pɛ́é</u>	'hat'
plur.		<u>fai-i</u>		<u>pɛé-hí</u>	'hats'
		<u>malai</u>		<u>melé</u>	'tick' (insect)
		<u>lai</u>		<u>léé</u>	'firewood'
		<u>šai</u>		<u>sé</u>	'Shai' (tribe)
		<u>gā́i</u>		<u>gě́é</u>	'bow and arrow'
		<u>lílɛi</u>		<u>lílɛ</u>	'tongue'
		<u>šwéi</u>		<u>pyé</u>	'rag'

G <u>gbéi</u>	D <u>byé</u>	'name'
<u>séí</u> =	<u>sé</u>	'stool'
<u>féí</u>	<u>fyé</u>	'cold' adj
<u>leí</u>	<u>he-lémi</u>	'tail'
<u>foi</u>	<u>fo</u>	'speed'

-V_x

A number of nouns in Gã end in -V_x, alternating with -i in the plural. They correspond in the first syllable to monosyllabic Adangme nouns.

G <u>yó-o</u>	D <u>yó</u>	'Maxwell's'
<u>lo-o</u>	<u>lo</u>	'meat, fish'
<u>so-o</u>	<u>so</u>	'Thursday'
<u>fa-a</u>	<u>pa</u>	'river'

It is noteworthy that none of the corresponding vowels are front vowels, with the exception of G e:D í and G é:D e (cf. 2.3.2.21). However, in a few of these nouns the plural in Gã involves a vowel alternation between o and é in the stem.

G <u>yo-o</u>	D <u>yo</u>
'woman'	'woman, wife'

plur. yé-i plur. yí-hí

The same alternation occurs in a few nominals without the -V_x suffix, e.g.

G <u>mómo</u>	D <u>mómo</u>	'old' adj
plur. <u>meme-dzí</u>	plur. <u>mómo-hí</u>	

-lV_x

Several nouns have a second syllable consisting of l followed by a vowel identical to the one that precedes. It may exist in one language corresponding to a syllable of the same type in the other language, or to \emptyset , or the form in the other language may have a non-corresponding second syllable.

G <u>malai</u>	D <u>mɛlɛ́</u>	'tick'
<u>ɔmɛ-lɛ</u>	<u>ɔmɛlɛ</u>	'bell'
<u>gbɛ</u>	<u>bɔlɔ</u>	'way, road'
<u>gãí</u>	<u>gɛ́lɛ́</u>	'bow and arrow'
<u>lɛ-lɛ</u>	<u>lɛ</u>	'canoe'
<u>bɛ-lɛ</u>	<u>bɛ̄</u>	'horn, pipe'
<u>yɛ-lɛ</u>	K <u>hyɛ̄</u>	'yam'
<u>wo-lo</u>	D <u>womí</u>	'hide, skin; book'

-li

A few items corresponding in the first syllable have a second syllable -li in Adangme, but something else in Gã.

G <u>ko-ŋ</u>	D <u>koli</u>	'antler'
	A <u>pɛ̄li</u>	'wing'
<u>tʃɛ-lɛ</u>	D <u>tʃɛ̄li</u>	'feather'

-le

A few items that correspond in the first syllable, also referring to body parts, have -le in the second syllable in one language but something else in the other.

G <u>tʃɛ-le</u>	D <u>tʃɛli</u>	'feather'
	K <u>pēle</u>	'wing'
<u>gonti</u>	D <u>gole</u>	'thumb'

-ne

Several names of body parts, especially in Gã, have a second syllable -ne.

G <u>gbo-ne</u>		'claw'
<u>fi-ne</u>		'wing'
<u>nĩ-ne</u>	D <u>nĩne</u>	'arm'
<u>nã-ne</u>	<u>nãne</u>	'leg'

-ŋ

Several Gã nouns end in -ŋ where the Adangme ends in \emptyset or -m, -mĩ. Many are names of living beings or of body parts. One is the name of a town.

G <u>ŋmo-ŋ</u>	D <u>ŋmo</u>	'louse'
<u>wó-ŋ</u>	<u>wó</u>	'deity'
<u>dze-ŋ</u>	<u>dēmĩ</u>	'rock python'
<u>kpo-ŋ</u>	<u>kpomĩ</u>	'Kpone'
<u>ko-ŋ</u>	<u>koli</u>	'antler'
<u>mĩ-lĩ-ŋ</u>	<u>mĩ</u>	'inside'
<u>té-ŋ</u>	<u>té</u>	'middle, midst'

G <u>wa</u> - <u>ɔ</u>	D <u>ɔwa</u> , <u>mwa</u>	'grey hair'
<u>ka</u> - <u>ɔ</u>		'shoulder'

2.4.2.2 Observations and Conclusions

1. In Adangme the plurals of these nouns are formed in a regular fashion, with the suffix -hī. In Gã, all of these syllables with the exception of -mī and -ī, -ī are dropped in the plural. Except when the singular ending is -V_x, the Gã plural suffix is -dzī, not the more usual -ī. e.g.:

G <u>le</u> - <u>le</u>	'canoe'	<u>le</u> - <u>dzī</u>	'canoes'
<u>fi</u> - <u>ne</u>	'wing'	<u>fi</u> - <u>dzī</u>	'wings'
<u>wɔ</u> - <u>ɔ</u>	'deity'	<u>wɔ</u> - <u>dzī</u>	'deities'

These syllables (other than mī, -ī) are therefore morphemes in Gã, signifying singular number.

2. A considerable number of the nouns ending in -mī, -lī, and in the singular in -le, -ne or -ɔ are names of parts of the body. Most, not all, of the nouns ending in -lV_x are names of inanimate objects. The semantic consistency is not total but probably too high to be purely accidental.

3. It is suggested that these second syllables are the remnants of a proto-G-D system of nominal suffixes. Since many pairs of forms which are cognate in the first or stem syllable differ in the second, it is likely that

there was considerable dialect variation in the distribution of the proposed suffixes in the proto-language itself. Gã mí-lí-ŋ carries two suffixes.

4. The correspondences of the type G Vi : D V are reconstructed as proto G-D *Vi, in order to account for the fact that the Adangme tone corresponds to the tone on Gã i. There was also a vowel change in Adangme, of *ai to modern ɛ or ɛ́, depending on the tone of *ai.

The loss of i in Adangme involved palatalization of the labial consonants *bw and *f before *ɛi, so that the word for 'name' should be reconstructed as *bwɛ́i.

These correspondences occur only in nouns, and in the Gã word for 'tick', -í is separated from the first syllable by the suffix -lV_x. It is suggested therefore that -í and -i are also relics of nominal suffixes. If so, the morpheme boundary between stem and suffix was probably lost before the separation of Gã and Adangme, since it is not present in either of the modern languages.

On this basis the items Gã maláí 'tick' and Adangme gɛ́lɛ́ (a variant of gɛ́ɛ́) 'bow and arrow' would be reconstructed as having once consisted of three morphemes each:

* <u>ma-lá-í</u>	>	G <u>maláí</u> ,	D <u>mɛlɛ́</u>
* <u>gã-lá-í</u>	>	D <u>gɛ́lɛ́</u>	
* <u>gã-í</u>	>	G <u>gáí</u> ,	D <u>gɛ́ɛ́</u>

It is possible that these changes are relatable to the fact that Gã i and ĩ occur in a larger number of morphs than do Adangme i and ĩ (1.3.2). However, they cannot account for the size of the statistical difference, especially since i (or possibly ĩ) has also been lost in Gã, through the change $*-\underline{ni} > \underline{n}$ (see below).

5. Protten (1764) gives the following forms:

Protten	Modern Gã	
"mini"	<u>mĩliŋ</u>	'in, inside'
"ten, teni"	<u>téŋ</u>	'midst'

The town-name kpo-ŋ is spelled "Kpone" on most maps. Early travellers⁴ refer to it as "Ponny". It would seem therefore that there has been a change in Gã of $*-\underline{ni}$ to -ŋ, after oral vowels and close vowels. After nasal open and half open vowels, $*-\underline{n-}$ was lost and $*-\underline{ni}$ became -ĩ (2.4.11)

2.4.3 Diffusion of Labialization

In Adã, the labial quality of a close or half-close back vowel in the first syllable of a morpheme was extended to l or n followed by e in the second syllable, so that in this environment $*-\underline{n}$ and $*\underline{l}$ became nw and lw respectively in Adã.

G <u>súne</u>	A <u>súnwe</u>	S <u>súne</u>	'pillow'
	<u>sulwé</u>	K <u>sulé</u>	'penis'
	<u>kolwé</u>	<u>kolé</u>	'turtle'

2.5 The Evidence for Nominal Prefixes2.5.1 Vocalic

A number of nouns in each language begin in a, o or e. A large proportion of those with initial a or o have likely sources in Twi or Ewe. A few have no known foreign source, e.g.

G <u>agbo</u>	D <u>agbo</u>	'big' adj
<u>adaŋme</u>	<u>daŋme</u>	'Adangme' n
<u>oyá</u>	<u>oyá</u>	'speed' n 'fast' adv

Nouns with initial e are fewer, but a smaller proportion of the examples appear to have a foreign source. In most examples the initial vowel is present in one language only.

G <u>hú</u>	D <u>ehú</u>	'pregnancy'
<u>ékãã</u>	<u>kã</u>	'courage'
<u>éŋàa</u>	<u>ŋa</u>	'weaver bird'
<u>éŋmími</u>	<u>mwómí</u>	(okro'

In both languages, é- is a morpheme which derives nominals from adjectives (see also 6.1.1.13; 6.1.2.16):

G <u>mómo</u>	'old'	<u>é-momo</u>	'old thing'
<u>hee</u>	'new'	<u>é-hèe</u>	'new thing'
D <u>he</u>	'new'	<u>é-hè</u>	'new thing'

The numbers from two to six in both languages

begin in é:

G	<u>ényǎ̀</u>	D	<u>ényǎ̀</u>	'two'
	<u>étě́</u>		<u>étě́</u>	'three'
	<u>édzwè</u>		<u>éywè</u>	'four'
	<u>énùmǎ</u>		<u>énwǎ</u>	'five'
	<u>ékpàa</u>		<u>ékpà</u>	'six'

It is likely that initial *é was morphemic in proto-G-D, but there is little evidence that the same was true of initial *e, *a and *o.

2.5.2 Nasal

1. Protten in his grammar section lists the singular and plural forms of a number of nouns which still exist, but without Protten's initial nasal consonant.

Protten		Modern Gã		Modern Adangme	
sing.	plur.	sing.	plur.		
"nkiu"	"nkjugi"	<u>tsú</u>	<u>tsú-i</u>	<u>tsú</u>	'room'
"sande"	"nsagi"	<u>sane</u>	<u>sadzĩ</u>	<u>sane</u>	'matter'
"Gong"	"nGogi"	<u>gɔɔ</u>	<u>gɔdzĩ</u>	-	'hill'
"nsisi"		<u>sĩsĩ</u>		<u>sĩsĩ</u>	'under'

This initial nasal was evidently dropped following a possessive pronoun, as initial vowels are dropped to-day:

Protten

"mi kiu fe o kiu da læ " 'mit Huus er større en dit'
(my house surpassed your house grew)

Modern Gã

mí tfu dà fe ó tfu 'my house is bigger than yours'
(my house grew surpassed your house)

Also, although he lists "nsisi", in texts he writes "jæ sippong sisi", ye sikpó sí sí 'under the earth'.

2. In Protten, several nouns and pronouns have "d" or "nd" where modern Gã and Adangme have n.

Protten		Modern Gã		Modern Adangme	
sing.	plur.	sing;	plur.		
"dinde"	"nigi"	<u>nɪne</u>	<u>nɪdʒi</u>	<u>nɪne</u>	'hand'
"ndæ "		<u>nɛ</u>		<u>nɛ</u>	'that'
"ndo"		<u>nɔ</u>		<u>nɔ</u>	'thing'
"didæ "	"njnæ "	<u>ni-nɛ</u>		<u>ni-nɛ</u>	'that which'
"nondæ "		<u>nɔ-nɛ</u>		<u>nɔ-nɛ</u>	' " " '

On the other hand, there are modern n which Protten also spells with "n":

Prottén	Modern Gã	
"no"	<u>no</u>	'on'
"noko"	<u>noko</u>	'something'
"nimæ kæ Namæi "	<u>nií-mé</u> <u>kæ</u> <u>naáméi</u>	'grandfather and grandmothers'
"nu"	<u>nũũ</u>	'man'

3. The foregoing examples are interpreted as evidence that at Prottén's time there was a nasal prefix, which occurred only with the plural suffix in many nouns, and also with the singular in at least a few, as in "nkiu, nkugi". This prefix has since been lost altogether before most consonants, but in the cluster *nd, *d was lost. This assimilation had already taken place when Prottén wrote, at least before *i and *i ("nigi", "njmæ"), but since then the assimilated cluster of the plural has been extended to the singular, presumably by a process of analogy, so that "dinde" > níne. It seems also that the suffix which was reconstructed (2.4.2.2) as *-ne may actually have had the form *-nde, in view of such items as "sande" and "dinde".

It is tempting to use the hypothesis of an obsolete nasal prefix to explain a number of otherwise irregular correspondences between a nasal consonant in one language and an oral consonant of the same order in the other. Although very suggestive, these correspondences

are otherwise very difficult to reconcile with the better attested correspondences already discussed.

G l:D n, l This correspondence is further complicated by apparently irregular variation between l and n in both languages.

G <u>laŋmɔ</u>	A <u>laŋmɔ</u>	K <u>naŋmɔ</u>	'navel'
<u>la-mɔ̃</u>	D <u>nāla-mí</u>		'dream'
<u>likɔlikɔ</u> , <u>nikɔlikɔ</u>	<u>likɔkɔ</u>		a kind of small cup
	<u>lugú</u> , <u>nugú</u> (rare)		'tooth'

G b:D m

G bo D mo 2nd sing pronoun

G w:A mw K, S ɔw

G waɔ A mwa K, S ɔwa 'grey hair'

G ŋ:D g

G ŋa-a D ga 'craft; advice'

G ny:D hy

G nyɛ̃ D hyɛ̃ 'yesterday'

nyɔ̃-mɔ̃ hyɔ̃ 'debt'

G ŋw:D hw

G ŋwālāmí 'star' D hwālāmí 'moon'

If these items are considered together with the evidence

in Proton of lost nasal prefixes, it may be concluded that proto-Gã-Adangme once had a nasal nominal prefix, possibly homorganic with the consonant of the stem, which has since become inactive in both languages and largely lost. In Adangme, the nasal quality was not lost when the stem consonant was a labial, *w (*N-wa > A mwa, K ɔwa) or *b (*m-bo > mo). In Gã, the nasal quality remains with all initial velars of which there is evidence, *hy (*N-hyẽ > G nyẽ, *N-hyõ > G nyõ), *g (*N-g > ɔ) and *hw (*N-hw > ɔw). In both languages, nasal quality remains where the stem-initial consonant was *d (*N-d > n). Generally the nasal consonant was lost before *l, but it seems that in some places it was assimilated. At present there is insufficient data to determine whether this retention can be located geographically, but in the word for 'navel' it is certainly distinctively Krobo.

There are a few attestations of a similarly irregular but suggestive correspondence G m:D n:

G <u>mũ</u>	D <u>nũ</u>	'oil'
<u>mõ</u>	<u>nõ</u>	'person'

If a nasal prefix is involved here, it would be expected, according to the previous argument, that the Adangme items should be reconstructed as *n-dũ, *n-dõ respectively. Yet this does not suit the Gã

forms. If, however, the prefix to be reconstructed were not homorganic, with the following consonant, but a bilabial *m, both forms could be reconstructed as respectively *m-dū, *m-dɔ̃. The implication is that the articulation of the prefix was assimilated to that of the stem consonant in Adangme, but the reverse happened in Gã. This hypothesis also implies two contrasting nasal prefixes at some stage of the proto-language and before the change *n-d > n.

Unfortunately, the hypothesis that Gã m and Adangme n are in these examples reconstructable as *N-p is equally acceptable, because no evidence has been found that would support or disprove either. Since it appears that *N-b > b and not m in Gã,

and m, not n in Adangme, the first hypothesis seems more likely. It is therefore suggested as possible, but by no means established, that proto-Gã-Adangme had more than one nasal nominal prefix.

Another problem arises, concerning the correspondence G n:D ny, which has been treated (2.2.2.2) as one of the correspondences attesting proto-Gã-Adangme *ny. In addition to the pair Gã na-a, Adangme nya 'mouth, edge' there exists a Gã item da-n (*da-ni) 'inside of mouth'. Although Gã na-a could be reconstructed as *n-da-a this is difficult to reconcile with the Adangme. It could be done by postulating a proto-consonant *dy,

contrasting with *d, *dw and *dz before *ũ and *a, and the hypothesis that in Adangme *n-dy > ny, but proto-G-D *n-dy > proto-Gã *n-d. Since this is the only evidence for such a consonant, it seems simpler to assume that the alternation *ny / *d was present in proto-Gã-Adangme.

4. The proposed simplification of NC clusters seems to have occurred without exception for all C. It follows therefore that the many nouns in the modern languages, especially Gã, that have an initial NC cluster are foreign. In fact, in most cases a Twi source is easily found for such items, e.g.

G	<u>ɔkpáí</u> , <u>mpáé</u>		Twi	<u>mpáé</u>	'libation'
	<u>ɔkátìé</u> ,	K	<u>akátè</u>	<u>ɔkátéé</u>	'ground nut'
	<u>ntá</u>			<u>ntá</u>	'pair'
	<u>ɔkákáláá</u>	D	<u>ɔkákala</u>	<u>ɔkákra</u>	'light soup'

Section II THE STRUCTURE OF THE
VERBAL BASE.

3. The Phonology of the Verbal Base.

3.0 Introduction

3.1 Syllabic Shape

3.1.1 Monosyllables

3.1.2 Polysyllables

3.1.2.1 CV+V

3.1.2.11 Gǎ

3.1.2.12 Adangme

3.1.2.2 CV+N

3.1.2.3 CV+CV

3.1.2.4 Trisyllabic Verbal Stems

3.1.2.41 Gǎ

3.1.2.42 Adangme

3.1.3 Summary

3.1.4 Proportion of Monosyllables to Polysyllables

3.2 Monosyllabic Verbal Bases

3.2.1 Tone

3.2.2 C+V Combinations

3.3 CVCV Verbal Bases

3.3.1 First Syllable

3.3.2 Second Syllable

3.4 Conclusions

3.0 Introduction

The verbal base in both languages contains a verbal stem. It may also have one or two verbal extensions (0.5.5). In this chapter, the phonological structure of the verbal base is discussed, excluding those bases which contain a productive extension (4.1). That is, all verbal bases discussed in this chapter have previously (e.g. in Okunor 1967, Apronti 1967) been tacitly treated as consisting of a stem only. Bases containing stems which never occur unaccompanied by extensions are included.

3.1 Syllabic Shape

Verbal bases in Gã and Adangme commence on a CV syllable. Following syllables may be of any type, though CV is most common.

3.1.1 Monosyllables

In both languages a high proportion of mono-morphemic vb have the shape CV. These have high or low tone in Gã, and high, mid or low tone in Adangme.¹ In each language there are a number of such vb that differ only in tone, e.g.

	H		L		M
G	<u>bú</u>	'wear'	<u>bu</u>	'be plentiful'	
	<u>tʃá</u>	'join'	<u>tʃa</u>	'dig'	

	H	L	M
D	<u>sá</u> 'snatch'	<u>sa</u> 'be suitable'	<u>sā</u> 'rot'
	<u>há</u> 'rub'	<u>ha</u> 'put on'	
		<u>ba</u> 'beg'	<u>bā</u> 'come'

3.1.2 Polysyllables

Most non-monosyllabic vb in both languages are disyllabic, but a few have three syllables. There are many polysyllabic vb in both languages, more in Gã than in Adangme.

3.1.2.1 CV+V

3.1.2.1.1 Gã

Verbal stems of this syllable-combination occur with a variety of tone patterns. In Gã only, the second vowel and its tone may both be identical to the first. Most of these bases closely resemble Akan forms. The following list is believed to be exhaustive:

Gã <u>doo</u> 'roast'	Twi <u>dòw</u> 'become brown'
<u>huu</u> 'blow'	<u>hùw</u> 'blow'
<u>foo</u> 'clean off'	<u>hwèw</u> 'sweep away', ²
<u>tee</u> 'go'	
<u>too</u> 'cut down'	<u>tèw</u> 'sever'
<u>tuu, tiu</u> 'follow'	<u>tìw</u> 'follow'
<u>tuu</u> 'be dark'	<u>tuu</u> 'dark' adj

In Gã, approximately thirty-five verbal bases have the shape $CV+V\check{V}_x$, where the first vowel is either i (preceded by a palatalized consonant or h) or the same as the second and third, which are always identical.

Examples are:

ywiéé 'speak' tʃʃʃʃ 'teach'

Except utterance finally, these bases drop the final vowel, so that the shape $CV+V\check{V}_x$ alternates with $CV+V\check{V}$. There are a few bases which have shape $CV+V\check{V}$ in all environments including utterance-final. In two of the four examples found, the first vowel is i. Three resemble Twi verbs.

Gã	<u>ʃié</u>	'preach'		
	<u>paá</u> , <u>paé</u>	'invoke name'	Twi	<u>paé</u>
	<u>hĩá</u>	'need'		<u>hĩá</u>
	<u>foá</u>	'embrace'		<u>fuá</u> 'grasp'

There are also a few verbal bases in Gã of shape $CV+V\check{V}$, in which if the first vowel is open the second is close, and vice versa. Most of the vb of this type in which the first vowel is not õ or ã resemble Twi verbs.

Gã bõí 'begin'
gõí 'belch'
dãí 'respond'

Gã	<u>kpáí</u>	'pour libation'	Twi	<u>paé</u>	(<u>mpáé</u> n)	'pour libation'
	<u>búá</u>	'help'		<u>boá</u>		'help'
	<u>kũá</u>	'wrinkle'		<u>kõá</u>		'bend'
	<u>híá</u>	'pour'		(<u>hwie</u>		'pour')
	<u>míá</u>	'squeeze'		<u>míá</u>		'squeeze'

There are also a few Gã vb in which the second vowel is half close. Again, most of these resemble Twi forms.

Gã	<u>púé</u>	'occur'	Twi	<u>pué</u>
	<u>káé</u>	'remember'		<u>kaé</u>
	<u>táó</u>	'want'		

There are three examples of this type of vowel combination with low tone in both:

Gã	<u>dɜao</u>	'worship'	Twi	<u>gyàw</u>
	<u>gwao</u>	'beat'		<u>guàw</u>
	<u>hao</u>	'be lazy'		<u>hàw</u>

3.1.2.12 Adangme

Adangme employs only two tone patterns in vb of the CVW type, and the vowel combinations are even more limited than in Gã. They are either CV+V', where the first vowel is i, u, or the same as the second vowel:

béé 'sweep' bié 'be stupid' buá 'pretend'

or CVW', where the first vowel is i or u:

pió 'complain' kua 'stop'

Exceptions to the rule are:

Adangme káí 'remember' Gã káé Twi kaé
kpáí 'watch, notice'
táí 'sketch' Gã téí (Twi sàí)
zao 'seize'

Since Gã káé and Adangme káí closely resemble each other, but the second vowels do not correspond, it is likely that both are borrowed from Twi kaé.

3.1.2.2 CV+N

Adangme has no vb of this type. Gã has only a few, most of which closely resemble Twi stems.

Gã seŋ 'hang' Twi seŋ Gã sŋ 'filter' Twi sŋ'
dʒweŋ 'think' dwèŋ doŋ 'travel' dom'
'peregrinate'
baŋ 'cut' téŋ 'draw, print'

3.1.2.3 CV+CV

Most of the disyllabic vb in both languages are of this shape. The possible tone patterns are: Gã and Adangme - HH, LL, HL, LH, Adangme only - MM. MM disyllables are all $C\bar{V}LV_x$.

Examples of the tone patterns are:

	Gã		Adangme
HH	<u>dʒwéle</u>	'praise'	<u>yóse</u> 'realize'

	Gã		Adangme	
LL	<u>bɔle</u>	'surround'	<u>sɔle</u>	'worship'
HL	<u>bódo</u>	'dent'	<u>bóni</u>	'begin'
LH	<u>dɔadɔé</u>	'straighten'	<u>gɔlé</u>	'belch'
MM			<u>dāla</u>	'share'

3.1.2.4 Trisyllabic Verbal Bases

3.1.2.41 Gã

In both languages there are a few trisyllabic vb. In Gã these are of several types, each of which has only a few examples, and some only one. In one type, either the second or the third syllable is ɔV_x. If it is the third, the first two syllables are usually identical except in tone.

CV-CV- <u>ɔV</u>	<u>tsómolo</u>	'toil'	<u>kókolo</u>	'roll'
	<u>tsótɔlo</u>	'hang'	<u>yoyolo</u>	'be distraught'
	<u>gbígbi</u>	'groan'		
CV- <u>ɔV</u> -CV(-CV)	<u>kpeléke</u>	'descend'	<u>kpulúkutu</u>	'be very annoyed'
	<u>filiki</u>	'fly'	<u>palásé</u>	'plaster'
	<u>peléné</u>	'suffer'		

palásé is borrowed from English 'plaster'. peléné is probably relatable to Twi pène 'groan in suffering' and père 'struggle in death agony'.

Another type has nasal syllabic consonants. These items

third vowels.

$C\acute{V}+C\grave{V}+V'$	<u>kúkùs'</u>	'gather up'	<u>mímìé</u>	'shiver'
	<u>dídǎǎ'</u>	'stagger'	<u>tʃítʃèé'</u>	'move, push'

3.1.3 Summary

In the following chart, types in square brackets ([]) occur only in Adangme, and types in parentheses (()) only occur in Gã.

Monosyllables	$C\acute{V}$	CV	$[C\bar{V}]$
Disyllables +CV	$C\acute{V}C\acute{V}$ $C\acute{V}C\acute{V}'$	$CVCV$ $CVC\acute{V}$	$[CVC\bar{V}]$
+V	$C\acute{V}\acute{V}$	$(C\bar{V}\bar{V})$ $C\bar{V}\acute{V}$	
+N	$(C\acute{V}\acute{N})$	$(C\bar{V}\bar{N})$ $(C\bar{V}\acute{N})$	
Trisyllables +CV+CV	$(C\acute{V}C\acute{V}\acute{V})$	$C\bar{V}\acute{V}C\acute{V}'$	
+V	$C\acute{V}C\bar{V}\acute{V}$		
+N		$(C\bar{V}C\bar{V}\acute{N})$	
+V+CV		$(C\bar{V}\acute{V}C\bar{V})$	
+V		$(C\bar{V}\acute{V}\acute{V})$	
+N+CV	$(C\acute{V}\bar{N}C\acute{V})$		

3.1.4 Proportion of Monosyllables to Polysyllables

When the bases in the sample were counted according to syllabic type, the following figures were obtained:

	Gã		Adangme	
monosyllables	309	55%	375	64%
polysyllables	257	45%	210	35%
<hr/>				
Total vb	566	100%	585	99%

Despite the larger total number of vb, the number of polysyllabic vb is lower in Adangme. The proportion of monosyllables to the total number of verbal bases is therefore higher in Adangme.

3.2 Monosyllabic Verbal Bases

3.2.1 Tone

The number of CV vb bearing each tone was as follows:

	Gã		Adangme	
	No.		No.	
H	122	39%	134	36%
L	187	60%	143	38%
M			98	26%
<hr/>				
Total	309	99%	375	100%

Since the proportions of high-tone vb in each sample differ by only 3% of the totals, they may be considered the same. The lower percentage of low-toned vb in Adangme is therefore accounted for by the fact that Adangme also

has mid-toned vb. The percentages of non-high vb in the two languages are practically the same; Gã 60 %, Adangme 64.7%.

In Gã the majority of CV bases are low-toned. In Adangme, mid is least frequent but the difference between low and high is not significant. Thus monosyllabic verbal bases are not evenly divided between the available tones for each language, nor between high and non-high, but the distribution is considerably more even in Adangme than Gã.

3.2.2 C+V Combinations

Chart 1 displays the C+V combinations in actually occurring monosyllabic verbal bases.

With a few notable exceptions, those consonants which do not occur or occur only rarely are tertiary or the rare primary consonants. Besides the generally non-occurring syllables noted previously (1.2.1.11, 1.2.1.21), no monosyllabic base in either language begins in y, although Adangme vy does occur. In Gã p, gw, and hw, in Adangme by, zy, tw, ɲw do not occur.

Some other consonants occur in very restricted contexts. Gã and Adangme ɲm, ny, ɲ, Adangme ny, mw

occur but only with open and half open vowels. In both languages w, l, y, and yw occur only with oral vowels.

Some occur with one vowel only:

-a: G and D dɜw, tʃw, G ɔw, D nyw, gw, lw, yw

-ã: D sy, ty

-u: D g

-ɔ: D dw

-ʃ: D sw

-ɛ: D gby, G yw

-e: D vy

The degree to which the possible syllables are exploited as monosyllabic verbal stems was calculated, i.e. the ratio was found of the number of syllables used in such verbs to the number of possible syllables.³

The ratios were:

	<u>Exploitation of</u> <u>CV syllables</u>	<u>Exploitation of</u> <u>CV in verbal bases</u>
Gã	67%	46%
Adangme	57%	36%

Therefore the exploitation of possibilities of forming CV syllables is greater in Gã than in Adangme, to exactly

the same degree in monosyllabic verbal bases as in the language as a whole, i.e. 10 %.

Chart I

Monosyllabic Verbal Bases

	a		ã		i		ĩ		e		ɛ		ẽ		u		ũ		o		ɔ		õ	
	G	D	G	D	G	D	G	D	G	D	G	D	G	D	G	D	G	D	G	D	G	D	G	D
b	x	x	x	-	x	x	-	-	x	x	x	x	-	-	x	x	-	-	x	x	x	x	-	-
bw	/	x	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	x	/	-
by	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-
gb	x	x	x	-	-	x	x	-	x	x	x	x	-	-	-	-	x	x	x	x	x	x	-	x
gby	/	-	/	-	/	-	/	-	/	-	/	x	/	-	/	-	/	-	/	-	/	-	/	-
p	-	x	-	x	-	x	-	x	-	x	-	x	-	-	-	x	-	x	-	x	-	x	-	-
pw	/	-	/	x	/	-	/	-	/	x	/	-	/	x	/	-	/	-	/	-	/	-	/	-
py	/	x	/	-	/	-	/	-	/	-	/	x	/	-	/	-	/	-	/	-	/	-	/	-
kp	x	x	x	x	-	-	-	-	x	x	x	x	-	x	-	-	-	-	-	-	x	x	x	x
d	x	x	x	x	x	-	-	-	x	-	x	-	-	-	-	x	x	-	x	x	x	x	-	-
dw	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	x	/	-
dʒ	x	x	-	-	x	x	-	-	x	x	x	x	-	-	x	x	-	-	x	-	x	x	-	-
dʒw	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
t	x	x	x	x	x	x	x	-	x	x	x	x	-	-	x	x	x	x	x	x	x	x	x	x
tw	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-
ty	/	-	/	x	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-
tʃ	x	x	-	-	x	-	x	x	x	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x
tʃw	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	-	-	x	-	-	-	-	x	-
gw	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
k	x	x	x	x	-	-	-	x	x	x	x	x	x	x	-	x	x	x	x	x	x	x	x	x
kw	x	x	-	x	-	-	-	-	x	-	x	-	-	-	-	-	-	-	-	x	x	-	-	-
f	x	x	x	x	-	-	x	x	x	-	x	x	x	-	-	-	x	x	x	x	x	x	x	x
fy	/	x	/	x	/	-	/	-	/	x	/	-	/	x	/	-	/	-	/	-	/	-	/	-
v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
vy	/	-	/	-	/	-	/	-	/	x	/	-	/	-	/	-	/	-	/	-	/	-	/	-
s	x	x	-	x	-	x	-	x	-	x	-	x	-	x	-	x	x	x	x	-	x	x	x	x
sy	/	-	/	x	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-
sw	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	x
ʃ	x	/	x	/	x	/	x	/	x	/	x	/	-	/	-	/	-	/	-	/	-	x	/	x
ʃw	-	/	x	/	x	/	-	/	x	/	x	/	-	/	-	/	-	/	-	/	-	x	/	-
z	x	x	-	x	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
zy	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-
h	x	x	x	x	-	x	x	x	x	x	x	x	-	x	-	x	x	x	x	x	x	x	-	-
hw	-	x	-	x	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-
hy	/	x	/	-	/	-	/	-	/	-	/	x	/	x	/	-	/	-	/	-	/	x	/	-
m	x	x	x	x	x	-	-	x	-	-	-	x	-	x	-	-	x	-	x	-	x	-	x	-
mw	/	-	/	-	/	-	/	-	/	-	/	-	/	x	/	-	/	-	/	-	/	-	/	x
my	/	-	/	x	/	-	/	-	/	-	/	x	/	-	/	-	/	-	/	-	/	-	/	-
w	x	x	-	-	x	-	-	-	-	-	-	-	-	-	x	x	-	-	x	x	x	x	-	-
n	x	x	-	x	x	-	-	x	-	-	-	x	-	-	-	x	x	-	-	-	-	-	x	x
ny	x	-	x	x	-	-	-	-	-	x	x	x	x	-	-	-	-	-	-	-	-	x	x	x
nyw	/	x	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-
ŋ	x	x	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x
ŋw	x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ŋm	x	-	x	x	-	-	-	-	-	x	x	x	x	-	-	-	-	-	-	-	-	-	x	-
l	x	x	-	-	x	x	-	-	x	x	x	x	-	-	x	x	-	-	x	x	x	x	-	-
lw	/	x	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-	/	-
y	x	x	-	-	-	x	-	-	x	x	x	x	-	-	-	x	-	-	x	x	-	-	-	-
yw	-	x	-	-	x	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	-	-

x CV combination occurs
 - combination does not occur
 / consonant not present in language

3.3 CVCV Verbal Bases

3.3.1 First Syllable

The first syllable of $C_1V_1C_2V_2$ verbal bases is in most ways like CV bases, but there are a few differences.

1. Rather surprisingly, nasal consonants other than m are quite rare at C_1 in both languages. In Gã ŋ and ŋm do not occur at all, and n occurs in only one item. In Adangme ŋ and ŋm occur but not n or ny.

2. z, which occurs in one or two CV bases does not occur at all. v occurs, but only in one Adangme item. Gã p, which does not occur in CV bases, occurs at C_1 in several $C_1V_1C_2V_2$ bases.

3. Adangme tertiary consonants, most of which are very restricted in CV bases do not occur at all.

Except for the nasal consonants and Gã p, the composition of the first syllable of $C_1V_1C_2V_2$ bases resembles that of monosyllabic bases.

3.3.2 Second Syllable

Charts II and III show the composition of second syllables of CVCV verbal bases and the number of occurrences of each type.

Chart II Gã + C₂V₂

No. Occur.	C	<u>a</u>	<u>ã</u>	<u>i</u>	<u>ĩ</u>	<u>e</u>	<u>ɛ</u>	<u>ẽ</u>	<u>u</u>	<u>ũ</u>	<u>o</u>	<u>ɔ</u>	<u>õ</u>
60	<u>l</u>	16	2	5		27	1	2	1		3	3	
22	<u>k</u>	5	1	3		5	3		3			2	
21	<u>m</u>	2											19
19	<u>t</u>	4	1	1		4	1		4		2	1	1
10	<u>s</u>	3				4	1		1		1		
9	<u>dʒ</u>					7					1	1	
9	<u>n</u>	1				8							
7	<u>d</u>	1		1		2					1	1	1
2	<u>b</u>			1					1				
1	<u>tʃ</u>					1							
1	<u>tʃw</u>							1					
1	<u>g</u>											1	
1	<u>kp</u>										1		
1	<u>p</u>								1				
1	<u>ɔ</u>					1							
<hr/>													
165		32	4	11	0	59	6	3	11	0	9	9	21

Chart III Adangme + C₂V₂

No. Occur.	C	<u>a</u>	<u>ã</u>	<u>i</u>	<u>ĩ</u>	<u>e</u>	<u>ɛ</u>	<u>ɛ̃</u>	<u>u</u>	<u>ũ</u>	<u>o</u>	<u>ɔ</u>	<u>õ</u>
100	<u>l</u>	19	9	6	1	28	5	11	2		7	10	2
10	<u>t</u>	1	2	1			1		2		1	2	
9	<u>n</u>			1		8							
9	<u>s</u>	1		1		4			1		1	1	
7	<u>k</u>	1	1			1	1				1	2	
4	<u>m</u>		1			1	1						1
3	<u>d</u>	1		1								1	
3	<u>dʒ</u>	1				1						1	
1	<u>b</u>											1	
1	<u>tʃ</u>					1							
1	<u>g</u>											1	
1	<u>g_b</u>											1	
1	<u>kp</u>										1		
1	<u>ɲm</u>					1							
1	<u>ɔ</u>											1	
1	<u>ny</u>	1											
1	<u>vy</u>					1							
1	<u>w</u>										1		
<hr/>													
154		24	13	10	1	46	8	11	5	0	12	21	3

The percentage of realized syllables in each language in Charts II and III is: Gã - 28.8%, Adangme - 26.7%. That is, it is essentially the same. These figures are very low, when compared with those for CV syllables in general and even CV vb (3.3.2). They would be very much lower if the calculation were based on the total number of consonants in the language, rather than on the number which were found to occur at C₂. In fact less than half of all the consonants occur in that position.

The consonants which occur at C₂ are among those which are in general the most frequent (1.2.3). Only one, Adangme vy, is tertiary, and that occurs as a kind of reduplication (vivye 'be greedy'). In both languages, l is by far the most frequent, and is followed by the widest range of vowels. In Gã, k, m and t are unusually frequent, but in Adangme this is less noticeable, especially with m.

The nasal vowels are not common, and ũ does not appear at all. In both languages e is distinctly the most frequent V₂, whereas in the languages in general a, o, and i in Gã, ɔ in Adangme are all more frequent

than e (1.3.2). With this exception, relative vowel frequencies in C_2V_2 of verbal bases are not significantly different from relative frequencies in morphemes in general.

When the actual forms are examined, it appears that in general V_2 is either the same as the vowel in the preceding syllable or e. This pattern is more marked in Gã than in Adangme. Some examples of what may be called the normal pattern are:

G	<u>hala</u>	'pick'	<u>kpɛtɛ</u>	'press against'	<u>dúku</u>	'cut up'
	<u>bole</u>	'surround'	<u>yóse</u>	'recognise'	<u>dʒadʒé</u>	'proclaim'
D	<u>fili</u>	'buy on credit'	<u>mãtã</u>	'stick'	<u>hósò</u>	'shake'
	<u>gɔlé</u>	'belch'	<u>tʃákè</u>	'change'	<u>kasé</u>	'learn'

n at C_2 in either language is followed only by e, with one exception:

G	<u>tʃine</u>	'thread'	<u>káne</u>	'read'	<u>ʃáne</u>	'slip'	<u>tʃíne</u>	'sneeze'
D	<u>kané</u>	'read'	<u>mãné</u>	'send'	<u>píne</u>	'untie'		

but G niná 'meet'

In Gã, a major exception to the pattern is syllables with m, which is usually followed by ɔ̃. In Adangme m is less frequent and the vowels at V_2 follow the normal pattern.

Gã kém̃ 'groan' lém̃ 'lick' tam̃ 'resemble'
dam̃ 'stand' sum̃ 'love' jam̃ 'urinate'

The pattern of repeating the first vowel or e is without exception following those consonants that occur in only one or two forms, with the following exceptions:

ɔ - Adangme dũɔ̃ 'leak'
f - Gã káfo 'praise'

Following is a list of the exceptions to the normal vowel pattern, with consonants that occur at C₂ in three or more verbs.

G + <u>Ca</u>	<u>bóda</u> 'make crooked'	D	<u>fũdza</u> 'get mouldy'
	<u>kóta</u> 'fold'		<u>kíkà</u> 'twist'
	<u>kúmã</u> 'reside with'		<u>pilá</u> 'injure'
	<u>níná</u> 'meet'		
	<u>pilá</u> 'injure'		
	<u>ʃíká</u> 'overflow'		
	<u>tíká</u> 'stuff'		
+ <u>Ci</u>	<u>kádi</u> 'mark'		<u>kádi</u> 'mark'
	<u>kóti</u> 'probe'		<u>téli</u> 'pour libation'
			<u>bónì</u> 'begin'
+ <u>Co</u>			<u>hákò</u> 'yawn'
+ <u>Ce</u>	<u>sísɛ</u> 'beg (as beggar)'		<u>sekɛ</u> 'last long'

+Cu háku 'yawn'

+Cɔ tsúkò 'smoke fish' tsúkò, tsíkò 'smoke fish'

kúdò 'guide, steer' kúdò 'guide'

3.4 Conclusions

Verb shapes in Gã and Adangme follow a well-defined pattern. In each language, more than half of all verbal bases are CV monosyllables. Disyllabic bases are of two types:

1. Gã CV+V̂(+V̂), Adangme CV+V̂ or CV̂+V̂.

$$\begin{matrix} \text{CV+V} \\ \text{X} \end{matrix}$$
2. CV+CV. In the first, either the first vowel is i (or u in Adangme) or the vowels are identical.

Almost all exceptions, that is, most of the verbs of shapes CV+N (Gã) or CV+V with tone and vowel combinations other than those just specified, can be attributed to loaning from Akan, mainly Twi. Of the trisyllabic types, most of those which cannot be described as some form of reduplication also appear to have foreign sources.

It was noted (2.2.11) that Gã p does not correspond to any Adangme phoneme. The inference is that forms containing it are of foreign origin. This seems to be confirmed by the fact that although the distribution of

C and V in monosyllabic verbal bases is in most respects comparable to distribution in the language as a whole, Gã p does not appear at all. The same is true of Gã and Adangme gw. All the verbal bases in which p occurs in Gã at C₁ have been shown to be in some way exceptional, and for most of them a possible Akan source is suggested.

Monosyllabic verbal bases display C+V patterns reminiscent of the language in general, except that l is not so outstandingly frequent or so freely distributed. The same is generally true of C₁V₁C₂V₂ bases in the first syllable, except for the remarkably low frequency of some nasal consonants at C₁. In the second syllable of such bases, however, the relatively high frequency of l is quite marked, especially in Adangme. The other consonants which occur at C₂ are among those which are most frequent in the whole language, and those which are most frequent at C₂ are also in general more frequent, especially in Gã. The range of vowels occurring at V₂, on the other hand, is extremely limited.

4. The Morphology of the Verbal Base

4.0 Introduction

4.0.1 Purpose and Method

4.0.2 Terminology

4.1 Productive Extensions in Gã

4.1.1 $-\underline{m\acute{o}}$, $-\underline{m\acute{o}}$ 4.1.2 $-\underline{i}$

4.1.3 Reduplication

4.1.4 Observations

4.2 Non-Productive Extensions

4.2.1 Gã

4.2.1.1 $-\underline{V}_x \underline{V}_x$ 4.2.1.2 $-\underline{1V}_x$ 4.2.1.3 $-\underline{1V}_x$ 4.2.1.4 $-\underline{le}$

4.2.1.5 Reduplication

4.2.1.6 $-\underline{sé}$ 4.2.1.7 $-\underline{dʒé}$ 4.2.1.8 $-\underline{né}$ 4.2.1.9 $-\underline{i}$ 4.2.1.10 $-\underline{k-}$ 4.2.1.11 $-\underline{t-}$

4.2.2 Adangme

4.2.2.1 $-\underline{x}\underline{V}_x$ 4.2.2.2 $-\underline{l}V_x$ 4.2.2.3 $-\underline{l}'V_x$ 4.2.2.4 $-\underline{l}\acute{e}$ 4.2.2.5 $-\underline{l}'V_x$ 4.2.2.6 $-\underline{s}\acute{e}$ 4.2.2.7 $-\underline{n}\acute{e}$

4.2.2.8 Reduplication

4.2.2.9 $-\underline{k}-$ 4.2.2.10 Other Occurrences at C_2

4.2.3 Observations

4.2.3.1 Comparative Evidence of Extension Status

4.2.3.2 \underline{l} at C_2

4.2.3.3 Extensions and Neighbouring Languages

4.2.3.4 Compound Bases

4.2.3.5 Cognate Extensions

4.3 Conclusions

4.3.1 Phonological Pattern

4.3.1.1 Consonant Frequency

4.3.1.2 Vowel Pattern

4.3.1.3 Tone of Reconstructed Monosyllabic Stems

4.3.2 Summary

4.0 Introduction

4.0.1 Purpose and Method

In this chapter, polysyllabic verbal bases are examined in an attempt to relate the findings of the previous chapter to grammar and grammatical reconstruction. Polysyllabic verbal bases are treated as falling into two groups. One group is morphologically complex, and describable as consisting of a verbal stem plus one or more productive extensions. Such extensions occur only in Gã. The stem of a morphologically complex base can enter a verbal base unaccompanied by any extension, and the extension occurs with an open set of verbal stems. The semantic difference between the simplex base consisting of stem only and the complex base including an extension is definable and reasonably consistent.¹ The second group consists of polysyllabic bases which are not complex in this manner, that is, they consist of a verbal stem only.

Actually, no Gã or Adangme set of polysyllabic verbal bases containing one of the recurrent types of final syllable perfectly fulfills these conditions for synchronic complexity. In a significant proportion of the data, uncertainty arises in assigning a base to one group or

the other. The semantic relationship between what appears to be a set of morphologically simple bases and a set of related complexes is not always consistent. A base which appears phonologically to contain the same extension as a set of complex bases sometimes has no corresponding simplex. Also, the putative extension may occur in a very small set of bases. Occasionally, the language containing a putative complex has no equivalent simplex, but a plausible cognate of a hypothetical simplex occurs in the other language. Most bases which might be said to be of indeterminate morphological structure were included in those treated in Chapter 3, In this chapter it will be shown that several types of realization of C_2V_2 and of V_2 are identifiable as extensions at some stage in the development of Gã and Adangme or of their common ancestor, but at the present time are not, or appear to be at some stage of transition from productive through non-productive to non-morphemic.

When a polysyllabic stem cannot be shown to be historically complex, and phonetically and semantically it resembles a base in another language with which there is known to be or have been cultural contact, it seems

reasonable to suggest that it was borrowed from that language. On the other hand, the resemblance between the suspected base and its source must be specific. If a feature exists in Gã but not in Adangme, and it is claimed that Gã borrowed it from Twi, it must be shown that the semantic functions of the feature in the two languages are closely similar, and that phonetically the Gã item and its Twi source coincide within the patterns of phonemic transfer from Twi to Gã. The case for borrowing is strengthened if the feature in question is productive in Twi but not in Gã. Thus, the fact that reduplication of the verb stem is productive in Gã but not Adangme and is also productive in Twi does not itself prove that borrowing has occurred. The fact that simple reduplication of the stem with high tone in the second part does not occur in Adangme, that it occurs in Gã in bases not relatable to any simplex, and that it also occurs in Twi bases relatable to a Twi simplex and phonetically closely resembling some of the Gã bases, strongly suggests that certain Twi bases were borrowed into Gã, and that the extension they contained was extended by analogy to form other Gã bases, with stems that do not occur in Twi (4.2.1.5).

4.0.2 Terminology

In this thesis, the terms "simplex" and "complex" describe the morphological structure of the base, either synchronic or diachronic. This departs from the use of the terms in Guthrie (1962) as descriptive of phonological structure.

A diachronically complex base consists of a reconstructed stem plus another morpheme which is usually a reconstructed extension but in a few cases seems to have been another stem. A diachronically simplex base consists of a reconstructed stem only. A base which is synchronically complex and in which the stem is a monosyllable is equivalent to Guthrie's "extended radical".

4.1 Productive Extensions in Gã

Only Gã has productive extensions. These occur at places ext_1 and ext_2 of the verbal base (0.5.5). ext_1 is realized by the morpheme $-\underline{m\acute{s}}$, and ext_2 by the morpheme $-\underline{i}$. Neither is realizable if vs is not realized by a monosyllable.

In addition, there is a productive reduplication of the verbal base, consisting of vs (any length) $\pm \text{ext}_1$. The reduplication base may be followed by $-\underline{i}$. Thus the following structures occur:

+vs	<u>bú</u>	'lie down'
+vs +ext ₁	<u>bú-mǔ</u>	'lie down' (several people)
+vs +ext ₂	<u>gbó-í</u>	'die' (several people)
+vs +ext ₁ +ext ₂	<u>ká-mǔ -í</u>	'turn' (different lots of fufu, in groups)
(+vs)R	<u>d3od3oo'</u>	'dance' (various dances)
(+vs +ext ₁)R	<u>búmǔbumǔ</u>	'lie down' (in groups)
(+vs +ext ₁)R +ext ₂	<u>búmǔbumǔ-í</u>	'lie down' (in groups)
4.1.1	<u>-mǔ</u> , <u>-mǔ</u>	

The suffix -mǔ, which occurs at ext₁, has 'iterative' meaning, and co-occurs with an open set of monosyllabic verbal stems. There is some variation in tonal pattern. Central Accra informants usually made no change in the stem tone, as in:

<u>bú</u>	'put on, wear'	<u>bú-mǔ</u>	'put on' (several)
<u>tʃɛ</u>	'tear'	<u>tʃɛ -mǔ</u>	'peel, scrape'
<u>fã</u>	'uproot'	<u>fã-mǔ</u>	'uproot' (several)
<u>ta</u>	'be like'	<u>ta-mǔ</u>	'resemble'
<u>nyɛ</u>	'squeeze'	<u>nyɛ-mǔ</u>	'dress wound'

In only one known base, a low-toned stem has high tone:

<u>kǔ</u>	'bite'	<u>kǔ-mǔ</u>	'bite, itch; be in labour'
-----------	--------	--------------	----------------------------

According to Okunor (1967, 6.2), several other stems

acquire high tone before $-m\overset{1}{\underset{\cdot}{\sigma}}$. Thus,

<u>nyɛ</u>	'squeeze'	<u>nyɛ</u> - <u>m¹</u>
<u>tũ</u>	'jump'	<u>tũ</u> - <u>m¹</u>

Since Okunor's description is based on his own east-of-Osu idiolect, this discrepancy probably reflects a dialectal variation.

4.1.2 $-i$

The extension $-i$, at ext_2 , occurs less commonly than $-m\overset{1}{\underset{\cdot}{\sigma}}$, but apparently with an open set of monosyllabic stems.

<u>gbo'</u>	'die'	<u>anẽ</u> <u>gbo'</u> - <u>i</u>	'They (several) died'
<u>kã</u>	'turn (fufu)'	<u>anẽ</u> <u>kã</u> - <u>m¹</u> - <u>i</u> <u>fufu'</u> - <u>i</u>	
			'They (in groups) turned (different lots of) fufu'.

4.1.3 Reduplication

Almost any Gã verbal base, of any length, can be reduplicated, with low tone throughout the second occurrence of the base and a suffix $-V_x$. In Central Accra this is generally accompanied by $-i$ at ext_2 .

<u>dʒo</u>	'dance'	<u>dʒoɔʒo-ó</u>	'dance' (various dances)
<u>sele</u>	'swim'	<u>selesele-é</u>	'swim' (in groups)
<u>bú</u>	'lie down'	<u>búm̩bum̩-ǝ</u>	
<u>bú-m̩</u>		<u>búm̩bum̩-ǝ-i</u>	
			'lie down' (in groups)
<u>ʃéle</u>	'kindle'	<u>ʃéleʃéle-é-i</u>	'kindle' (fires in various places)

4.1.4 Observations

There are a number of disyllabic verbal stems in Gã that end in the syllable m̩. These do not occur with the extensions -m̩, -m̩, although they do occur with other suffixes of the segmental shape m (5.2.2.6, 6.1.1.11). Although these stems cannot be matched to a monosyllabic base in Gã, in several cases a plausible cognate for a monosyllabic simplex exists in Adangme:

G <u>dam̩</u> (<u>ʃi</u>)	'stand up'	D <u>dā</u> (<u>sī</u>)	'stand up'
<u>wám̩</u>	'crawl'	<u>wā</u>	'creep'
<u>tʃúm̩</u>	'clean, mop'	<u>tʃū</u>	'clean off'
<u>kém̩</u>	'groan'	<u>ké</u>	'say'
<u>sũm̩</u>	'love'	<u>sũ</u>	'court'
<u>lém̩</u>	'lick'	<u>lɔ</u>	A 'suck', K 'lick'
<u>gúm̩</u>	'peel'	<u>gũ</u>	'pierce'

language (4.2.1.1, 4.2.2.1) is considered to be definitely an extension morpheme occurring in complex bases, and also the second and third types in Gã (4.2.1.2, 4.2.1.3). The other types of second syllable are thought to be less obviously morphemic. They are discussed for each language in approximately descending order of synchronic "morphemeness".

4.2.1 Gã

4.2.1.1 $\underset{x}{\overset{\vee}{-}} \underset{x}{\overset{\vee}{}}$

Of about forty verbs ending in this di-syllable, which is realized as $\underset{x}{\overset{\vee}{-}} \underset{x}{\overset{\vee}{}}$ except utterance-finally, at least the following are members of a simplex-complex pair. All stems have low tone with this extension. If the consonant is one of the palatals $\underset{w}{j}$, $\underset{z}{d}$, $\underset{w}{t}$, or $\underset{w}{y}$ and the vowel of the simplex is a front vowel or $\underset{a}{a}$, the vowels of the extension are the same as the vowel of the simplex but the stem vowel is $\underset{i}{i}$.

<u>dʒɔ</u>	'be peaceful, good'	<u>dʒɔ-ɔ̀ɔ̀</u>	'rest, bless'
<u>kpe</u>	'meet'	<u>kpe-éé</u>	'marry' (of man)
<u>sa</u>	'be suitable, good'	<u>sa-áá</u>	'repair; prepare'
<u>ta</u>	'chew; stir'	<u>ta-áá</u>	'argue'
<u>tʃɔ̃</u>	'set out, display'	<u>tʃɔ̃-ɔ̀ɔ̀</u>	'teach; show'

<u>ni</u>	'brood over'	<u>ni-ii</u>	'bear a grudge'
<u>dʒe</u>	'leave' (place)	<u>dʒi-éé</u>	'remove; outdoor'
<u>tʃwa</u>	'kick, hit'	<u>tʃwi-áá</u>	'beat'
<u>ʃwé</u>	'play'	<u>ʃwi-éé</u>	'play'
<u>lo</u>	'embrace; bring all'	<u>lo-óó</u>	'collect; carry in hand, bale out'
<u>fũ</u>	'swell'	<u>fũ-úú</u>	'swell'

As with -m̃ (4.1.4) many verbal bases of this phonological pattern are not members of a simplex-complex pair, e.g.

baáá 'look after, guard; mend'

bééé 'sweep'

gbééé (ʃi) 'fall down'

kpoóó 'refuse to accept'

ywiéé 'grind'

One of these is an English loan:

peéé 'pay'

4.2.1.2 -lV_x

This extension is accompanied by a vowel mutation o→ɔ. The tone is the same as that of the stem, as is the vowel. The meaning of the bases containing the extension is 'iterative', i.e. it indicates that an action is performed more than once. The following list is thought

to be exhaustive.

<u>ɔmã</u>	'write'	<u>ɔmã-lã</u>	'write'
<u>ʃa</u>	'rot'	<u>ʃa-la</u>	'rot'
<u>fɔ</u>	'cut'	<u>fɔ-lɔ</u>	'cut'
<u>ye</u>	'eat; win, govern'	<u>ye-le</u>	'force'
<u>ha</u>	'scramble for'	<u>ha-la</u>	'pick'
<u>gbá</u>	'turn aside'	<u>gbá-la</u>	'pull'

The following are not members of simplex-complex pairs:

<u>ʃálã</u>	'move about, circulate'
<u>tʃɛlɛ</u>	'string, thread' (beads)
<u>gíli</u>	'be enraged'
<u>ywíli</u>	'paddle'
<u>fála</u>	'return greetings'

solo 'differ', be different' is perhaps a back-formation from sólòtɔ-i 'different kinds of'. The similar Fante asrotóó, ásóròtów has been traced by Stewart² to English 'assorted'.

4.2.1.3 - lV_x

This extension occurs with a slightly larger set of stems than does -lV_x, but the two sets are mutually exclusive. There is a vowel mutation o→ɔ and also e→ɛ.

<u>bo</u>	'shout'	<u>bó-ló</u>	'scream, shout repeatedly'
<u>ba</u>	'come'	<u>bá-lá</u>	'move individually'
<u>kpá</u>	'collect'	<u>kpá-lá</u>	'herd; bring in'
<u>tʃe</u>	'fall'	<u>tʃé-lé</u>	'fall; scatter about'
<u>gbá</u>	'split'	<u>gbá-lá</u>	'tear'
<u>hɔ</u>	'hide'	<u>hó-ló</u>	'deceive' (good-humouredly)
<u>ká</u>	'strike'	<u>ká-lá</u>	'seal; hammer'
<u>tɔ</u>	'be sufficient; exhaust'		
		<u>tó-ló</u>	'be satisfied' (of food)
<u>tʃá</u>	'join; heal, cure'		
		<u>tʃá-lá</u>	'mend'
<u>tá(ʃí)</u>	'sit down'	<u>tá-lá(ʃí)</u>	'sit down' (several)

Not a member of a pair is:

fíli 'inflate' (English "fill"?)

4.2.1.4 -'le

In both languages, the most frequent phoneme combination at C_2V_2 is le (3.3.2). In Gã the stem tone preceding is high. In the first three examples below, the extensions has 'reversive' meaning.

<u>bu</u>	'respect, obey'	<u>bú-le</u>	'offend, commit offense'
<u>tʃɛ</u>	'remain, last'	<u>tʃɛ́-le</u>	'reduce quantity, become less'
<u>gbe</u>	'open'	<u>gbé-le</u>	'close'
<u>ʃɛ</u>	'burn'	<u>ʃɛ́-le</u>	'kindle'
<u>hée</u>	'get'	<u>hé-le</u>	'accept'
<u>wó</u>	'lift; raise; fill'	<u>wó-le</u>	'lift'
ʔ <u>dʒao</u>	'worship'	<u>dʒwé-le</u>	'congratulate, bless'

The following are not members of simplex-complex pairs:

hile 'warm'

mále 'tell lies' (cf. 6.1.1.24)

ʃwéle 'prosper'

téle 'carry'

tʃíle 'drip, leak'

tʃóle 'lie, sleep'

wéle 'warm at fire'

4.2.1.5 Reduplication

In Gã there is a type of reduplication which consists of a repetition of the base with high tone. Unlike the type described in 4.1.3, it occurs with only a small set of bases. These are of two types:

1. Bases with a high tone on the second part. Four may be compared to a non-reduplicated base, which is monosyllabic

except in one example. The reduplicated form has 'iterative' meaning.

<u>mǎ́</u>	<u>mǎ́mǎ́</u>	'catbh'
<u>tǎ́</u>	<u>tǎ́tǎ́</u>	'be wrong'
<u>tǐ́</u>	<u>tǐ́tǐ́</u>	'scratch'
<u>gǎ́í</u>	<u>gǎ́ígǎ́í</u>	'belch'

Five are formally like the above but without a simplex. These closely resemble Twi forms.

G <u>bubú</u>	'break'	Twi <u>bubú</u>	'break' (<u>bu</u>)
<u>pupú</u>	'harangue'	<u>pupúw</u>	'speak roughly to' (<u>puw</u>)
<u>tswǎ́tswǎ́</u>	'plait'	<u>twetwé</u>	'be stretched' (<u>twé</u>)

These are the only occurrences of p and tsw at C₂ in Gã.

b occurs in one other base (gbɔ́bi 'hunt')

<u>sesé</u>	'speak indirectly'	Twi <u>sesé</u> , <u>sé</u>	'say'
	(eg in proverbs)		
<u>tutú</u>	'ache'	<u>tutúw</u>	'pain' (<u>tu</u>)
(<u>ʃiʃíu</u>	'deceive, betray'	<u>hyehyé</u>	'be grievous to')

There are also a very few bases which phonologically are simple reduplications with tone pattern HdH, HL. These also are not relatable to a Gã simplex but to Twi:

G <u>kpókpo</u>	'shake, shiver'	Twi <u>popó</u>	'tremble' (<u>po</u>)
<u>súsú</u>	'measure'	<u>susu</u>	'measure'

2. Bases in which the second part contains an extension $-l\check{V}_x$, but the first does not. Two of the ~~six~~ occurrences belong to simplex-complex pairs.

<u>tá</u> (<u>ʃí</u>) 'sit down'	<u>tá-tá-la</u> 'sit' (in groups)
<u>tá-la</u> 'sit' (several people)	
<u>yó</u> 'realize'	<u>yó-yó-lo</u> 'be distraught'
<u>ta</u> (<u>he</u>) 'touch'	<u>tá-tá-la</u> 'grope'
	<u>gbígbíli</u> 'groan, moan'
	<u>kókólo</u> 'roll'
	<u>tʃótʃólo</u> 'hang'

4.2.1.6 -sé

There is a small set of verbal bases ending in sé that form simplex-complex pairs, with a vowel mutation $o \rightarrow \check{o}$.

<u>fó</u> 'weep'	<u>fó-se</u> 'pour out'
<u>yó</u> 'realize'	<u>yó-se</u> 'recognize'
<u>ka</u> 'try, test, examine'	<u>ka-sé</u> 'learn'

One base ending in sé is not relatable to a simplex:

tʃóse 'train, bring up' (child)

4.2.1.7 -dʒé

dʒe is a fairly frequent second syllable (3.3.2) but

only a few of the bases containing it are relatable to CV bases.

<u>d3a</u>	'be straight'	<u>d3a-d3é</u>	'straighten'
<u>wa</u>	'be strong'	<u>wa-d3é</u>	'be alert to'
<u>ʃé</u>	'be happy'	<u>ʃé-d3e</u>	'comfort'

Others are:

<u>d3ad3é</u>	'narrate'	<u>d3id3é</u>	'resound'
<u>m̃-d3é</u>	'send'	<u>tẽ-d3é</u>	'take courage to act'
<u>laád3e</u>	'lose; get lost'		

The last example is sometimes split into two in certain morphological environments.

<u>é</u>	<u>lád3e</u>	<u>kò</u> ,	<u>é</u>	<u>là</u>	<u>kò</u>	<u>d3é</u>	'He has not got lost'
----------	--------------	-------------	----------	-----------	-----------	------------	-----------------------

4.2.1.8 -/né

The status of this syllable as a separate morpheme is the least secure of those discussed so far. The following pairs occur:

<u>tʃi</u>	'block up'	<u>tʃi-né</u>	'sneeze'
<u>ka</u>	'examine'	<u>ka-né</u>	'read'
<u>ʃa</u>	'pull into'	<u>ʃa-né</u>	'slip'

An irregular semantically but ^vsuggestive pair is:

fī 'tie, bind' fěné 'untie, uncoil'

The following are not relatable to a simplex:

kóné 'be eccentric' kúné 'check, correct'

nyéné 'spin' (thread) peléné 'die as from plague or
epidemic; suffer'

peléné is suspicious because it contains p and because it appears to contain two extensions. It is relatable to Twi pène 'groan' and pěré 'be in agony'.

According to Canu (1968, pg 32) the following forms occur:

Arabic qara'a 'read'

Bambara kàrà 'study'

Mo:re kàrè 'read, study'

A similar verb also occurs in Akan, kà, kane 'count, read'. It is possible therefore that Gã káne (and Adangme kané 4.2.2.7) has come ultimately from Arabic, via one or more intermediate source, the immediate source being a dialect of Akan. The similarity of its first syllable of ka 'attempt; examine' (and also to the first syllable of kasé 'learn') might be accidental. It is also possible that ka arose through a process of analogical subtraction. The latter could only occur if -né were a morpheme.

4.2.1.9 -i

Of the three verbal stems displaying this second syllable (cf 2.4.1.1) two belong to simplex-complex pairs:

<u>bo</u>	'create; set in motion'	<u>boi</u>	'begin'
<u>da</u> (<u>fi</u>)	'thank'	<u>dai</u>	'respond'
		<u>goi</u>	'belch'

4.2.1.10 -k-

A number of the bases ending in -k- followed by oral vowels other than o are relatable to a simplex. All six syllables must be considered different morphemes, since, although there is an over-all impression of vowel harmony, both -'ka' and -ke', -'ka' and -ki' occur after the same stem. There is no discernible pattern, in the semantic relationships.

-' <u>ka</u>	<u>la</u>	'dream'	<u>la-ka</u>	'deceive'
	<u>wa</u>	'be strong'	<u>wa-ka</u>	'be active'
	<u>ti</u>	'increase'(size)	<u>ti-ka</u>	'stuff'(eg bird)
	<u>fi</u>	'add to'	<u>fi-ka</u>	'overflow'
	<u>tsa</u>	'join together'	<u>tsa-ka</u>	'mix up'
- <u>ke</u>	<u>te</u>	'arise'	<u>te-ke</u>	'overflow'
	<u>te</u> (<u>fi</u>)	'stumble'	<u>te-ke</u>	'step over'
	<u>tsa</u>	'join; cure'	<u>tsa-ke</u>	'change'
- <u>ke</u>	<u>dze</u>	'be from'(place)	<u>dze-ke</u>	'be far away'(cf 4.2.3.5)
- <u>ki</u>	<u>di</u>	'blacken'	<u>di-ki</u>	'paint black or multicolour'

-ed'

	<u>tí</u>	'increase size'	<u>tí-ki</u>	'overflow, burst'
-/kɔ́	<u>ʃɔ</u>	'rub'	<u>ʃɔ-kɔ</u>	'rub'
	<u>tʃu</u>	'redden'	<u>tʃú-kɔ</u>	'smoke fish'
	<u>dɔ</u>	'bend, twist'	<u>dɔ-kɔ</u> (naa)	'mince words'
-/kú	<u>ha</u> (momo)	'stammer'	<u>há-ku</u>	'yawn'

táke 'grumble', is phonologically regular as a borrowing of Ghanaian English "talk".

There are nine other verbal bases with k at C₂, all of which display vowel harmony:

-ke	<u>déke</u>	'walk stealthily'
-ke	<u>tʃekɛ</u>	'stick out into' (cf 4.2.3.5)
	<u>ʃéké</u>	'stop short, stop suddenly'
-ki	<u>ʃiki</u>	'steam, as with medicinal herbs'
-ku	<u>dúku</u>	'cut to bits'
	<u>tʃúku</u>	'talk uproariously'

4.2.1.11 -t-

t occurs at C₂ in nineteen verbal bases, but only the following can be considered as members of simplex-complex pairs, and the first two are somewhat doubtful.

-tɛ	<u>kpe</u>	'remain behind'	<u>kpe-tɛ</u>	'stick to'
-tu	<u>kpa</u>	'perform'	<u>kpa-tú</u>	'be forced to set'
		(customary rite)		
	<u>bú</u> (<u>ʃí</u>)	'turn over'	<u>bú-tú</u>	'capsize'

4.2.2 Adangme4.2.2.1 -\V_x

Of approximately twenty-four verbal bases of shape CVV_x, sixteen are members of simplex-complex pairs.

<u>fũ</u>	'swell'	<u>fũ-ũ</u>	'swell'
<u>hě</u>	'support'	<u>hě-ě</u>	'hold, control; take'
<u>bě</u>	'be absent'	<u>bě-ě</u>	'sweep, sweep away'
<u>dʒɔ</u>	'wear out; become night, cool'	<u>dʒɔ-ɔ</u>	'stop; rest'
<u>dʒɔ</u> (he)	'rejoice'	<u>dʒɔ-ɔ</u>	'bless'
<u>gbe</u>	'hit, beat'	<u>gbe-ě</u>	'beat, punish; pound'
<u>gbũ</u>	'pierce, perforate'	<u>gbũ-ũ</u>	'perforate'
<u>hɔ</u>	'plait'	<u>hɔ-ɔ</u>	'plait'
<u>kɔ</u>	'bite; ache'	<u>kɔ-ɔ</u>	'pain; groan'
<u>kpe</u>	'meet, join'	<u>kpe-ě</u>	'marry' (man)
<u>mĩ</u>	'swallow'	<u>mĩ-ĩ</u>	'swallow in lumps'
<u>sa</u>	'be suitable, good, necessary'	<u>sa-á</u>	'prepare; repair'
<u>ɔmɛ</u>	'deposit'	<u>ɔmɛ-ě</u>	'drop'
<u>tʃɔ</u>	'set out, display'	<u>tʃɔ-ɔ</u>	'teach'
<u>tʃě</u>	'wake up'	<u>tʃě-ě</u>	'waken' (someone)

wā 'crawl'

wa-á 'crawl'

The following are not members of a pair:

laá 'lose evade; hide'

nãá 'trample'

nyěé, nyĩé 'walk'

sěé, sié 'speak'

K siá 'narrate'

D wεé 'grind'

4.2.2.2 -1V_x

In the data obtained, sixty-seven Adangme verbal bases have the shape CV1V_x, with the same tone in both syllables. Of these, only the following can be considered members of simplex-complex pairs, in which the complex has the tone contour of the simplex:

D tʃě 'thread' (beads) K tʃě-1ě

K dε 'leak' dε-1ε

4.2.2.3 -1V_x

There are more simplex-complex pairs showing this extension in the complex than were found for Adangme -1V_x (4.2.2.2), but if the simplex has high tone, bases

containing $-\text{'}\underline{\text{l}}\text{V}$ cannot be distinguished from bases
 x
 containing $-\underline{\text{l}}\text{V}$.

<u>dā</u>	'be straight, right'	<u>da'-la</u>	'repair, mend'
<u>hā</u>	'take'	<u>há-la</u>	'search for'
<u>hō</u>	'go'	K <u>hó-lo</u>	'transport'
K <u>kí</u>	'twist, squeeze'	K <u>kí-lí</u>	'entwine'
<u>sē</u>	'burn'	<u>sé-le</u>	'kindle'
<u>te(sī)</u>	'get up'	<u>té-le</u>	'take off, remove'
<u>wā</u>	'be strong'	<u>wá-la</u>	'solidify'

4.2.2.4 $-\underline{\text{l}}\text{é}$

Of twenty-one Adangme verbal bases ending in $\underline{\text{l}}\text{é}$,
 the following belong to simplex-complex pairs:

<u>hū</u>	'blow'	<u>hu-lé</u>	'blow down'
<u>hwō</u>	'lie down'	<u>hwō-lé</u>	'drop'
<u>ka</u>	'challenge'	<u>ka-lé</u>	'be proud'
<u>bɔ</u>	'roll'	<u>bɔ-lé</u>	'roll around'
A <u>tʃī</u>	'block up'	A <u>tʃī-lé</u>	'sneeze'
<u>kpa(sī)</u>	'wander about'	<u>kpa-lé</u>	'go back'
<u>hé</u>	'answer; save'	<u>hé-le</u>	'respond'
<u>ka</u>	'attempt'	<u>ka-lé</u>	'imagine'

If the verbal stem has the vowel e and high tone, a
 base containing $-\underline{\text{l}}\text{é}$ cannot be distinguished from one

containing $-l\underline{V}_x$ (4.2.2.3) or $-l\underline{V}_x$ (4.2.2.2).

Some of the bases of this shape which are not members of a pair are:

<u>gb</u> lé 'massage'	<u>gb</u> lé 'slacken'
<u>d</u> lé 'trickle'	<u>tfe</u> lé 'drip'
<u>m</u> lé 'ensnare, deceive'	
<u>pa</u> lé 'call name'	Twí <u>pa</u> é 'exclaim, cry out; give surname, title'

4.2.2.5 $-l\underline{V}_x$

Only two of the ten bases of this type are relatable to a monosyllabic stem:

<u>sā</u> (de) 'shake hands'	<u>sa-lá</u> 'visit'
<u>to</u> (sī) 'unload from head'	<u>to-ló</u> 'carry on head'

Two others are relatable to bases ending in $-l\underline{é}$ (4.2.2.4):

<u>mɔ-ló</u> 'dissuade; deceive'	<u>mɔ-lé</u> 'ensnare, deceive'
<u>mɔ-lɔ̃</u> 'soothe'	"mɔle" 'soothe' (from Huber 1963 pg.24)

Other verbal bases ending in this syllable are:

<u>sālá</u> 'be slippery'	<u>fālá</u> 'become thin'
<u>belé</u> 'change'	<u>kpélé</u> 'agree'
<u>filí</u> 'buy on credit'	<u>doló</u> 'rescue'

fili is probably borrowed from Twi firi 'buy or sell on credit'.

4.2.2.6 -sé

All of the four Adangme verbal bases ending in the syllable sé are relatable to a monosyllabic base.

<u>ké</u>	'say'	<u>ké--sé</u>	'tell'
<u>yó</u>	'recognize'	<u>yó--se</u>	'realize'
<u>ka</u>	'attempt'	<u>ka--sé</u>	'learn'
<u>tfó</u>	'be good, pure'	<u>tfó--se</u>	'train, bring up' (child)

4.2.2.7 -né

Of eight verbal bases ending in né, the following are relatable to a monosyllabic base:

<u>tsí</u>	'block up'	K <u>tsí--né</u>	'sneeze'
<u>mã</u>	'move about; come, go'	<u>mã--né</u>	'send'
<u>ka</u>	'examine'	<u>ka--né</u>	'read; count' (but cf 4.2.1.8)

In view of the sound correspondence G f:D p the following pair of Adangme bases is suggestive:

<u>fí</u>	'tie'	<u>pí--né</u>	'untie' (cf 4.2.1.8)
-----------	-------	---------------	----------------------

One base with no related monosyllabic stem may be compared to a base ending in $-\underline{lv}_x$ (4.2.2.5):

<u>sã--né</u>	'slip'	<u>sã--lá</u>	'be slippery'
---------------	--------	---------------	---------------

Other bases of this type are:

míne 'turn into, become'

ɲmané 'improve'

hĩné 'answer'

4.2.2.8 Reduplication

Reduplication of the verbal base is not common in Adangme. The type described for Gã in 4.1.3 occurs in only one known base:

gbe 'beat' gbegbee 'beat several objects
repeatedly'

Of the other formally reduplicated bases, none are relatable to monosyllabic stems, and most have plausible sources in other languages (compare 4.2.1.5).

súsù 'measure' Twi susu 'measure'

kpókpò 'shake, shiver' popó 'tremble'

sisí 'cheat' sisí 'cheat'

nsisí 'act of cheating'

gbúgbɔ 'lick, suck' Ewe gbúgbɔ 'suck'

bɔbɔ 'soak'

The vowel mutation in gbúgbɔ is regular in Ewe (Westermann 1930, 89).

One base, of the type described for Gã (4.2.1.5) as having an extension $-\underline{1}\overset{\prime}{V}_x$ in the second part', is one of a

simplex-complex pair:

yó 'realize' yó-yō-ló 'worry'

4.2.2.9 -k-

Of the seven bases with k at C₂, only two have the same vowel at V₂. The following are considered to be simplex-complex pairs, mainly because of semantic resemblance.

- <u>kà</u>	<u>tsá</u>	'join together'	<u>tsá-kà</u>	'mix'
- <u>kà</u>	<u>kí</u>	'twist'	<u>kí-kà</u>	'twist, wrestle'
- <u>kè</u>	<u>tsá</u>	'join; cure'	<u>tsá-kè</u>	'change'
- <u>ko</u>	<u>tsu</u>	'redden'	A <u>tsu-ko</u>	'smoke fish'

Others are:

seke 'last, not get worn'

hakò 'yawn'

K tsiko 'smoke fish'

Two others, not included in 3.3.2 Chart III, are probably borrowed from Ghanaian English (cf 4.2.1.10):

tóké 'grumble; chuckle; get on good terms with'

English "talk"

sákè 'throw away; brush off, push away'

English "sack"

4.2.2.10 Other Occurrences at C₂

The following bases may be related to a monosyllabic base:

-ɔm-	sũ	'court'	sũ-ɔme ³	'dislike'
-g-	lo	'weave'	lo-gɔ	'twist'
-m-	ké'	'say'	ké-mè	'groan'
-ɔ-	dũ	'leak'	dũ-ɔɔ	'leak'
-t-	bú(sĩ)	'capsize'	bú-tù	'capsize'
-tʃ-	ka	'challenge'	A ka-tʃe	'dare'
			K ka-tʃi	

These are the only occurrences at C₂ of Adangme g, ɔ, tʃ and ɔm.

4.2.3 Observations

4.2.3.1 Comparative Evidence of Extension Status

When bases in the two languages are compared, it sometimes appears that where one has only a disyllabic base, the other has a monosyllabic base that might be considered cognate with the first syllable of the disyllable, so that from a diachronic (but not synchronic) point of view the disyllable may be considered complex. Whether the simplex has been lost in one language but preserved in the other, or whether the extended form is historically primary and the other formed by an analogical process of subtraction, such a situation is evidence of morphemic status for the extension, in the past if not in either modern language. Thus,

- (4.2.1.1) D bé 'be absent' G*bé-éé 'sweep away'
- (4.2.1.6) tʃó 'be good, pure' *tʃó-se 'train, bring up'
tʃó-se 'train, bring up'
- (4.2.1.7) D mã 'move; come, go' G*mã-dʒé 'send'
mã-né 'send'
laá 'lose, get lost' *laá-dʒe 'lose, get lost'
- (4.2.2.2) G gbí 'dry' D*gbí-lí 'dry'
mě 'wait' *mě-lě 'wait'
la 'dream' *nā-la 'dream' (2.5.2)

In the verbal noun (6.1.2.11) meaning 'cough' Adã preserves the complex with the extension $-lV_x$, but Krobo preserves only the simplex:

A hɔ̄-lɔ̄ -mĩ K hwɔ̄-mĩ

(4.2.2.1) It has been shown that Adangme laá is probably cognate with the first two syllables of Gã laádʒe, and it was also remarked (4.2.1.7) that in a particular morphological environment the two parts of laá-dʒe are sometimes separated. In that same environment, the second syllable of the first part is always dropped:

é la kò dʒé, é la dʒe kò

The form la in this environment allows the set

G la D *la-á G *la-á-dʒe

The inference is that the simplex has been lost in both

languages except in the Gã negative perfect tense.

(4.2.2.7) G hĩ 'gossip; chat' D *hĩ-né 'answer'

Gã verbal bases ending in -ĩ (4.2.1.9) may be compared with Adangme bases displaying two different extensions, -lé (4.2.2.4) and a unique instance of -nĩ.

G	<u>bóĩ</u>	D	<u>bó-nĩ</u>	'begin'	(see 2.4.1.2)
	<u>góĩ</u>		<u>gɔ-lé</u>	'belch'	

4.2.3.2 l at C₂

So far, the following lV patterns have been treated as extensions: -lV_x (Gã and Adangme), -lV_x (Gã), -lV_x (Adangme), -lV_x (Adangme), -le (Gã), -lé (Adangme). There are a few others which occur in only a few bases, which usually cannot be matched to a monosyllabic base. Only a few have a possible foreign source:

Gã

<u>-lV_x</u>	<u>ka</u>	'examine'	<u>kalá</u> ⁴	'guess'	
			<u>hulú</u>	'jump'	Twi <u>hurúw</u> 'jump'
<u>-lè</u>	? <u>kpa</u>	'bring in'	<u>kpálé</u>	'return'	
			<u>tʃélé</u>	'dawn'	
			<u>gbóle</u>	'rub'	(cf D <u>gɔ-lé</u> 'massage')
	<u>sɔle</u>	'worship'	Twi <u>sɔre</u>	'worship'	
	<u>dɜale</u>	'rinse'			
	<u>bɔle</u>	'circumscribe, surround'			
	<u>sele</u>	'swim; melt'			

Adangme

<u>-lè</u>	<u>hólè</u>	'hurry'	English "hurry"
			(cf Apronti(1967) pg.229)
	<u>sɔle</u>	'worship'	Twi <u>sɔre</u> 'worship'
	<u>bɔle</u>	'surround'	
	<u>sele</u>	'swim; melt'	

A few verbal bases end in lǎ́. These are not related to a monosyllabic base, and are probably borrowed from Twi.

G kulá 'manage; preserve' Twi korá 'keep, preserve, manage'

G and D pilá 'injure; get hurt' Twi pirá 'wound, be wounded'

4.2.3.3 Extensions and Neighbouring Languages

Derivation of a verb stem from a verbal base by reduplication has been seen to be a productive morpheme in Gã, and present but non-productive in Adangme. It is also characteristic of Twi and Ewe. Christaller (1875.pg. 64) describes reduplication that resembles the Gã type semantically, and also phonologically to the extent that there is no vowel mutation and the final tone of the new base is high. The Ewe literature on this point (Ansre 1963 pg. 131, Westermann 1930 pg. 182) is sketchy, but apparently in that language reduplication also has iterative meaning but involves vowel

mutation (4.2.2.8). Neither Twi nor Ewe reduplication has the final rising tone which is characteristic of the more productive type of Gã reduplication. Therefore on phonological grounds reduplication of this type (4.2.1.5) cannot be attributed to borrowing. For the same reasons, it seems fairly certain that reduplication of the type described in 4.2.1.5 and 4.2.2.8 was borrowed from Twi and extended to native bases.

Like Gã and Adangme, Akan has verbal extensions beginning in r (Twi has no [l]) and n (Christaller 1875 pg.17). It appears that in Akan the semantic relationship between simplex and complex is less close than in Gã, and the phonological relationships are different. In Ewe (Westermann(1930) pp. 182-3) all non-monosyllabic verb stems are either reduplications or compounds of two verb stems. There is thus no strong reason to believe that Gã and Adangme extensions of the types lV and ne are not inherited from the proto-language.

Other consonants occur at C₂ position of Twi verbal bases, and most of these appear in loans into Gã. According to Berry⁵ the isolable verbal extensions in Twi are -dV, -kV, -nV, -w and -m. It is possible that Twi -dV has some significance for the occurrence of Gã d at C₂, although only one comparable

pair has been found (4.3.1.1)

It has been remarked already (3.1.2.1) that CVo shaped bases are probably foreign. They are loans from Twi verbs bearing the extension w. In a few cases a Ga base of this shape co-exists with another base of the same meaning without -o:

G d3ao, d3a

Twi gyaw 'worship'

tao, taa

Awutu tao 'want, search for'

G and D zao, za

'steal, snatch'

The last example is a problem, because Twi has no phoneme z and a comparable verb could not be found in Fante. In all three, the form without -o is regarded here as a naturalized form of the other, which is not complex.

The verbs 'yawn', G haku (4.2.1.10) D hakò (4.2.2.8) are very similar but the final vowels do not correspond. The Awutu verb of the same meaning is haku, and the Twi is hãram. It seems that Awutu h does not normally correspond to Gã h, and Akan h and Awutu h do not correspond.⁶ It seems likely that there has been borrowing from Twi, by either Awutu or Gã, and that one of those has borrowed from the other.

4.2.3.5 Compound Bases

There is evidence that some occurrences of a few extensions are relatable to a simplex, so that these bases

4.2.3.5 Cognate Extensions

On phonological grounds, it is considered that the following pairs of extensions are probably cognate:

G $\Delta\acute{V}_x \hat{V}_x$ ($\Delta\acute{V}_x$)	:	D $\Delta\acute{V}_x$	(4.2.1.1, 4.2.2.1)
$-\underline{1V}_x$:	$-\underline{1V}_x$	(4.2.1.2, 4.2.2.2)
$-\underline{se}'$:	$-\underline{se}'$	(4.2.1.6, 4.2.2.6)
$-\underline{ne}'$:	$-\underline{ne}'$	(4.2.1.8, 4.2.2.7)

Other pairs of extensions beginning in $-\underline{1}$ cannot be considered cognate because of tonal irregularities. It is also possible that the following are cognate pairs, although there is very little evidence from Adangme:

G $-\underline{ka}'$:	D $-\underline{ka}$	(4.2.1.10, 4.2.2.9)
$-\underline{ke}'$:	$-\underline{ke}$	
$-\underline{tu}'$:	$-\underline{tu}$	(4.2.1.11, 4.2.2.10)

4.3 Conclusions

4.3.1 Phonological Pattern

4.3.1.1 Consonant Frequency

If Charts II and III of 3.3.2 are studied in the light of the findings of this chapter, the disproportion in the relative frequencies of consonants at C_2 is seen to be to a considerable extent due to past or present morphological complexity. Some of those which rarely occur at C_2 , e.g. kp, tʃw, p, gb, w in both languages occur at that

position only in loan words.

l. the most frequent consonant at C_2 , is almost completely accounted for in both languages by its occurrences in describable extensions, (4.2.1.2-4, 4.2.2.3-5) although for some of the extensions simplex-complex pairs are rare (4.2.2.2, 4.2.2.5). Most of the bases that do not fit any of the extensions patterns are explainable as loans from Twi, or occasionally English. A notable exception to both explanations is Adangme téli 'make libation'.

Occurrence of m̃ at C_2V_2 in both languages is accounted for by the extension -m̃, plus one Twi loan (4.1.1, 4.1.4). Gã sámá 'summons', Adangme sámá 'sue' are loans from the English "summons". Gã kumá 'reside with' cannot be accounted for as either a complex or a loan.

s before e has been attributed in most cases to an extension (4.2.1.6, 4.2.2.6), and before u to loaning (4.2.1.5, 4.2.2.8). Gã sísé Adangme sísé, sése 'beg as a beggar' occurs also in Twi (sísé, sísè, sesè), and Christaller seems to imply that it is borrowed from English (or possibly French?) "subsistence". There are also a number of simplex bases (mainly in Gã) that end in sa. A few are probably Twi loans,

G <u>pása</u> 'tell a lie'	T <u>apása</u> 'fraud, deception'
<u>kpósa</u> 'rub in palms'	<u>posa</u> 'rub' (with hands)

but for others there is no comparable Akan form:

G bása¹ 'grip'

G kpása¹ D kpása¹ 'lean on'

n at C₂ is taken care of by the extensions Gã -'né¹ (4.2.1.8), -nã (4.2.3.5), Adangme -né¹ (4.2.2.7) and -'ní¹ (4.2.3.1).

Verbal bases with k at C₂ (4.2.1.10, 4.2.2.9) have been shown to be generally di-morphemic. The result is a relatively large number of extensions beginning in k, since otherwise only l occurs in more than one.

The method followed has failed to account for the relatively large number of bases with t at C₂. Five such bases in Gã have been related to a monosyllable (4.2.1.5, 4.2.1.11) and one in Adangme (4.2.2.10). In Gã one has been attributed to a Twi loan (4.2.1.5). Three more in Gã and one in Adangme have plausible sources of borrowing.

G kóta¹ 'fold' D kóta¹ 'wrap' Awutu kota 'wrap'

kótò¹ 'bend' kótò¹ 'bend' Twi kotów¹ 'bend over,
bow' (English "kow-tow"?)

kpátã¹ 'appease' kpátã¹ 'appease' Twi pata 'appease'

Others remain problematic, e.g.

G fátã¹ 'add to' kóti¹ 'probe'

kata 'lift with hands' ʃótó¹ 'strangle'

G	<u>fítè</u>	'destroy'	<u>fútù</u>	'mix'
	<u>kpéte</u>	'eke out'		
D	<u>fútù</u>	'mix'	<u>pítì</u>	'pick up'
	<u>pete</u>	'support, protect'		
	<u>pótò</u>	'rot, spoil; crush, smash'		

d is also fairly frequent at C_2 (3.3.2), and not so far explainable as a historical morpheme or as a loan, except perhaps in the following item:

G kúdù D kúdù 'guide, steer' Twi kúdùù 'rudder, helm'

Christaller (1933) seems to suggest that this might be a loan from Gã into Twi.

4.3.1.2 Vowel Pattern

It was shown previously (3.3.2) that the predominant vowel pattern in $C_1V_1C_2V_2$ verbal stems and bases is that V_2 is either e or the same as V_1 . In the extensions described, the vowel is either e or the same as the preceding vowel in all but the rare extensions G -í, D -ni, and in some of the extensions beginning in k or t or some of the consonants that occur at C_2 in only one base.

4.3.1.3 Tone of Reconstructed Monosyllabic Stems

In a number of the extensions described, the tone of the stem is automatic, i.e. part of the definition of the extension (4.2.1.1, 4.2.1.3, 4.2.1.4, 4.2.1.8, 4.2.1.9,

4.2.2.1, 4.2.2.3). A result of this is that the tone of a reconstructed monosyllabic stem is indeterminate, if it has not survived in one of the languages in a simplex base or in a complex base where the tone of the stem is not part of the extension. Thus, the stem in the bases meaning 'belch' may be reconstructed as *gɔ- with non-high tone, because although the extension gives the stem high tone in G gɔ́í, the non-high tone in D gɔ-lé is not automatic (4.2.3.1). On the other hand, the tones of the stems of G kú-mɔ́ 'itch' and ló-mɔ́ 'curse' cannot be reconstructed, because at least in some varieties of Gã, high tone before -mɔ́ is part of the extension, and these stems or their cognates do not exist in any other known base. This feature of extensions explains the apparently irregular tone correspondence between such pairs as G tʃí-nè, K tʃĩ-né

4.3.2 Summary

Most of the distinctive phonological patterns of the non-monosyllabic verbal stem and verbal base have been attributed to synchronic or diachronic morphological complexity. A number of specific syllable types have been described as extensions to the verbal stem. A few patterns

have been shown to be probably the results of borrowing from other languages. It is possible that other Ga and Adangme CVCV verbal bases arose originally as compounds, and that one or both of the related simplexes have been lost or the semantic relationships obscured; for instance, that bases ending in -ta are related to G ta : D ta 'touch, feel' (4.3.1.1). Also, complexes with a unique extension (4.2.2.10) are very likely diachronic compounds. However, these hypotheses are not demonstrable.

From the conclusions reached it is clear that CV is the primary verbal stem shape, diachronically as well as synchronically. A verbal base of any shape other than CV which cannot be shown to be complex, either synchronically or diachronically, or a loan, must be regarded as a problem.

On the other hand, several irreducibly simplex polysyllabic bases exist in both languages. Several of the non-productive extensions and extensions which synchronically do not have morphemic status occur in the two languages in largely the same stem-extension combinations, so that the complete bases correspond. For example:

G ka-sé D ka-sé 'learn' (4.2.1.6, 4.2.2.6)

tsá-se tsá-se 'train'

G	<u>yó</u> - <u>se</u>	D	<u>yó</u> - <u>se</u>	'realize'
	<u>ká</u> - <u>né</u>		<u>ka</u> - <u>né</u>	'read; count' (4.2.1.8, 4.2.2.7)
	<u>tsá</u> - <u>ká</u>		<u>tsá</u> - <u>kà</u>	'mix' (4.2.1.10, 4.2.2.9)
	<u>tsá</u> - <u>kè</u>		<u>tsá</u> - <u>kè</u>	'change'
	<u>bú</u> - <u>tù</u>		<u>bú</u> - <u>tù</u>	'capsize' (4.3.11)
	<u>fú</u> - <u>tù</u>		<u>fú</u> - <u>tù</u>	'mix'

The extensions beginning in l rarely occur in corresponding stem-extension combinations. It is likely that many extensions, such as those beginning in -k-, *-sé, the extension or extensions of which G -né and D -né are reflexes, extensions in l with no cognate in the other language, and possibly an extension *-tù, were non-productive by the time Gã and Adangme began to separate. Irreducibly simplex polysyllabic bases might be reflexes of complexes with extensions that became non-productive before the proto-Gã-Adangme period, or they might be loans from an as yet undiscovered source. In any case it is highly unlikely that all the extensions described or suggested were ever productive at one single stage of the proto-language.

Section III VERBAL CONSTRUCTIONS5. The Verbal Group

5.0 Introduction

5.0.1 Components of the Verbal Group

5.1 Pronoun

5.1.1 Adangme

5.1.2 Gã

5.1.3 Comparison

5.1.3.1 The Tone of the First Person Singular Pronoun

5.1.3.2 Impersonal Pronoun

5.2 The Independent Verb

5.2.1 Adangme

5.2.1.1 Direction

5.2.1.2 Aspect

5.2.1.3 Polarity

5.2.2 Gã

5.2.2.1 Class

5.2.2.2 Direction

5.2.2.3 Aspect

5.2.2.4 Polarity

5.2.2.5 Tense

5.2.2.6 Command

5.2.3 Comparison

5.2.3.1 Components of the Independent Verb

5.2.3.2 The Markers of Shared Systems

5.2.3.21 Intentive

5.2.3.22 Habitual

5.2.3.23 Negation

5.2.3.3 The Markers of Unshared Systems

5.2.3.31 Gã Tense Markers

5.2.3.32 Gã Classes of the Verbal Base

5.2.3.33 Gã Command

5.2.3.34 Conclusions

5.3 Dependent Verbs

5.3.1 Adangme

5.3.1.1 Emphatic

5.3.1.2 Negative

5.3.1.3 Adverbial

5.3.1.4 Auxiliary

5.3.1.5 Ingressive

5.3.2 Gã

5.3.2.1 Auxiliary

5.3.2.2 Negative

5.3.2.3 Ingressive

5.3.3 Comparison of Dependent Verb System

5.3.3.1 Shared Systems

5.3.3.2 Unshared Systems

5.4 Recursion of the Predicate

5.4.1 G kɛ, K kɛ̄ as Independent Bases

5.4.2 The Adangme Future

5.4.3 The Negative Imperative

5.5. Conclusions

5.0 Introduction

This chapter presents a radical re-analysis of the verbal group in Gã and in Adangme. Many of these structures have been described elsewhere, by the author (Kropp 1964, 1966) (Okunor, Pɔ̀lampu) and others, but but it is now felt that these descriptions are basically deficient. Their short-comings seem to be due in large part to a rigid identification of Gã and Adangme expressions with English translation equivalents, and a lack of attention to recurrent patterns and relations within and between constructions. One striking feature of these descriptions is that the systems of the two languages appear very different, to the extent that it would be difficult on the basis of previous analyses to formulate any solid common core in the grammar of the verbal group. This situation is unsatisfactory in view of the clear relationship between the two languages in phonology, lexicon and other aspects of structure, as demonstrated in the preceding sections. In fact the differences are, although striking, superficial. The systems of the two languages are reconcilable typologically, and historical conclusions may be drawn from the emergent patterns.

5.0.1 Components of the Verbal Group

Every verbal group contains an independent verb, which may be preceded by one or more dependent verbs.

If no other subject is present in the clause the verb or verbs may be preceded by a pronoun as subject, which in some cases is a component of the verbal group but in others constitutes a nominal group.

Verbs consist of a verbal base, the morphology of which was described in the preceding section, and a grammatical base. The grammatical base is realized by a set of systems of particles (including the absence of a particle), three in Adangme and six in Gã, such that any verb can be treated as governing or not governing each system. Independent verbs govern every system, but dependent verbs govern only a restricted selection of systems.

The bases that realize the verbal base of the independent verb form an open set, to which almost every verbal base belongs. The verbal bases of dependent verbs fall into sub-classes of small closed sets, some of only one member, which differ slightly between the two languages.

The verbal group may be represented by the following formula, where parentheses represent repetition in a multivariate structure.¹

$$\pm P_n \quad (\pm DV) \quad \pm 1V$$

5.1 Pronoun5.1.1 Adangme

Pn is realized by a sub-system² of the pronoun, with the following members:

	Singular	Plural
1	<u>i</u>	<u>wa</u>
2	<u>o</u>	<u>nyě</u>
3	<u>e</u>	<u>a</u>

However, if direction (5.2.1.1) is marked, the first and second person pronouns are excluded from the verbal group. In this case a first or second plural pronoun subject constitutes a nominal group, and belongs to the appropriate sub-system.³

<u>Pn</u> // + <u>dir</u> vb	<u>nyě</u> // <u>ě</u> - <u>bā</u>	'you must come'
	<u>wa</u> // <u>á</u> - <u>bā</u>	'we must come'
	<u>mo</u> // <u>ó</u> - <u>la</u>	'you must sing'

The expected shape of the first singular pronoun followed by a group boundary and the direction marker is *mi-í-, but it is realized as má-.

má-bā

It appears also that at least in some idiolects the second singular pronoun may appear in its verbal group form.

<u>Pn</u> + <u>dir</u> vb	<u>ó</u> <u>la</u>	'you must sing'
<u>Pn</u> - <u>dir</u> vb	<u>o</u> <u>lá</u>	'you sang'

If direction is marked, marking of Pn is optional.

The general pitch level of the utterance is raised slightly.

<u>ó</u> <u>bā</u>	'You come!'	<u>bā</u>	'Come!'
<u>ó</u> <u>bèé</u>	'You are to sweep!'	<u>bèé</u>	'Sweep!'
<u>ó</u> <u>sèle</u>	'You are to swim!'	<u>sele</u>	'Swim!'

5.1.2 Gã

Pn is realized as in Adangme by a special sub-system of the pronoun;

	Singular	Plural
1	<u>mi</u>	<u>wɔ</u>
2	<u>o</u>	<u>nyẽ</u>
3	<u>e</u>	<u>amẽ</u>
Impersonal	<u>a</u>	<u>a</u>

All members of the pronoun occur freely at Pn, whether direction is marked or not.

Pn <u>-dir</u>	vb	<u>wɔ</u> <u>bā</u>	'We came'
Pn <u>+dir</u>	vb (<u>sa</u> <u>ni</u>)	<u>wó</u> <u>bā</u> ¹	'We must come'
		<u>wó</u> <u>tèè</u>	'Let's go!'

The only suggestion of a restriction is that, although mi in quick speech is often realized by a nasal consonant homorganic with the following one, with the direction marker it has the form má (not- m̃):

sa ní ma tèè 'I must go!'

In the presence of certain alternants of the Imperative marker (5.2.2.6) Pn is not marked:

lá 'sing!'
sèle-mã 'swim!'

5.1.3 Comparison

5.1.3.1 The Tone of the First Person Singular Pronoun

This tone is not completely accounted for by assimilation of the direction marker. Unlike all the other pronouns, in both languages it is sometimes high when aspect or tense and/or polarity is marked. Thus

G	<u>mí</u> <u>lá-a'</u>	I sing
but	<u>o</u> <u>lá-a'</u>	You sing
D	<u>í</u> <u>la-a</u>	I sing
but	<u>o</u> <u>lá-a</u>	You sing
G	<u>mí</u> <u>í-la</u>	I am singing
but	<u>o</u> <u>o-lá</u>	You are singing
	<u>mí</u> <u>lá-aà</u>	I did not sing
but	<u>e</u> <u>lá-aà</u>	He did not sing
D	<u>í</u> <u>la wē</u>	I did not sing
but	<u>a</u> <u>lá wē</u>	They did not sing

5.1.3.2 Impersonal Pronoun

Adangme has no impersonal pronoun. In situations where the impersonal pronoun is used in Gã, the third person plural is used in Adangme. Since the two are homophonous, it is possible that they are diachronically identifiable. The Gã third person plural pronoun appears to consist of this morpheme plus mě, which is the plural form of the noun mō 'person'.

G	<u>a</u> <u>feéè</u>	} 'It was done'	G	<u>amě</u> <u>feéè</u>	} 'They did it'
D	<u>a</u> <u>peé</u>		D	<u>a</u> <u>peé</u>	

5.2 The Independent Verb

The components of the independent verb, which realizes IV in both languages, are

+vb +gb

5.2.1 Adangme

In Adangme gb is realized by one prefixed and two suffixed systems:

dir vb asp, pol

5.2.1.1 Direction

The terms of the system of direction, which appears at place dir, are Neutral, (unmarked, -) and Intensive, with the marker \acute{V}_x- (+). \acute{V}_x- is realized as high tone of the preceding syllable unless a group boundary intervenes, in which case it is realized as length of a preceding low-toned syllable, with a rising tone.

Pn	+ <u>dir</u>	vb	(<u>e sa n\u00e9</u>) o <u>n\u00e1</u>	'You ought to see'
N //	+ <u>dir</u>	vb	(<u>e sa n\u00e9</u>) <u>n\u00e1/\u00e1-n\u00e1</u>	'Na (masc. name) ought to see'
Pn	- <u>dir</u>	vb	<u>e n\u00e1</u>	'He saw'
N //	- <u>dir</u>	vb	<u>na</u> // <u>n\u00e1</u>	'Na saw'

The contrast between the terms of this system is neutralized across group boundary if the preceding syllable has high tone. This does not happen within the group, because all pre-IV elements (pronouns, dependent verbs) have a normally low tone.

N // + <u>dir</u> vb	(<u>e sa n</u> é) àdzó // <u>n</u> ǎ	'Adzo ought to see'
N // - <u>dir</u> vb	<u>adzó</u> // <u>n</u> ǎ	'Adzo saw'

In most idiolects the contrast is also neutralized both within and beyond the group if the following syllable has high tone.

Pn + <u>dir</u> vb	(<u>e sa n</u> é) è <u>l</u> á	'He ought to sing'
	(not * <u>e</u> é- <u>l</u> a)	
Pn + <u>dir</u> vb	(<u>e sa n</u> é) <u>n</u> ǎ // <u>l</u> á	'Na ought to sing'
	(not * <u>na</u> // <u>á</u> - <u>l</u> a)	

5.2.1.2 Aspect

The terms of the system of aspect (at asp) are Simple (unmarked, -) and Habitual (+). The Habitual marker is a suffixed morpheme with several allomorphs. It has low-tone after a mid-tone base, when both base and suffix takes low tone, and after a polysyllabic base ending in low tone, and high tone. Its segmental component is a after a base final a, vowel length after a low-toned monosyllable and ɔ otherwise.

Pn - <u>dir</u> vb + <u>asp</u>	<u>e n</u> ũ- <u>ũ</u>	'He drinks' (<u>n</u> ũ 'drink')
	<u>e l</u> á- <u>a</u>	'He sings' (<u>l</u> á 'sing')
	<u>e y</u> e- <u>ɔ</u>	'He eats' (<u>y</u> e 'eat')

5.2.1.3 Polarity

The terms of the system of polarity (at pol) are Positive (unmarked, -) and Negative (marked, +).

The Negative marker in both Adã and Krobo consists of high tone on the final syllable of the base plus a particle or suffix.

There are dialectal differences in the morphophonemics of this marker. In both Adã and Krobo, the particle wē is used after any base which normally ends in a high tone.

Pn -dir vb -asp +pol e lá wē 'He did not sing'

It is also used in both languages with disyllabic verbs that normally end in a low tone. The base then has a suffix $-V_x$.

Pn -dir vb -asp +pol A e bɔleé wē 'He did not surround'

K e kikãã 'He did not twist'

e béleé 'He did not push out'

In Krobo only, wē is also used with mid-tone stems, both $\bar{C}\bar{V}$ and $\bar{C}\bar{V}\bar{I}\bar{V}$, which then have high tones throughout:

Pn -dir vb -asp +pol dū → e dú wē 'He did not bathe'

mēlě → e mélě wē 'He did not wait'

In Adã, any direct object of IV always precedes wē:⁴

e lá la-hĩ we

'He did not sing songs'

It might therefore be preferable in Adã to treat wē as an adverb, and high base tone and the suffix $-V_x$ as the negative markers. In Krobo, on the other hand, wē always

follows IV immediately, so that the preceding high tone can be considered part of a morpheme -'wē:

e lá-wē la-hĩ 'He did not sing songs'

Low and mid tone monosyllabic bases in Adã and low tone monosyllabic bases in Krobo take a negative suffix consisting of a front vowel: ɛ if the base vowel is open or half open, and i otherwise. The base vowel itself is dropped⁶. If it is a back vowel, the consonant is labialized.

A e wa 'He is old' e w-ɛ 'He is not old'

a gũ 'They passed by' a gw-ĩ 'They didn't pass by'

A and K e mwɔ̃ 'He laughed' e mw-ɔ̃ 'He did not laugh'

e ne 'It rained' e n-ɛ 'It did not rain'

All verbal bases of shape CVlV_x, and in Krobo a number of other disyllabic verbal bases with two low tones, have negative forms in which each syllable is marked by high tone plus a suffix which is realized by a change of vowel, as if the two syllables were a series of low-toned monosyllables:

D bɔle 'surround' K e bwɛli 'He did not surround'

(A e bɔleé wē)

D sele 'swim' K e sili 'He did not swim'

D gbala 'pull' K e gbɛle 'He did not pull'

K Katʃi 'dare' K e kɛtʃi 'He did not dare'

Bases with this type of negative might be analyzed as containing discontinuous stems consisting of two consonants, with a system of discontinuous markers of the positive/negative opposition, each consisting of two vowels. The pair katʃi, kéʃi would consist of a stem k-tʃ-, a positive marker -a -i and a negative marker -ɛ-i. However, most disyllabic low tone bases show no such vowel alternation.

These verbs might also be analyzed as containing the same alternants of the negative marker as low-toned monosyllables, but accompanied in the case of polysyllables by vowel harmony in the preceding syllable. The negative forms are nevertheless irregular, since most low-toned di-syllabic bases (other than $CV\underline{V}_x$) take the negative marker consisting of $-\acute{V}_x$ and wē.

Viewed as di-syllables, these bases have irregular negative forms. Yet each individual syllable could be viewed as having a perfectly regular negative form. This situation seems to support the suggestion in the preceding chapter (4.2.2.2, 4.2.2.10) that these bases are historically complex.

On the other hand, the same pattern occurs in a few other bases which it has been suggested are borrowed (3.1.2.1):

K	<u>s</u> ole	'worship'	<u>sw</u> éli (Adã <u>s</u> oleé <u>w</u> ē)
	<u>h</u> ao	'worry'	<u>h</u> éwi
	<u>g</u> wao	'whip'	<u>gw</u> éwu
A	<u>h</u> ao/ <u>h</u> awo	'annoy'	<u>h</u> éwui

It is possible that swéli has arisen on analogy to bwéli, and that the others are peculiar because in fact they are loans, with a foreign structure that has not been fully assimilated into the Adangme system. gwao is especially suspect, because gw hardly occurs otherwise in verb stems, and there is a Twi verb guàw, 'beat, punish'.

There are also a few Krobo mid-tone bases which can take either type of negative marker:

<u>e</u> <u>kú</u> <u>mí</u>	→ both	<u>e</u> <u>kwé</u> <u>mí</u>	'He did not fold it'
	and	<u>e</u> <u>kú</u> <u>wē</u> <u>mí</u>	
<u>e</u> <u>hwǎ</u> <u>sí</u>	→ both	<u>e</u> <u>hwǎ</u> <u>wē</u> <u>sí</u>	'He has not gone to bed'
	and	<u>e</u> <u>hwé</u> <u>sí</u>	

5.2.2 Gã

The number of prefixed and suffixed grammatical systems of the grammatical base is larger than in Adangme:

cl, dir, t₁, vb, asp, pol, t₂, com

5.2.2.1 Class

As in Adangme, vb is filled by the independent class of verbal bases, but unlike Adangme, independent bases

are divided into two classes. Class is not marked with Class I bases. Class II bases are preceded at cl by é-, but only when polarity (5.2.2.4) is marked.

Class I

Pn -dir -cl vb +pol -asp +t e bí-íí 'He did not ask'
 N/ -dir -cl vb +pol -asp +t híí lé/bi-íí 'The men did not ask'

Class II

Pn -dir +cl vb +pol -asp +t ó ywie-eè 'You did not speak'
 N/ -dir +cl vb +pol -asp +t híí lé /e-ywie-eè 'The men did not speak'
 Pn -dir -t -cl vb -pol +asp e ywí-á 'He speaks'

Generally, Class II bases are those with an initial low tone not followed by another low tone, and Class I bases are the rest. However, a small sub-set of Class I bases are low-toned monosyllables. (see 5.2.3.42).

5.2.2.2 Direction

The two terms of the system of direction (at dir) are Neutral (unmarked, -) and Intentional, marked by á-(+). á- is assimilated to the preceding syllable within the group, so that that syllable has high tone and a becomes ∅.

Pn	- <u>dir</u>	vb		<u>e</u> <u>ba</u>	'He came'
Pn	+ <u>dir</u>	vb	(<u>sa ní</u>)	<u>e</u> - <u>bà</u>	'He should come'
N//	- <u>dir</u>	vb		<u>kwafí</u> // <u>bà</u>	'Kwashie came'
N //	+ <u>dir</u>	vb		<u>kwafí</u> // <u>á</u> - <u>bà</u>	'Kwashie should come'

5.2.2.3 Aspect

The terms of the aspect system (at asp) are Simple (unmarked, -) and Habitual, marked by -ǎ (+), except after a base final a where it is marked by -á. Unlike the Habitual marker in Adangme, none of the allomorphs of the Habitual marker in Gã have high tone.

Pn	- <u>dir</u>	vb	+ <u>asp</u>	<u>e</u> <u>bí</u> - <u>ǎ</u>	'He asks'
				<u>e</u> <u>ba</u> - <u>a</u>	'He comes'

5.2.2.4 Polarity

Polarity (at pol) has the terms Positive (unmarked, -) and Negative (+) which is marked by high tone on the base.

N//	vb	+ <u>pol</u>	+ <u>t</u>	<u>sele</u>	'swim'	<u>kwafí</u> // <u>sele</u> - <u>ǎ</u>	'Kwashie will not swim'
				<u>ba</u>	'come'	<u>kwafí</u> // <u>ba</u> <u>kò</u>	'Kwashie has not come'

5.2.2.5 Tense

There are two mutually exclusive systems of tense. If polarity is not marked (i.e. the verb is positive), tense is marked at t₁. If polarity is marked, tense is marked at t₂. Like polarity, tense is unmarked if aspect

or direction is marked.

Each of the marked terms of tense consists of a choice of one member of a multi-term sub-system. The markers at t_1 are: '- Imperfect, é'- Perfect, mí-, míŋ-, m-, ŋ-, n-, V_x - Present Progressive, and aá- Future.

-cl -dir +t vb -asp -pol:

Imperfect	<u>kwafí</u> // <u>bi</u>	'Kwashie asked'
Perfect	<u>kwafí</u> // <u>e-bi</u>	'Kwashie has asked'
Present	<u>kwafí</u> // <u>mim-bí</u>	'Kwashie is asking'
Future	<u>kwafí</u> // <u>àá-bi</u>	'Kwashie shall ask'

The Imperfect marker '- is not realizable except after a high tone, so that with a subject (including pronouns) the final tone of which is low, this tense is not overtly marked

<u>e</u> <u>ba</u>	'He came'
<u>nũũ</u> <u>ko</u> <u>bí</u>	'A certain man asked'

The Perfect marker é'- and the Future marker aá- are assimilated within the group in the same manner as the Intensive marker á- (5.1.2.2):

Perfect	<u>é-bí</u>	'He has asked'
Future	<u>oó-bi</u>	'You shall ask'

The Present Progressive marker is V_x - only after the second and third person singular pronouns. After

the first singular pronoun it is a nasal consonant homorganic with the following consonant, and having high tone. With the plural pronouns and with nominal subjects the alternants other than \underline{V}_x - are in free variation.

<u>e</u> <u>e-bí</u>	'He is asking'
<u>o</u> <u>o-ba</u>	'You are coming'
<u>mí</u> <u>m-bi</u>	'I am asking'

The tense markers at t_2 are: $\overset{\cdot}{-V}_x \overset{\cdot}{V}_x$ Aorist, $\underline{-kò}$ Perfect, and $\underline{-g}$ Future.

N// -cl -dir vb -asp +pol +t:

Aorist	<u>kwafí</u> // <u>bi-íí</u>	'Kwashie did not ask, does not ask, is not asking'.
Perfect	<u>kwafí</u> // <u>bi-kò</u>	'kwashie has not asked'
Future	<u>kwafí</u> // <u>bi-g</u>	'Kwashie will not ask'

5.2.2.6 Command

The system of command, which occurs at com, is marked only if the pronoun is unmarked, or if direction is marked and the pronoun is marked by the second person plural pronoun. Command is marked by the Imperative marker which has several alternants.

a) If the pronoun is unmarked; after a monosyllabic base belonging to Class I (5.2.2.1) the marker is \emptyset :

há 'Give!'

ba 'Come!'

after a Class II monosyllabic base it is $-\overset{\cdot}{V}_x$:

ya-á 'Go!'

after a polysyllabic base it is $-\overset{\cdot}{m\check{s}}:5$

tʃíne-mṣ 'Sneeze!'

séle-mṣ 'Swim!' (sele 'swim')

b) If direction is marked, and Pn is marked by the second person plural pronoun, it is -a:

Pn +dir vb +com nyé bi -à 'Ask!'

Those alternants that occur if the pronoun is unmarked do not occur if the verbal group includes a dependent verb (see 5.3.2).

5.2.3 Comparison

5.2.3.1 Components of the Independent Verb

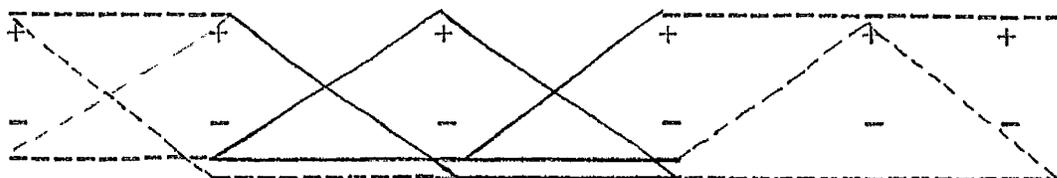
In both languages, an independent verb is marked for only one of direction, aspect or polarity.

In Gã, a verb not marked for any of the other systems must be marked for tense.

The following diagram displays the essential congruence between the independent verbs of the two languages. The differences are the Gã tense, command and class systems, which when reduced to simple features which are either marked or unmarked appear to be additions

on the periphery of the basic common system. Solid lines show the possible co-occurrences of markers of systems of the common core, and the broken lines join these to the systems peculiar to Gã.

Command Direction Aspect Polarity Tense Class



In general the typological congruence is such that, provided it can be shown that the morphemes that realize the markers correspond phonologically, it may be deduced that proto Gã-Adangme probably possessed a set of systems of the independent verb closely resembling those of modern Adangme.

5.2.3.2 The Markers of Shared Systems

5.2.3.21 Intentive

The positive term of direction is marked by the Intentive particle, which in Gã is a morpheme of the shape á-, alternating with high tone on the preceding syllable if it is not initial in the group. In Adangme, high tone on a vowel identical to the preceding one alternates under the same conditions with high tone on the preceding syllable. The only difference then is that in Adangme the segmental component of the

morpheme cannot be assigned a basic vowel shape. It has been mentioned that when the Intensive marker is immediately preceded by the first person singular pronoun, the result is má (5.1.1, 5.1.2). In Gã this is explained as a contraction in which mi + á becomes má. Since in Adangme mi belongs to the required nominal group pronoun series, it is tempting to give the same description for that language. This implies that in Adangme the allomorphs of the Intensive marker are í, V_x', and á-, and the proto-marker may be reconstructed as *á.

This solution requires a group and span boundary after the pronoun in Adangme, which need not be postulated in Gã, because of the restrictions in Adangme on pronouns in the verbal group, i.e.

Adangme	<u>m//á</u> <u>bā</u>	} 'I am to come'
Gã	<u>má</u> <u>bá</u>	

5.2.3.22 Habitual

In both languages, the Habitual marker is a morpheme consisting of -ɔ or -V_x, depending upon the final vowel of the verbal base. In Gã the length variant occurs only if the base vowel is a, and neither alternant ever has high tone, whereas in Adangme low tone verbs typically have length and rising tone in the Habitual.

In both Adã and Krobo, mid tone bases (except those ending in a) behave like high tone ones, in that the suffix has the same tone as the bases (which becomes low), and is usually ɔ.

G	e <u>bi</u> - <u>ɔ</u> ¹	D	e <u>bí</u> - <u>ɔ</u>	'He asks'
	e <u>ba</u> - <u>a</u>		e <u>ba</u> - <u>á</u> (<u>bā</u> 'come')	'He comes'
	e <u>ye</u> - <u>ɔ</u>		e <u>ye</u> - <u>ɔ</u> (<u>yē</u> 'eat')	'He eats'
	e <u>dzo</u> - <u>ɔ</u>		e <u>do</u> - <u>ó</u>	'He dances'

It is likely that the Adangme allomorphs of the Habitual consisting of -ɔ and -a with low tone are cognate with the Gã allomorphs of the same shape. It is possible that the Adangme allomorphs of shapes -ɔ and -á are cognate with Gã -ɔ¹ and -á¹ after final high tones, although this would mean a rare instance of diachronic loss of contrast (in Gã) between high and non-high tone. From a phonological point of view, it is quite unlikely that the Adangme allomorph -V_x¹ occurring after a low tone is cognate with any of the alternants of the Gã Habitual marker, which all have low tone. It is suggested as a possibility that the Adangme allomorph -V_x¹ is the result of diachronic suppletion of some of the allomorphs of the proto--G-D Habitual marker by allomorphs of some other morpheme.

It may be noted that these allomorphs are phonologically very similar to the realization of the extension $-\dot{y}_x$ (4.2.1.1, 4.2.2.1).

5.2.3.23 Negation

The realization of the Negation marker in both languages includes high tone on the base. Ambiguity in bases that have only high tones in the positive is avoided by the presence of a post-base particle or suffix (5.2.1.3, 5.2.2.5). None of the Gã suffixes occurring at t_2 correspond to Adangme $w\bar{e}$ or to the negative suffix (5.2.1.3). Therefore, only high base tone and possibly $*\dot{V}_x$ (5.2.1.3) are proposed as a realization of a negation marker in the proto-language.

5.2.3.3 The Markers of Unshared Systems

If most of the markers of the shared grammatical systems can be attributed to the proto-language, there remains the problem of the source of the unshared features, namely the Gã systems of tense, command and base class markers.

5.2.3.31 Gã Tense Markers

There is a degree of parallelism between some Twi tense distinctions and the Gã, but very little in the actual shape of the morphemes involved. The Twi

Future (Christaller 1875 pp. 58-60, 1933 pp. XX II-III) shows phonological resemblance to the Gã Future. The Twi distinction of Continuative versus Perfect to some extent semantically parallels the Gã distinction Imperfect versus Perfect, and resembles it formally in that in the Twi Perfect, as in the Gã Perfect, the pronoun subject has a high tone, and in the Twi Continuative and the Gã Imperfect the pronoun has a low tone.

Twi Continuative	<u>ə</u> <u>kɔ</u>	Gã Imperfect	<u>eya</u>	'he went'
Perfect	<u>wá</u> <u>bà</u>	Perfect	<u>é</u> <u>yá</u>	'he has gone'

However, the resemblance is superficial. The high tone in the perfect is attributable in Gã to a prefix é'- (5.2.2.5) but in Twi to a prefix á- (Christaller 1933 pg. XXIII). The semantic function of the Gã Imperfect is shared by the Twi Present (Aorist) and the Preterite, with a suffix e or i.

There is no physical resemblance between the Gã Present Progressive tense and the semantically similar Adangme stative construction (6.1.1.23). The usual orthographic form of the marker (except after the second and third singular pronouns) is "mliɣ", but miliŋ is only used in deliberate speech. The alternation between miliŋ, míŋ, mǎ is very like the alternation in the noun meaning "inside" (2.4.2.2.22) 2.4.2.2.24), which occurs in

nominal groups with the meaning "in", e.g.

ʃiá à míliŋ 'In the house'

house-the-insides

It seems very likely that the vowel-length alternant of this tense marker (5.2.2.5) is from a different source than the others. There is also evidence (Protten 1764) that in the last two hundred years the míliŋ / míŋ / mí / N alternant has widened its distribution range at the expense of V_x^- . Protten indicates "mi" as the sign of the Present tense only with the second and third person plural pronouns, and vowel length everywhere else.

Protten	transcription	modern Gã	
"míba"	miiba	<u>mím</u> -bà	'I am coming'
"ó ba"	oo ba	o o-ba	'You are coming'
"é ba"	ee ba	e e-ba	'He is coming'
"vó ba"	woo ba	wɔ̃ m-ba	'We are coming'
		wɔ̃ mím-ba	' " "
"njæ mí ba"	nyæ mii ba	nyẽ m-ba	'You are coming'
		nyẽ mím-ba	' " "
"amæmi ba"	amæ mii ba	amẽ m-ba	'They are coming'
		amẽ mim-ba	' " "

Also relevant is the fact that a regional variant of the Twi Progressive⁷ closely resembles the Gã tense with the vowel-length alternant:

Twi	<u>ɔ</u> - <u>re</u> - <u>ba</u> , <u>ɔ</u> - <u>ɔ</u> - <u>ba</u>	'He is coming'
Gã	<u>o</u> - <u>o</u> - <u>ba</u>	'You are coming'

In Twi, re and length both occur with all persons of the pronoun.

A very tentative hypothesis to account for this state of affairs is that the Present tense originally was borrowed from Twi (or its ancestor)⁸, expounded by length of the pronoun and that this exponent has been partially replaced by an indigenous Gã-Adangme marker miliŋ and its variants.

5.2.3.32 Gã Classes of the Verbal Base

Adangme does not have a system of classes of the verbal base. There is, however, an interesting relationship between certain Class I Gã bases and Adangme mid-tone bases. There is a small set of monosyllabic low-toned bases belonging, unlike most verbs of this type, to Class I (5.2.2.1). Three of these bases are each one of a pair which are homophonous except where class, (or command in the absence of a pronoun), is marked:

Gã

<u>ba</u> :	<u>e</u> <u>ba</u>	Class I	<u>e</u> <u>bá-aà</u>
	'He came, he begged'		'He did not come'
		Class II	<u>é</u> <u>ba-aà</u>
			'He did not beg'
<u>bo</u> :	<u>o</u> <u>bo</u> <u>toí</u>	Class I	<u>o</u> <u>bó-o</u> <u>tòí</u>
	'You listened'		'You did not listen'
	<u>o</u> <u>bo</u>	Class II	<u>ó</u> <u>bò-oò</u>
	'You shouted'		'You did not shout'
<u>nũ</u> :	<u>kwafí</u> <u>nũ</u>	Class I	<u>kwafí</u> <u>nũ-ũũ</u>
	'Kwashie drank, Kwashie heard'		'Kwashie did not hear'
		Class II	<u>kwafí</u> <u>e-nũ-ũũ</u>
			'Kwashie did not drink'

In each case, the Class I base corresponds to a mid tone base in Adangme, and the Class II base corresponds to a low tone base.

<u>Gã</u>		Adangme	
Class I	Class II		
<u>ba</u>		<u>bā</u>	'come'
	<u>ba</u>	<u>ba</u>	'beg'
<u>nũ</u>		<u>nũ</u>	'hear'
	<u>nũ</u>	<u>nũ</u>	'drink'
<u>bo</u>		<u>bō</u>	'listen'
	<u>bo</u>	<u>bo</u>	'shout'

Of the other nine verbs in the Class I set of low toned monosyllables, eight correspond to mid toned Adangme bases:

G <u>be</u>	D <u>bē</u>	'be cooked'
<u>ho</u>	<u>hō</u>	'pass by'
<u>wa</u>	(A) <u>wā</u>	'be hard'
<u>wu</u>	<u>wū</u>	'fight'
<u>ye</u>	<u>yē</u>	'eat'
<u>wo</u>	<u>wō</u>	'put on (clothes)'
<u>le</u>	<u>lē</u>	'know'

Gã dze 'be from' has no cognate in Adangme, although it is remarkably similar to Gã dze:Adangme dze 'leave (a place)'. Although it apparently belongs to the Class I set in Mr Okunor's idiolect (Okunor 1967, 3.52 pg. 35) it is a regular Class II verb for Central Accra informants. In both languages, some of the bases concerned have irregular negative forms.

Gã le has an irregular Imperfect tense suffix in the Negative:

e <u>lé</u> <u>mi</u> ¹	'He did not know me'	(not *e <u>lé</u> -e <u>mi</u> ¹)
e <u>lé</u> -è	'He did not know'	(not *e <u>lé</u> -eè)

In Krobo lē and also wō have irregular negatives. They behave as mid tone stems do in Adã, i.e. like Krobo low tone stems.

K e lí 'He did not know' (not *e lé wē)

A e lí

K e wí tàdé 'He did not put on clothes' (not *e wó wē)

A e wú-i

It is a general rule therefore that Class I bases which are low toned monosyllables correspond to mid tone bases in Adangme. On the other hand, Adangme mid tone bases also correspond to Class II low tone bases in Gã:

G bu : D bū 'respect' G é bú-u mí 'He did not respect me'

dzu : dū 'bathe' ó dzu-u o hè 'You did not bathe yourself'

5.2.3.33 Gã Command

Adangme does not have a command system. For the expression of the Imperative in Adangme, the verb is marked for direction, and the pronoun may be marked or not. As a result, Imperative forms in the two languages are only similar if the verb stem is a Class I monosyllable and the pronoun is not marked:

G <u>bí</u>	D <u>bí</u>	'Ask!'
<u>ba</u>	<u>bā</u>	'Come!'
but <u>ya-á</u>	<u>ya</u>	'Go!'

Adangme also has an optional feature of low-toned vowel

length of the final vowel in the tone group, when the verb stem is Intentive:

mo // ó bā // mālā ǎ 'Come early!'

mo // ó ye è 'Eat!'

Possibly this is another case of Gã a corresponding to Adangme -V_x, as in the Intentive marker 5.2.3.31.

5.2.3.34 Conclusions

It seems likely that the Gã system of classes of the verbal base is based on a distinction present in the proto-language, but it is difficult to say just what form that distinction took, although it must have had something to do with tone. It is also likely that Gã Command derives from the proto-language.

It is possible that the presence of Gã tenses in the Positive is related to presence of somewhat similar tenses in Twi. There is not enough phonetic similarity to justify a claim that the actual morphemes were borrowed from Twi, with the possible exception of the alternant of the Present Progressive.

5.3 Dependent Verbs

It has been stated (0.5.3, 5.0.1) that the dependent verb is repeatable. The number of dependent verbs in the group is limited, and dependent verbs are divisible

into sub-classes according to their relative order in a maximally expended verbal group. No dependent verb governs all the systems of the verbal grammatical base.

5.3.1 Adangme

The sub-classes of dependent verb are five, and occur in the following order:

EV NV DV AV InV

Each consists of a verbal and a grammatical base. In all Adangme dependent verbs, the grammatical base is realized by just one particle system, direction. The verbal base of each is realized by a different sub-class of verbal stem:

dir- es dir- ns dir- ds dir- ds dir- ins

If one or more dependent verb is present, the independent verb may be marked for both direction and either aspect or polarity, e.g.:

+dir ab +dir inb +dir vb +pol

yī ɔ̄ mē // ké ya hā wē / lè

women the plur. // take go give neg. /him

'The women do not take it to him'

+dir inb +dir vb +asp

á kè / áhlewui // ba hā-ā / wò // līgbi tjúe pe līgbi /

they take // sugar cane/ some intent- give -habit / us

// day every

'They bring us sugar cane every day'

Pn +dir eb +dir nb +dir inb +dir vb +pol

i tʃa ko ba pèé wē

I indeed not come intent.- do-neg.

'Please I wouldn't have done it!'

5.3.1.1 Emphatic Verb

es is realized by one item, the emphatic stem tʃá, meaning something like 'if you please'. This verb is only used if the independent verb has the Intentive marker. It apparently always carries the Intentive marker, but the effect of this is largely neutralized by the fact that it always has high tone, whether lexically or because it always precedes a verb which is Intentive.

+dir eb +dir vb mo // tʃá nũ 'Please drink!'

+dir eb +dir inb +dir vb mo // tʃá ba nũ
'Please come drink!'

5.3.1.2 Negative Verb

ns is realized by the negative stem ko. It governs the system of direction which is marked only if it is also marked for the independent verb.

Pn -dir nb -dir vb e ko lá 'He would have sung'

Pn +dir nb +dir vb é ko la 'Let him not sing!'

+dir eb +dir nb +dir vb
mo// tʃá ko nũ 'Please do not drink!'

Adā

-dir ab -dir vb na//(ko wó//) kē pò

'Na (would have taken it
and) cut with it'.

It is a peculiarity of the Adangme auxiliary verb that when it is immediately preceded by a pronoun subject it always appears to have the Intensive marker, even though the independent stem is Neutral and a noun subject would not show this marker. Thus,

wa // á-kē ba

'We brought it'

but nā // kē ba

'Na brought it'

(not *nā // á-kē ba)

'Na brought it')

5.3.15 Ingressive Verb¹⁰

There are two ingressive verb stems, which occur at ins, ya 'go' and bā 'come'. They are marked for direction whenever the independent verb is marked for direction.

Pn -dir inb -dir vb e ya nā /lɛ

'He went to see him'

Pn +dir inb +dir vb (e sa né) e ba nā /mi

(It is necessary that) he come see/me

'He ought to come to see me'

Pn +dir ab +dir inb +dir vb

(e sa né) e kē ba hā /mò

(It is necessary that) he take come
give/ you

'He ought to bring it to
you'

+dir inb +dir vb bá yē 'Come eat!'

5.3.2 Gã

In Gã there are three sub-classes of dependent verb, which occur in the following order:

A V N V InV

AV has only one place, vb, and thus no grammatical base. The other two have both a grammatical and a verbal base, but the grammatical bases differ. That of InV is realized by three particle systems, direction, class and polarity. The grammatical base of NV is realized by only one system, direction. Each verbal base is realized by a different sub-class of verbal stem.

^a/ns dir-ns dir-cl-ins-pol

If a dependent verb is present, the system marking Command is limited to the marker which co-occurs with the Intentive marker and the second plural pronoun (-a, 5.2.2.6). With a dependent verb present and the pronoun unmarked, verbs are Intentive and there is no other marker, e.g.

vb +com ya-á 'Go!'

but

as +dir vb ké yá 'Take it!'

5.3.2.1 Auxiliary Verb

The auxiliary verb ka occurs at as. It does not govern any of the grammatical systems.

Pn ab vb + <u>asp</u>	<u>mi</u> <u>ke</u> <u>madz</u> ^é - <u>ò</u> / <u>bo</u>	I took sent-habit/you	'I sent it to you'
Pn ab + <u>t</u> vb	<u>mi</u> <u>ké</u> <u>madze</u> / <u>bò</u>		'I have sent it to you'
Pn ab + <u>dir</u> vb	<u>mi</u> <u>ké</u> <u>ba</u>		'I ought to bring it'

5.3.2.2 Negative Verb

The negative verb stem occurs at ns. It is only used if the independent verb or the ingressive verb is Intentive. The Negative verb is always Intentive if the Independent verb is Intentive.

Pn + <u>dir</u> nb + <u>dir</u> vb	(<u>sa</u> <u>ní</u>)// <u>e</u> <u>ka</u> <u>ba</u>	'He must not come'
Pn + <u>dir</u> nb + <u>dir</u> vb + <u>com</u>	<u>nyé</u> <u>ka</u> <u>sèle</u> - <u>a</u>	'Don't swim!' (plur.)
Pn ab + <u>dir</u> nb + <u>dir</u> vb	<u>mi</u> <u>ké</u> <u>ka</u> <u>ba</u>	'I am not to bring it'

5.3.2.3 Ingressive Verb

The ingressive verb stems ya 'go' and ba 'come' occur at ins. The ingressive verb may be marked for direction, whether, or not the independent verb is.

Pn - <u>dir</u> inb - <u>dir</u> vb	<u>mi</u> <u>ya</u> <u>nā</u> / <u>lɛ</u>	'I went to see him'
Pn + <u>dir</u> inb + <u>dir</u> vb	<u>ó</u> <u>ba</u> <u>nā</u> / <u>mi</u>	'You are to come to see me'

Pn -dir nb +dir inb -dir vb +com
nyē ká yà há-ǎ/le

'Don't you give to him'

N// -dir inb +t vb
*kofi// bà aá-bá → kofi/bà á-bá

Kofi// come shall come

'Kofi will come'.

If the independent verb is Negative, the ingressive verb is also Negative and marked for class, even though ba 'come' is a Class I base when it occurs independently (5.2.2.11).

//+cl inb +pol -cl vb +pol +t/
mi ke/ bo // é-ya há-ǎ / lè

I take/ you/ cl II-go-neg-give-neg-imperf/him

'I didn't take you to him'

// Pn +cl inb +pol -cl vb +pol +t/

ó ba há-kò 'You have not come and given'

mi ke/bo//é-ba há-kò/le

'I have not brought you to him'

5.3.3 Comparison of Dependent Verbs

5.3.3.1 Shared Systems

It may be said that both languages have an auxiliary base, Gã kē and Adangme kē̄, which probably correspond and are reflexes of a proto-Gã-Adangme *kē̄. Both have two

ingressives, Gã ya Adangme ya, Gã ba Adangme bā. These also are cognate, and may be assigned to the proto-language as *ya and *bā. Both also have a negative base, Adangme ko and Gã ka.

Gã kɛ and Adangme kē are clearly cognate, but they differ in that the Gã auxiliary verb carries no grammatical systems, while the Adangme verb governs direction. Whether direction is marked or not depends entirely upon whether the independent verb is marked.

Intentive marking of the negative verb is automatic in both languages, since Gã ka is always Intentive and never used if the independent verb is Neutral. It is possible that the difference in shape between ka and ko is due to the fact that ka invariably occurs before the Intentive marker á-, even when it belongs to a different group (see 5.3.2.2). It is possible that *ko + á became Gã ká, just as in both languages mi + á has become má (5.2.3.21). Since in Adangme ko can occur in a group with Neutral verbs (5.3.1.2), the same condition would not apply.

In Adangme the ingressive verbs are automatically marked for direction, in the same manner as kē and ko. In Gã, not only is the Intentive marker independent of the independent verb, but the class and polarity (but not

tenses or aspect) systems may also be marked.

Thus, of the classes of dependent verbs occurring in both languages, the Gã ingressives are grammatically the most like independent verbs, and the Gã auxiliary verb is the least like them. It is probable that each dependent verb stem in each language is cognate with a member of the parallel class in the other, and that these classes with these members existed in the proto-language. Their relative order is somewhat indeterminate, since the negative verb precedes the auxiliary in Adangme, but follows it in Gã. In both languages, groups in which both of these positions are realized do not occur very frequently.

5.3.3.2 Unshared Systems

Gã has no equivalent to the Adangme emphatic and adverbial verbs. They are reminiscent of elements of the Ewe verbal group, which have, however, been analyzed¹¹ as particles rather than verbs. Compare:

Adangme NG// DV IV//DG tjũ ɔ//páà hlué//ekò hũ

'The house fell down again'

Ewe NG/ rep Verb xɔ lá/ gà mù

'The house fell down again'

Adangme Pn DV IV//NG//Adv i pí bā/we è mí // gũ

'I came home for nothing'

Ewe Pn/ aug Vb//NG Adv me/xa vá/àfé/dzódzròó

'I came home for nothing'

In Adangme these elements are analyzed as dependent verbs because they carry the grammatical system of direction, which is characteristic of ^{verbs,} and behave syntactically like other verbs which carry direction and are homophonous with independent verb stems. It is possible that deliberately comparable analyses of Adangme and Ewe would show greater resemblances between these structures than the existing analyses indicate. Even if this is not the case, it is possible that the Adangme structures were developed by analogy with the Ewe ones, but filled by members of a different word class. Clearly none of the Adangme stems concerned are actually borrowed from Ewe, since there are no phonological resemblances.

5.4 Recursion of the Predicate

Distinct from the verbal group, in which one independent verb may be accompanied by one or more dependent verbs, is the series of two or more predicate spans. All the spans share one subject, which occurs only once, either as a preceding nominal group or as a pronoun in the verbal group of the first span in the series.

There are restrictions on the number of such spans that can occur in one clause, the sequence of objects

and types of verbal group, and the marking of grammatical systems in the verbal groups of the series. These restrictions are different in Gã and Adangme, and in Adã and Krobo. Their investigation is beyond the scope of this thesis. It may be noted however that such restrictions seem to be the source of the feeling among Adangme speakers that verbal groups containing the auxiliary verb are typical of Gã and Krobo in contrast to Adã. A brief study of Adã texts indicated that in fact groups containing the auxiliary verb are quite acceptable, but rarely in the first group of a series of predicates, or a single predicate. The following examples are from an Adã text:

Two predicates:

Pn InV IV/NG // AV IV / NG

ā ba wó / ḍẓukwē ɔ̄ // kɛ ya-á / ɔ̄ā n̄ɔ̄

they came took/child the// took went-habit/bush toward

'They were taking the child to the bush'

Three predicates:

Pn IV / NG // AV IV / NG // A V IV

e hēē / à huhwé ɔwā ko // kɛ ḍze / a mā // kɛ ba

She carried/mirror big one// took left/ their town//

took came

'She brought a big mirror from their town'

Examples of recursion of the predicate from Krobo
and Gã are:

Krobo - two predicates:

NG/ NV IV // AV IV

adzó // kō ɔ̄ // kε ba

Adzo // not take // take come

'Adzo could have brought it'

na // ko ɔ̄w-é // kē b-é

'Na could not have brought it'

IV // DV InV IV

kpalé // pa ba ye

return // repeat come eat

'Eat again!'

Pn IV / NG // EV NV DV IV

ó kē / le // tʃá ko pa bā

You take / him // kindly not again come

'Kindly don't bring him again!'

three predicates:

NG // IV / NG // IV // In V IV / NG

na// kε / hwíli // mā // bá hā / w̄

Na// take/ eggs//move//come give/us

'Na will bring us eggs'

Gã - two predicates

NG // IV / NG // AV IV // DG

gã mě // nũ-õ / e fɪfɪ fěě // kɛ ya // hé-fiaa-he

Ga people//hear-habit/it s under all//take go//place-
all-place

'Gã people understand it all, wherever they
may be'

Pn AV IV / NG // AV IV

mi kɛ yí / mĩlĩy // ke ba

I took arose/inside//took'came

'I got up and came'

5.4.1. G kɛ, K kɛ̄ as Independent Bases

Gã kɛ and Krobo (but not Adã) kɛ̄ occur in independent verbs in the verbal group of the first of two or more predicates, but only in a predicate in which NG is realized. They are never accompanied by a dependent verb, or positively marked for any grammatical system.

Gã - three predicates

Pn IV/NG : // IV / NG // IV / NG

e kɛ / é kò // ye / mpái' // hã / wò

he took/some//consumed/libation//gave us

'He used some in libation for us'

For Krobo examples, see the last two Krobo examples in 5.4 above.

5.4.2 The Adangme Future

The so-called Future tense of Adangme (Puplampu 1952, Kropp 1964 A.6) is a two-predicate sequence in which the first predicate does not include a nominal group, and the verbal group of the second has the Intentive marker:

Pn IV // IV

e mã // á-yē

he move//intent-eat

'He will eat'

Adã

Pn IV // IV / NG

wa mã // á-hĩ / lɛ nã-ã

we move/ intent-remain/ him seeing

'We will be seeing him'

Pn IV // IV

e ya / á-tũ

'He is going to jump'

Krobo

Pn AV IV // IV

é kē mã // á-hō

he take move // intent-go

'He will take it away'

Pn IV // IV / NG // AV IV

e mã // á-hĩ / kē-ē // ké hō

He move//intent-remain/taking/takego

'He will keep on taking it away'

NG // IV // InV IV / NG

adzó // mǎ // bá hǎ / mò

Adzo//move//come/give/you

'Adzo will come to give you...'

5.4.3 The Negative Imperative

In both Gã and Adangme, the Negative verbal base (Gã ka, Adangme ko) occurs in an independent verb only when no pronoun is marked and the negative verb immediately precedes a verb in the Intensive:

Adangme

IV // IV	<u>ko</u> // <u>l</u> á	'Don't sing!'
	<u>ko</u> // <u>ó</u> -yē	'Don't eat!'
	<u>ko</u> // <u>ó</u> -nǔ	'Don't drink!'

Gã

IV // IV	<u>ka</u> // <u>á</u> - <u>ɔ</u> mǎ	'Don't write'
	<u>ka</u> // <u>á</u> - <u>h</u> ǎ	'Don't give!'

5.5 Conclusions

Despite the fact that in both Gã and Adangme an adequate grammar must distinguish between the verbal group containing one or more verbs and the series of predicate spans in which NG may be unmarked, these structures in fact form a cline. In the Gã verbal

group, a sequence of ingressive verb plus independent verb is more like two groups than is a group containing any other dependent verb, because a wider range of the grammatical systems which characterize the verbs apply to ingressives. The distinction between multi-verb group and series of predicates is blurred in both languages by the severe limitations on the occurrence of ke, kē and ka, ko in independent verbs, which is only possible in predicate recursion and also by the fact that a series in which the first verbal group is directionally Neutral and the second Intensive is apparently limited in the independent bases which can occur in the first; Gã ka (-Pn), which does not otherwise occur independently, and Adangme ya, mā, and ko (-Pn), which also does not otherwise occur independently.

Excluding pronouns, the morpheme classes realizing different positions in the verbal group can be ranked on a cline between grammatical particles, whose segmental shapes are totally or partially dependent upon the shape of neighbouring morphemes, and independent verbal stems. An independent stem is almost completely independent of its environment in its segmental shape, is not a member of a closed

system, occurs in the base of a verb which is at least potentially transitive, can occur in an independent verb IV in either verbal group of a two predicate series, and in a group which is the only verbal group in the span. Also, it occupies a unique position, i.e. only one morpheme of this class occurs in a group. Particles which normally consist of tone or vowel length have none of these attributes. In the charts below, morpheme classes are arranged in order according to the degree to which they attain the status of independent verbal stems, with the least verb-like classes at the top.

Ga

	unique in group	indep- endent shape	at vs, in 1st VG	at vs, in 2nd VG	trans- itive	at vs, in sole VG	Member of Open set
1. particles: Intentive, Negative Class II, imperative	-	-	-	-	-	-	-
2. particles: all positive tenses, neg. imperfect, habitual	+	-	-	-	-	-	-
3. particles: neg. perfect and future	+	+	-	-	-	-	-
4. negative stems	+	+	+	-	-	-	-
5. auxiliary stems	+	+	+	-	+	-	-
6. ingressive stems	+	+	+	+	-	+	-
7. independent stems	+	+	+	+	+	+	+

Adangme

	unique in group	indep- endent shape	at vs, in 1st VG	at vs, in 2nd VG	trans- itive	at vs, in <u>1</u> sole VG	Member of Open set
1. particles: intensive	-	-	-	-	-	-	-
2. particles: habitual, negative	+	-	-	-	-	-	-
3. emphatic stem	+	+	-	-	-	-	-
4. adverbial stem	+?	+	(+)	-	-	-	-
5. negative stem	+	+	+	+	-	-	-
6. ingressive stem	+	+	+	+	-	+	-
auxiliary stem	+	+	+	+	+	-	-
7. independent stem	+	+	+	+	+	+	+

All of the above morpheme classes and sub-classes which have no more than one independent stem-positive feature have been classed as markers of terms in grammatical systems. The others are treated as sub-classes of verb stem. Since some of the grammatical systems can occur more than once in a group, and their recurrence depends on the presence of a particular sub-class of dependent group, sub-classes of the dependent verbal stem may be graded for independence according to the number of such systems they govern.

<u>Gã</u>	Stem Class	<u>dir</u>	<u>pol</u>	<u>cl</u>	<u>t</u>	<u>asp</u>	<u>com</u>
1.	auxiliary	-	-	-	-	-	-
2.	negative	+	-	-	-	-	-
3.	ingressive	+	+	+	-	-	-
4.	independent	+	+	+	+	+	+

Adangme

1.	all dependent stem classes	+	-	-	-	-
2.	independent	+	+	-	+	-

The fact that the components of the verbal group on one hand, and verbal groups and serial predicates on the other can be viewed as stages on a cline, tends to suggest that historically each dependent verb in the group represents a decayed predicate. In that case, the fact that, although the process seems to be more advanced in Adangme, sub-classes of dependent verbal stem in the two languages are realized by corresponding morphemes implies that in the proto-language there must already have been a distinction between dependent and independent verbs, involving these same corresponding stems.

It also appears that there is a link, though tenuous, between grammatical particles and dependent stems. It is tentatively suggested that the Gã negative perfect tense marker -ko is evidence of the obsolete independent (second span) use of the negative stem, and further supports the suggestion that Gã ka corresponds to Adangme ko (5.3.3.1).

It should be pointed out that the analyses presented in 5.3.2.3 and 5.4.2 of what other writers have called the Future in both languages is perhaps slightly idiosyncratic, particularly as regards Adangme. The following pairs of translation equivalents occur:

Adangme	Gã	
<u>e</u> <u>mã</u> <u>á-tù</u>	<u>e</u> <u>ba</u> <u>á-tù</u>	'He will jump'
<u>e</u> <u>ya</u> <u>á-tù</u>	<u>e</u> <u>ya</u> <u>á-tù</u>	'He is going to jump'
	<u>e</u> <u>é-tù</u>	'He shall jump'
	<u>kofí</u> <u>áá-tù</u>	'Kofi shall jump'
<u>é-tù</u>	<u>é-tù</u>	'Let him jump!'
<u>é</u> <u>ba</u> <u>tù</u>	<u>é</u> <u>ba</u> <u>tù</u>	'Let him come jump!'
<u>kofí</u> <u>a-tù</u>	<u>kofí</u> <u>a-tù</u>	'Let Kofi jump!'

In Gã, the existence of the Definite Future tense marker áá-, in contrast to the Intentive marker á-, allows e baá-tù and eya á-tù to be analyzed as ingressive verb plus tense marker plus independent base. No similar marker occurs in Adangme, and mã does not otherwise occur as an ingressive verb. Therefore Adangme e mã á-tù, e ya á-tù and also e ba á-tù have been analyzed as series of two predicates, the verbal group of the first being Neutral and that of the second being Intentive.

Nevertheless, there is an obvious similarity between the Gã and the Adangme structures.

It is possible that the future tense marker has been lost in Adangme, remaining only in expressions with ingressive verbs, and that one of the ingressives went out of use as such in all other environments. This would mean that the proto-language had four, not three systems of the independent verb. On the other hand, it is

equally possible that the future tense marker is an innovation in Gã. This morpheme, because of its phonological shape, would have entailed a re-analysis of a structure, namely the series of two predicates in which the first verbal group has a Neutral independent verb and the second has an Intensive one, which had become semantically and lexically very specialized.

6. Verbal Bases in Non-Verbal Word Classes6.0 Introduction

6.1 Nominalizations

6.1.1 Gã

6.1.1.1 Nominalizations Inflected for Number

6.1.1.11 -mĩ6.1.1.12 -lĩ6.1.1.13 é-

6.1.1.14 Simple Base

6.1.1.15 Reduplication

6.1.1.2 Nominalizations not Inflected for Number

6.1.1.21 -lɛ6.1.1.22 -V_x6.1.1.23 -'lĩ6.1.1.24 o-, a-6.1.1.25 Reduplication, -ĩ

6.1.1.3 Observations

6.1.1.31 The 'Infinitive'

6.1.1.32 Number Systems

6.1.1.33 Vowel Prefixes

6.1.2 Adangme

6.1.2.1 Nominalizations Inflected for Number

6.1.2.11 -mĩ6.1.2.12 -lĩ

6.1.2.13 Simple Reduplication

6.1.2.14 Simple Base

6.1.2.15 -mũ6.1.2.16 é-

6.1.2.2 Nominalizations not Inflected for Number

6.1.2.21 o-

6.1.2.22 Reduplication with Front Vowel in Adã

6.1.2.23 The Stative

6.1.3 Comparison

6.1.3.1 Corresponding Morphemes

6.1.3.2 The Adangme Stative

6.1.3.3 Reduplication in Adã

6.2 Adverbialization

6.2.1 Derived Adverbs

6.2.1.1 Gã

6.2.1.11 Reduplication

6.2.1.12 $-V_x$

6.2.1.2 Adangme

6.2.2 Verbid Constructions

6.2.2.1 Gã

6.2.2.2 Adangme

6.2.2.3 Remarks

6.0 Introduction

The purpose of this chapter is to describe structures in which a verbal base occurs in a word which does not contain a grammatical base of the type appropriate to verbs in verbal groups, as described in Chapter 5. Some of these structures are regarded as nominalizations and others as adverbializations, according to their occurrences in different types of groups and spans, and according also to whether or not the affixes are comparable to those occurring in nouns, i.e. number systems and prefixes.

6.1. Nominalizations

In both Gã and Adangme, nominalizations of the verbal base, which occur as words in nominal groups, may be sub-classified according to whether or not they are inflected for number, and whether they occur as nouns or as adjectives or both. Both languages contain all the possible combinations. Most of the nominalizations which occur as nouns and are inflected for number also occur with the plural genitive particle a. This occurs in both languages between two nouns where the second is head of the construction and in Gã/^{if}either noun is plural, in Adangme if the first is plural. Thus:

Gã	loóf ^h -l ^h fí-ne	'bird's wing'
	loóf ^h -l ^h a fí-dz ^h	'bird's wings'
	loóf ^h -dz ^h a fí-dz ^h	'birds' wings'
Adangme	lohwebí pēli	'bird's wing'
	lohwebí pēli-hí	'bird's wings'
	lohwebí-hí a peli-hí	'birds' wings'

Nominalizations could therefore be graded for "nominalness", according to how closely their grammatical bases and their behaviour in the nominal group approximate the characteristics of nouns. In the following description they are only classified according to whether or not they occur in a word with a grammatical base consisting of a two-term system of number.

6.1.1 Gã

6.1.1.1 Nominalizations Inflected for Number

In some types of nominalization, the verbal base plus a nominalizing affix occur with a grammatical base consisting of a number system of the types \emptyset 'singular' / $-i$ 'plural', \emptyset 'singular' / reduplication 'plural', or $-h$ 'singular' / $-dz^h$ 'plural'. In others, the verbal base is not accompanied by any nominalizing suffix, but only by a number system $-lV_x$ 'singular' / $-dz^h$ 'plural' or $-h$ 'singular' / $-dz^h$ 'plural'.

6.1.1.11 -m¹₅

Nominalizations of this type function as nouns.

The suffix is productive, and occurs with all shapes of verbal base, except that among monosyllabic low-toned bases, it has been found to occur with only a small set, namely

<u>bā</u>	'strike, slash'	<u>la</u>	'dream'
<u>mū</u>	'breathe'	<u>nō</u>	'fight'
<u>nū</u>	'drink'		

Some examples are:

<u>filíki</u>	'fly'	<u>filíki-mō</u>	'flying'
<u>kata</u>	'lift'	<u>kata-mō</u>	'lifting'
<u>nyiéé</u>	'walk'	<u>nyié-mō</u>	'walking'
<u>tsá</u>	'join'	<u>tsá-mō</u>	'joining'
<u>nū</u>	'drink'	<u>nū-mō</u>	'drinking'

When this suffix occurs with a disyllabic base of which the second syllable is mō, the first mō is assimilated to the vowel of the initial syllable¹. The tone pattern of the base remains the same.

Thus:

<u>lé¹mō</u>	'lick'	<u>léé¹mō</u>	'licking'
<u>sū¹mō</u>	'love'	<u>sūū¹mō</u>	'loving'

The grammatical system of number with nominal bases of this type has the term \emptyset 'singular' / -i 'plural'.
la 'dream' la-mō 'dreaming, dream' la-mōi 'dreams'

The genitive particle a occurs if the nominalization occurs following a plural noun:

gbékébi-i a tfóse-mó 'bringing up children'

6.1.1.12 -lò

The agentive suffix -lò is highly productive and occurs freely with all types of verbal base. These nominalizations occur as nouns.

<u>fó</u>	'beget, give birth'	<u>fó-lò</u>	'parent'
<u>gba</u>	'tell'	<u>gba-lò</u>	'prophet'
<u>gbálà</u>	'break'	<u>gbálà-lò</u>	'one who breaks (something)'

These nominal bases occur, with a number system of \emptyset 'singular' / -ì 'plural'.

<u>tfù</u>	'take'	<u>tfù-lò</u>	'messenger'
		<u>tfù-lò-i</u>	'messengers'

They also occur in constructions of two nouns with the particle a :

níbi-i a bálà-lò-i 'beggars of (more than one kind of) things'

6.1.1.13 é-

This prefix, which is non-productive, has been found only in a few nouns derived from monosyllabic verbal bases. The accompanying grammatical bases are of several types. A few occur with a system of \emptyset 'singular' / -ì 'plural':

<u>sa</u>	'be rotten'	<u>é-sa</u>	'sin'	<u>ésa-i</u>	'sins'
<u>kó</u>	'break'	<u>é-ko</u>	'broken thing'		

Several occur with a system consisting of

-ò 'singular' / -dzì 'plural':

<u>yé</u>	'be white'	<u>é-ye-ò</u>	'white thing'	<u>é-ye-dzì</u>	'white things'
<u>dí</u>	'be black'	<u>é-di-ò</u>	'black thing'	<u>é-di-dzì</u>	'black things'
<u>gbí</u>	'dry'	<u>é-gbí-ò</u>	'dry thing'	<u>é-gbí-dzì</u>	'dry things'

At least one occurs with a system consisting of

-lV_x 'singular' / -dzì 'plural':

<u>tfu</u>	'be red'	<u>é-tfù-lu</u>	'red thing'	<u>é-tfù-dzì</u>	'red things'
------------	----------	-----------------	-------------	------------------	--------------

∅ 'singular' / reduplication 'plural'²:

<u>fé</u>	'break'	<u>éféi</u>	'ragged, torn thing'	<u>éféféi</u>	'ragged things'
-----------	---------	-------------	----------------------	---------------	-----------------

6.1.1.14 Simple Base

A few Gã verbal bases occur in nouns with no affix other than a number system with the terms ∅ 'singular' / -ì 'plural':

<u>bé</u>	'quarrel' vb	<u>bé</u>	'quarrel' n	<u>bé-i</u>	'quarrels'
<u>dzo</u>	'dance' vb	<u>dzo</u>	'dance' n	<u>dzo-i</u>	'dances'

A noun of this type may occur as object of a verb with the same stem, as in:

edzodzoóá dzo-i sólòto-i pii 'He danced many different
he danced-iter. dance-pl. dances'
various-pl. many

This object may be displaced to the position of prominence preceding the verbal group, as in:

yí à yí-ǎ 'He is beaten' (incessantly)
dzu o dzu-ǎ ? 'Are you stealing?'

There are also a few monosyllabic bases which occur in nouns with the number system $-lV_x$ 'singular' / $-dzí$ 'plural':

gbā 'marry' (of woman) gbā-lā 'marriage'; chasing
also-'chase men' (pejorative) men'

dza 'divide' dza-la 'price' dza-dzĩ 'prices'

nm̄ 'laugh' nm̄-lō 'laughter'

Other verbal bases unaccompanied by any affix other than the suffixes of the number system occur in adjectives. These bases occur in nouns with the same systems of number when accompanied by the prefix é- (6.1.1.13)

yé 'turn white' atalé ye-ǎ 'white dress' atalé-ǎ ye-dzĩ
'white dresses'

tfu 'redden' atalé tfu-lu 'red dress' atalé-ǎ tfu-dzĩ
'red dresses'

kó 'knock' ká ko 'broken pot'

6.1.1.15 Reduplication

Only one example was found of formation of a nominal base by reduplication of a verbal base. It occurs in a noun with a number system of the type \emptyset 'singular' / -i 'plural'

<u>lá</u>	'sing'	<u>lá</u> lá	'song'
<u>amě</u> <u>lá</u> <u>la</u> <u>là-i</u>			'they sang songs'

6.1.1.2 Nominalizations not Inflected for Number6.1.1.21 -lɛ

This suffix occurs only with nouns derived from monosyllabic low-toned verbal bases

<u>tɔ</u>	'exhaust'	<u>tɔ-lɛ</u>	'tiredness'
<u>ʃwi</u>	'be tough'	<u>ʃwi-lɛ</u>	'toughness'
<u>hi</u>	'be good'	<u>hi-lɛ</u>	'goodness'

6.1.1.22 -V_x

This suffix also occurs only in nouns derived from monosyllabic low-toned verbal bases. However, -V_x and -lɛ do not occur with all the same bases. -V_x does not occur with any of those cited as examples in 6.1.1.21, and -lɛ does not occur with the following:

<u>gbū</u>	'pierce'	<u>gbū-ū</u>	'piercing'
<u>tʃwa</u>	'strike'	<u>tʃwa-a</u>	'striking'
<u>hi</u>	'abstain'	<u>hi-ī</u>	'abstaining'

There are a few bases with which these two suffixes are interchangeable:

<u>ba</u>	'come'	<u>ba-a</u> , <u>ba-lɛ</u>	'coming'
<u>be</u>	'be cooked'	<u>be-e</u> , <u>be-lɛ</u>	'being cooked'
<u>da</u>	'grow'	<u>da-a</u> , <u>da-lɛ</u>	'growing'
<u>ɔmã</u>	'write'	<u>ɔmã-ã</u> , <u>ɔmã-lɛ</u>	'writing, writings'

$-V_x$ is interchangeable with $-m\dot{s}$. (6.1.1.11) in the following:

<u>la</u>	'dream'	<u>la-a</u> , <u>la-m\dot{s}</u>	'dreaming, dream'
<u>mũ</u>	'breathe'	<u>mũ-ũ</u> , <u>mũ-m\dot{s}</u>	'breathing, breath'

6.1.1.23 $-l\dot{i}$

This suffix has been noted only with the verb ye 'eat', which does not occur with $-V_x$, $-lɛ$ or $m\dot{s}$.

<u>ye</u>	'eat'	<u>yé-li</u>	'eating'
as in	<u>yɛlɛ yéli</u>	'yam eating'	(an annual festival)

6.1.1.24 $o-$, $a-$

From a synchronic point of view, $o-$ and $a-$ are nominalizing prefixes in Gã. However, some of the derived nouns are phonologically irregular. For most pairs of verbal base and noun derived with $o-$ or $a-$ there is a Twi form that closely resembles the noun or both the noun and the verb.

		<u>awí</u>	'wickedness'	Twi	<u>a-wí</u>	'theft'
<u>ka</u>	'try'	<u>akán</u>	'competition'		<u>a-káne</u>	'first, foremost'
<u>mále</u>	'tell lies'	<u>amále</u>	'lie'			
<u>ywele</u>	<u>hó</u>	<u>aywelchó</u>		<u>were</u>		'heart, seat of affections' n
	'grieve'		'grief'		<u>hòw</u>	'wither'
					<u>a-were-hòw</u>	'grief'
<u>pása</u>	'tell lies'	<u>apása</u>	'hypocrisy'	<u>apása</u>		'hypocrisy'
		<u>opása</u>	' " '			
<u>hiã</u>	'be poor'	<u>o-hiã</u>	'poverty'	<u>hiã</u>		'distress'
				<u>o-hiã</u>		'poverty'
<u>sa</u>	'castrate'	<u>osai</u>	'eunuch'	<u>sà</u>		'castrate'
				<u>o-sàé</u>		'eunuch'

It seems likely that, probably with the exception of ka 'try', both noun and verbal base are borrowed from Twi, home of the verbs, such as pása, may have been created by subtraction of the prefix on analogy with other pairs. This is almost certainly the case with ywele ;. . hó, which in Gã is a sequence of two predicates, as

e-ywele e-hó è he 'He grieved (himself)'

but in Twi is a noun and a verb. Gã ywele only occurs in a construction in which it is followed by hó.

Gã has another, indigenous verb ta 'castrate'.

6.1.1.25 Reduplication, -í

Reduplicated verbal bases of shape CVCV occur in adjectives. Both parts of the reduplication usually have a suffix which is -í after bases of tone shape HdH but -í elsewhere³.

<u>fé-le</u>	'crack'	<u>kúkwei fɛlɛifɛlɛi</u>	'broken pots'
<u>gbá-la</u>	'tear'	<u>mamá gbalaigbalai</u>	'torn cloth'
<u>logo</u>	'circumvent'	<u>gbɛ logoiflɔgoi</u>	'circuitous road'
<u>kóta</u>	'roll up'	<u>wo-dzi kótàikótài</u>	'crumpled paper'

Reduplication also occurs without -í:

<u>gbɔdɔ</u>	'be loose'	<u>atalé gbɔdɔgbɔdɔ</u>	'loose dress'
--------------	------------	-------------------------	---------------

In modern Gã adjectives, -í does not occur separately from reduplication. However, it seems likely that this is the same suffix as occurs in the set fé 'break' éfɛi 'torn' eféfɛi 'torn, plur.' (6.1.1.13). If so, -í was once a suffix deriving nominal bases of the type which occur in adjectives inflected for number (see fn. 2).

6.1.1.3 Observations

6.1.1.31 The 'Infinitive'

The suffixes -mɔ̃, -lɛ, -V_x and -'lí (6.1.1.11, 6.1.1.21-3) are very nearly in complementary distribution. Most verbs occur with only one of them. In several environments they are interchangeable, e.g.

e <u>bǎi</u> <u>sele</u> - <u>mǎ</u>	'He began to swim'
e <u>bǎi</u> <u>la</u> -a, e <u>bǎi</u> <u>la</u> - <u>mǎ</u>	'He began to dream'
e <u>bǎi</u> <u>da</u> -a, e <u>bǎi</u> <u>da</u> - <u>lɛ</u>	'It began to grow'
e <u>bǎi</u> <u>tʃwa</u> -a	'He began to strike'
e <u>bǎi</u> <u>hǐ</u> - <u>lɛ</u>	'He began to be good'
e <u>bǎi</u> <u>yeli</u>	'He began to eat'

However, $-V_x$ and $-lɛ$ are not always equivalent, as in dɔ 'get hot' → dɔ-lɛ 'heat', dɔ-ɔ 'heating'

e bǎi dɔ-ɔ 'It began to get hot'

but not *e bǎi dɔ-lɛ

On a synchronic basis it is justifiable to group together $-mǎ$, $-V_x$ and $-lɛ$ as one 'infinitive' morpheme, with $-lɛ$ as another morpheme of limited range deriving abstract nouns. The overlap in the distribution of $-mǎ$ and $-V_x$ could be regarded as an alternation which is conditioned in the presence of a plural morpheme but otherwise free. Considering their considerable phonological differences, and the fact that only $-mǎ$ occurs before a plural suffix, it seems very likely that from a diachronic point of view they are the reflexes of four different morphemes.

6.1.1.32 Number Systems

The number systems $-lV_x / -d_zi$, $-y / -d_zi$, $\emptyset / -i$ all occur in nouns with ordinary nominal bases (0.5.4., 2.4.2)

Only \emptyset / reduplication, found in only one obsolete form (6.1.1.13), is peculiar to nominalized verbals.

6.1.1.33 Vowel Prefixes

Of the three vowel prefixes, only é-does not appear to have been introduced in loanwords. This agrees with observations of initial vowels in nouns in general (2.5.1).

6.1.2 Adangme

6.1.2.1 Nominalizations Inflected for Number

6.1.2.11 -mī

The suffix -mī is productive, and occurs with all verbal bases.

<u>gbó</u>	'die'	<u>gbó-mī</u>	'dying'
<u>dū</u>	'bathe'	<u>dū-mī</u>	'bathing'
<u>kané</u> (<u>ní</u>)	'read'	<u>ní kàné-mī</u>	'reading'

These bases occur with a system of number having the terms \emptyset 'singular' / -hī 'plural'.

<u>do</u>	'dance'	<u>dō-mī</u>	'dancing, dance'
<u>ā do do-mī-hī fúu</u>	'They danced many dances'		
<u>tḡē-mē ke nyē-mē a bu-mī</u> ⁴	'Respect for fathers and mothers'		
father-pl and mother-pl part. and mothers'			
respect suff.			

6.1.2.12 -lō

The agentive suffix -lō is productive and occurs with

all types of verbal base.

<u>nū</u>	'drink'	<u>nū-l̄</u>	'drinker'
<u>yē</u>	'eat'	<u>yē-l̄</u>	'eater'
<u>lá</u>	'sing'	<u>lá-l̄</u>	'singer'

These bases occur with the number system consisting of \emptyset 'singular' / -hī 'plural'. Before the plural suffix, the agentive morpheme has the shape -li-.

<u>lá-l̄</u>	'singer'	<u>lá-lī-hī</u>	'singers'
--------------	----------	-----------------	-----------

In many idiolects, the suffix -hī is not present, so that the singular/plural system is realized in the vowel of the agentive suffix:

<u>lá-l̄</u>	'singer'	<u>lá-lī</u>	'singers'
--------------	----------	--------------	-----------

6.1.2.13: Simple Reduplication

A number of verbal bases are nominalized by reduplication, with no affix except a number system with the terms $-V_x$ or \emptyset 'singular' / -hī 'plural'. With some polysyllabic bases there is tone change in the reduplication. Most of these nominals occur only in Adã. Some occur in nouns:

<u>fī</u>	'bind'	<u>fifi</u>	'bound thing'
<u>lē</u>	'know'	A <u>lēle</u>	'knowledge, authority' (occurs mainly in proverbs)
<u>mū</u>	'breathe'	A <u>mūmū</u>	'breath'
		<u>mūmū-hī</u>	'breaths'
<u>tʃákà</u>	'mix'	<u>tʃákàtʃákà</u>	'mixture'

Others occur in adjectives:

D	<u>tí</u>	'be thick'	D	<u>títí</u> ; <u>titilí-í</u>	'thick'
	<u>tfu</u>	'be red'		<u>tfutfu-u</u>	'red'
	<u>hwǎnyǎ</u>	'shake'	A	<u>hwǎnyǎhwǎnyǎ</u>	'shaking'

6.1.2.14 Simple Base

The simple verbal base occurs as a nominal base in nouns and adjectives, with the number system ϕ 'singular' / $-hí$ 'plural'.

<u>lá</u>	'sing'	a mā <u>ǎ-kǎné</u> <u>kálama</u> <u>lá</u> <u>kpàgo</u> they go intent.- count Klama song seven 'They will count Klama's seven songs'
<u>pɛ</u>	'quarrel'	<u>pɛ</u> <u>ba</u> <u>ba</u> <u>ɔɛ</u> <u>lo</u> <u>kɛ</u> <u>òtimi</u> quarrel came came at fish and kenkey 'A quarrel came about between fish and Kenkey'
<u>dzwa</u>	'sell'	<u>okpɔ́lɔ́</u> <u>ǎ</u> <u>he</u> <u>dzwa</u> <u>wa</u> <u>tsǎ</u> table the self price is-tough too-much 'The price of the table is too high' <u>okpɔ́lɔ́</u> <u>ké</u> <u>sɛ</u> <u>ā</u> <u>dzwa-hí</u> <u>bé</u> <u>kaké</u> table and chair their price-plur is-not one 'The prices of table and chair are not the same'

K hyś 'whiten'D nyɔ-hyś 'dawn'
night-whiteD he 'be new'bo he 'new cloth', 'cloth
is new'bō he-hī 'new cloths'6.1.2.15 -mũ

One verbal base accompanied by this suffix occurs as a nominal base, with the number system -V_x 'singular' / -hī 'plural'

yú 'blacken' nomolo yú-mũ-ũ 'black person'nimili yú-mũ-hī 'black people'6.1.2.16 é-

The prefix é- occurs in a few nouns containing verbal bases which, without the prefix, also occur as adjectives. The nouns have the same member systems as the adjectives (6.1.2.14, 6.1.2.15).

yú 'blacken' é-yumũ-ũ 'black thing'he 'be new' é-hè 'new thing'

6.1.2.2. Nominalizations not Inflected for Number

6.1.2.21 o-

A non-productive prefix o- occurs with several verbal bases.

<u>mwõ</u>	'laugh'	<u>o-mwõ</u>	'laughter'
<u>seé</u>	'chat'	<u>o-seé</u>	'gossip'
<u>pã</u>	'clear off'	<u>o-pã</u>	'enlightenment'

o-seé do kē ò-mwõ dó nò ba

gossip effect and laughter effect thing leaf

'Herbs against the effects of gossip and laughter'

There are other Adangme nouns with initial o which are probably loans from Twi; eg

<u>hiã</u>	'be poor'	<u>o-hiã</u>	'poverty'	Twi <u>hiã</u>	'be in distress'
				<u>o-hiã</u>	'poverty'
<u>kádi</u>	'mark, notice'	<u>o-kadé</u>	'mark'	<u>akade</u>	'mark'
<u>sale</u>	'worship'	<u>o sáfó</u>	'priest'	<u>so-m</u>	'worship'
		(Christian)		<u>o-sáfó</u>	'priest'

6.1.2.22 Reduplication with Front Vowel ⁵

In Adã only, monosyllabic verbal bases and a few bases containing the extension $-lV_x$ are nominalized by reduplication plus a suffix consisting of a front vowel with high tone which is of the same degree of openness as the base vowel, except that it is e after a. With mid tone bases, and high toned bases ending in a, the suffix replaces the reduplicated base vowels.

These nominalizations occur both as nouns and as adjectives.

Adj:	<u>kó</u>	'knock'	<u>tʃimí</u> <u>kokoe</u>	'broken calabash'
Noun:	<u>gbó</u>	'die'	<u>e</u> <u>tólo</u> <u>gbogboe</u> <u>ɔ̄</u>	'He was carrying the dead body'
Adj:	<u>kpě</u>	'bend'	<u>tʃo</u> <u>kpěkpě</u>	'bent pole'

Other examples are:

<u>fú</u>	'give birth'	<u>fúfú</u>	'born'
<u>gbá</u>	'tear'	<u>gbágbé</u>	'ragged'
<u>bā</u>	'come'	<u>babé</u>	'coming'
<u>gbā</u>	'marry' (of woman)	<u>gbagbé</u>	'marriage'
<u>sí</u>	'fry'	<u>sísí</u>	'fried'

This type of reduplication in Adã replaces some of the uses of mĩ, as

Adã	<u>e</u> <u>gbagbé</u>	'her marriage'
Krobo	<u>e</u> <u>gba-mĩ</u>	' " " '

but not all, as

Adã and Krobo	<u>e</u> <u>bɔ̄nɪ</u> <u>nɔ̄</u> <u>hla-mĩ</u>	'he began searching'
and not Adã	* <u>e</u> <u>bɔ̄nɪ</u> <u>nɔ̄</u> <u>hlahle</u>	

To some extent the two forms are interchangeable in Adã. Thus, both the following occur, with the same meaning:

<u>nɔ̄</u> <u>hyahyɛ</u> <u>hè</u> <u>wa</u>	'Pulling it out was difficult'
<u>nɔ̄</u> <u>hyā-mĩ</u> <u>hè</u> <u>wa</u>	
thing pulling-out self difficult	

Some uses of this reduplication in Adã are expressed

in Krobo by a rank-shifted clause:

Adã	<u>n</u> ́ <u>b</u> ́ <u>b</u> ́ <u>s</u> ́ <u>e</u> ́	'created things'
Krobo	<u>n</u> ́ <u>ne</u> à <u>bo</u>	'things that they created'

6.1.2.23 The Stative

This nominalization, unlike all the others, occurs only at NG in the Predicate, and never in the Subject.

The form of the stative suffix varies. Broadly, in Krobo it is e after ɛ but otherwise e, and has mid tone. In Adã, it is realized as length of the final vowel of the verbal base, and has low tone after a low-toned base but mid tone otherwise.

K	<u>lá</u> 'sing'	→	<u>lá</u> - <u>e</u>
A	<u>lá</u>	→	<u>lá</u> - <u>a</u>

The selection of independent verbs occurring in the verbal group of a predicate containing a nominalization of this type is limited to just three: bé 'be absent', the negative form of bā 'come', hĩ 'remain' and ɲē 'have; be at':

K
hwa 'struggle' o bé hwā-e

'You will not struggle'

bole 'go around' alú ɛ ɲe tfo ɔ he bole-e

tortoise the had tree the self go around-st

'The tortoise was going around the

tree'

tū (mūnyū) 'say' e hī-í mūnyū ko tū-e
 he remain-habit. something certain
 say-st.

'He was saying something'

A nā 'see' na bé àdzó nā-ā wóò
 Na be absent Adzo see-st. tomorrow
 'Na will not see Adzo tomorrow'

hoó 'cook' é hī ní hòó-o hā mě
 she intent-remain things cook-st
 give them

'She was to cook for them'

Stative nominalizations are recursive, but this is rather rare. In all the examples found, the verb of the predicate was bé and one of the nominalized verbs was hī.

K o bé yē-e hī-e 'You will not be eating'
 you absent eat-st. remain-st.

In the following example, the final nominalization is of a verbal group kē ba, 'bring':

K na bá hī-e kē ba-e 'Na will not continue bringing it'
 Na absent remain-st. take come-st.

6.1.3 Comparison

6.1.3.1 Corresponding Morphemes

A remarkable feature of nominalization in Gã and Adangme is that although both languages have several

productive nominalizing morphemes, there is only one pair of probable cognates, the agentive suffixes, G -lɔ́ D lɔ́, proto-G-D *-lɔ́ (6.1.1.12, 6.1.2.12). Both languages also have nouns and adjectives consisting simply of a verbal base plus a number system (6.1.1.14, 6.1.2.14) and although the number systems involved are not composed of corresponding morphemes (except \emptyset) it is likely that this type of nominalization also existed in the proto-language. There is evidence in Adangme that o- as a nominalizing prefix is an indigenous morph (6.1.2.21), even though in Gã it only occurs in loanwords (6.1.1.24). é- as a nominalizing prefix is probably also indigenous, even though it is rare in Adangme (see 2.5.1). There is no evidence in either language that a- is an indigenous nominalizer.

6.1.3.2 The Adangme Stative

The Adangme stative form bears no structural similarity to any Gã form. It is on the other hand strongly suggestive of an Ewe construction or set of constructions which have been analyzed quite differently⁶. In the following example, lè is analyzed by Ansre as a particle, in a discontinuous verbal group of which the verb is no.

Adangme	<u>ē</u> <u>ŋe</u> / <u>ní</u> <u>yē-e</u>	'He is eating food'
Ewe	<u>mè</u> / <u>lè</u> <u>àkatsá</u> <u>no-m'</u>	'I am eating porridge'

Like Adangme ŋē, bé and hí, Ewe lè and the particles which can replace it are homophonous with verbs occurring in other structures. In Adangme these words are treated in this thesis as verbs, not particles, because they can be marked for the three verbal systems of polarity, direction and aspect (see examples in 6.1.2.23)⁷. There seems to be no difficulty in treating yē, in the example above, as a nominalized verb preceded by another noun, both/^{part}of the (compound) nominal group of the predicate. To treat it as the verb of a discontinuous group, with an infixed object, when the normal order is verbal group - nominal group, and with the verbal systems marked or a particle rather than the verb only complicates the analysis.

Despite the differences in analysis, there is clearly a parallelism here between Adangme and Ewe. On the other hand, neither the suffixes nor the verb homonyms involved are phonologically similar, so that none of them can be said to be borrowed. Therefore, as in the case of the dependent verb (5.3.32.) the strong parallel between Adangme and Ewe as opposed to Gã and Akan must be admitted to be highly suggestive, but in itself no proof that borrowing has occurred.

The Gã spoken in Kpone, which is in many ways transitional between Gã and Adangme (0.3, Map I) has a construction which resembles the stative, semantically and in the selection of the verb, but substituting the Gã infinitive suffixes (6.1.1.31) for the stative.

Accra	Kpone	Prampram	
<u>má</u> <u>nũ</u>	<u>má</u> <u>hĩ</u> <u>nũ-ũ</u>	<u>má</u> <u>hĩ</u> <u>nũ-e</u>	
			'I will be drinking'
<u>má</u> <u>fɔ</u>	<u>má</u> <u>hĩ</u> <u>he</u> <u>fɔ-mɔ</u>	<u>má</u> <u>hĩ</u> <u>he</u> <u>fɔ-ɔ</u> (also A)	
			'I will be washing'
<u>o</u> <u>ba</u> <u>á-ye'</u>	<u>o</u> <u>ba</u> <u>á-hĩ</u> <u>yéli</u>	<u>o</u> <u>ba</u> <u>á-hĩ</u> <u>ní</u> <u>yē-e</u>	
		A <u>mo</u> <u>ó-hĩ</u> <u>ye-e</u>	
		K <u>o</u> <u>má</u> <u>á-hĩ</u> <u>ye-e</u>	
			'You will be eating'

The people of Kpone are thought to have exchanged the Adangme language for Gã in the last hundred years (0.3). It is likely that this use of the Gã infinitive represents substitution of native (Gã) morphemes in a borrowed (Adangme) construction. The possibility arises, therefore, that the Adangme stative was modelled in the same way on the parallel Ewe constructions. However, the Gã infinitive suffixes occur in many other constructions, so that the stative use in Kpone can be treated as a new use of an indigenous morpheme, but the

Adangme stative suffix apparently occurs only in this construction. If the construction is originally a borrowed one, the source of the suffix is a problem. It is tentatively suggested, on the basis of phonological similarity and partially similar syntactic occurrence, that the Adã form of the stative suffix, $-V_x$, is cognate with the Gã infinitive suffix of the same shape.

Even if this is correct, borrowing from Ewe into Adangme and loss in Gã are still equally possible. The latter hypothesis would contribute to an explanation of the phonological disparity among the Gã infinitive suffixes (6.1.1.31). Also, there is no evidence that the Krobo stative suffix ($-\underline{e}$) and the Adã suffix are cognate. At the present time, it is not possible to determine whether the construction involving the stative suffix in Adangme has been inherited from the proto-language but lost in Gã, or whether it has been borrowed from Ewe into Adangme.

6.1.3.3 Reduplication in Adã

The kind of reduplication described in 6.1.2.22 does not occur in Krobo or Gã. There is a certain similarity to Gã reduplication with $-\underline{f}$ (6.1.1.25) but the Gã type derives only adjectives, whereas the Adangme nominalizations occur both as adjectives and as nouns. Also, in Gã base plus suffix is reduplicated, but in

Adangme the suffix is added to the reduplicated base. The Adangme type typically occurs with monosyllabic bases, but the Gã type typically occurs with polysyllables. It seems unlikely therefore that these two are reflexes of a single proto-language reduplication with suffix.

Here again there is a significant parallel in Ewe. In that language⁸, adjectives are derived from verbs by reduplication plus a final high tone.

tsi 'grow' ame tsitsií 'grown person'

In Ewe, a final front vowel whose degree of closeness depends upon that of the stem vowel has diminutive meaning. Thus:

fó 'split' atí fófóé 'tiny splinter of wood'

This meaning is not apparent in the Adã forms. The fact that the phonological complication can be analyzed into two morphemes in Ewe but not in Adã is evidence in favour of the hypothesis that this type of reduplication was borrowed into Adã from Ewe. On the other hand, these Ewe forms do not occur as nouns, as the Adã forms do. Although not strictly proved, it seems likely that reduplication with final high-toned front vowel as a device forming adjectives from verbs was borrowed into Adã from Ewe, but with loss of the distinction between the two Ewe morphemes of reduplication and the diminutive. Some of the adjectives formed this way in Adã have come to be used as nouns as well.

6.2 Adverbialization

Adverbializations are of two main types; derivation of an adverb word from a verbal base, and rank-shifting of a predicate into an adverb.

6.2.1 Derived Adverbs6.2.1.1 Gã6.2.1.1.1 Reduplication

A few adverbs are derived from verbal bases by simple reduplication, e.g.

kóli 'pick away at' kólikoli 'completely, cleanly'

as in:

wuś lé koli duáde lé 'The hen picked at the cassava'

e kũ e yi-tʃwéi lé kolikoli 'He barbered his hair completely'

he shaved his head-hair the
completely

6.2.1.1.2 -V_x

At least one verbal base is adverbialized by this suffix:

e e-wa 'It is becoming difficult' v

e bɔ módeŋ wà-a 'He tried hard' (and successfully) adv

6.2.1.2 Adangme

Only one adangme adverb derived from a verb was found:

wā 'be strong' wawéε 'with difficulty'

6.2.2 Verbid Constructions

In both Gã and Adangme, there is a construction whereby the place of the adverb is realized by a group of words, of which the first has the appearance of being a member of a small sub-class of verbs.

6.2.2.1 Gã

The initial word is either ye 'be at; have' or ke 'take; be with'

e ba á-hã bó ní-ì ye tsũ 'She will give you
she fut.-give you things food in the room'
at room

o ba á-ye otsi ye tsũ lè mĩlĩn 'You will spend a
you come fut.-eat week at week in the room'
room the in

mí ya-a gã ke kofí 'I didn't go to Accra
I go-neg-imperf Accra take Kofi with Kofi

6.2.2.2 Adangme

The initial word is ɲē 'be at; have' kē 'be with; take' or há 'give; be for'.

A ē wɔ sĩ ɲe sa 'She lay down on a mat'
she lay down at mat

í pō ɛ ke há 'I cut it with a knife'
I cut it took knife

K	<u>na</u> <u>ké</u> <u>wòmí</u> <u>ɔ</u> <u>ɲɛ</u> <u>í</u> <u>dè</u> Na took-neg. book the at my hand	'Na didn't take the book from me'
	<u>ē</u> <u>tʃɛ</u> <u>ɔ</u> <u>pw-í</u> <u>ké</u> <u>ha</u> his father the cut-neg take knife	'His father didn't cut it with a knife'

6.2.2.3 Remarks

It has been pointed out by Ansre with regard to comparable structures in Ewe⁹ that it is unsatisfactory to treat these as serial verbs (in the terms of this thesis, to treat the verb-like element with what follows it as one of a series of predicates) because the initial item, although it is homophonous with a verb, is never marked for any of the verbal systems. In Gã and Adangme an additional reason for avoiding that analysis is that the 'verbid' cannot always be assigned the same subject as the preceding predicate or predicates - see the first Gã example (6.2.2.1) and the first Krobo example (6.2.2.2). From a purely synchronic point of view, it is satisfactory in both languages to treat the verb-like words as prepositional particles, followed by rank-shifted nominal groups.

On the other hand, it seems equally valid to treat these adverbials as rank-shifted predicates. The fact that the grammatical systems are never marked is not necessarily important, since in ordinary verbal groups

in both languages it is not necessary for any system to be overtly marked. The choice between the two treatments depends upon whether the fact that all the initial words are homophonous with ordinary independent verbs, or the fact that these words form a small closed set, is given greater weight. From a historical point of view the former is more revealing. It appears that this construction is another illustration of the diachronic progression from verb to particle, (5.5, 6.1.2.23).

7. C O N C L U S I O N

7.1 Method

7.2 Loans

7.3 Typology and Change

7.1 Method

A number of conclusions can be drawn from the foregoing chapters, concerning general patterns of change, and the sources of individual changes.

Throughout the present work, the focus has been on the application of the Comparative Method to two closely related languages, in order to determine which lexical morphemes, and within a restricted range, which grammatical morphemes, are attributable to the proto-language. This procedure has entailed reconstruction of a number of changes, in the phonemic system of each language, and in the morphologies of the noun and the verb. The detection of lexical, phonological and morphological changes which are due to external linguistic contact, as opposed to changes generated internally upon inherited material, has depended in the first instance upon phonological criteria developed as a by-product of the application of the comparative method. Typological criteria were also employed as indicators of possible foreign

elements, but not as proof of foreign origin.

Practically this has meant that if an item fitted into the phonological correspondence patterns and showed no typological deviation, the possibility of a foreign origin was not usually investigated. Some loans are undetectable by these methods, for instance Adangme tʰkè (4.2.2.9) 'grumble; chuckle; chat up', from Ghanaian English "talk". This is a phonologically normal Adangme disyllabic verb, in its tone pattern and in the realization of its C and V positions and combinations. Loans of this sort were detected only by the addition of the working hypothesis, based on the observation that the establishment of phonological correspondences depended almost entirely upon morphs of the shape CV, that in these languages verbal bases of more than one syllable were either morphologically complex or borrowed. In fact, a number of verbal bases of shape CVCV must be relegated to proto-Gã-Adangme (4.3.2). Nevertheless, as a practical rule of thumb this hypothesis aided in the discovery of a significant number of loans (as in e.g. 4.2.2.8, 4.2.3.2).

In some cases, there is every reason to believe that an item is a loan, even a loan from a particular language, and yet no extant source for it can be found. Verbal bases of shape CVV_x occur only in Gã, cannot be shown to

be di-morphemic, and have plausible sources in Twi, except for one example, tee 'go' (3.1.2.11). The Gã verb táo 'want; search for' (3.1.2.11) is a similar case. The noun G amãdãã, D mãdãã, mãñãã 'plantain' (0.3) has a final tone pattern which is not typical of Gã-Adangme nouns but of Akan nouns, and yet has not been found in that language. The Gã word duadé 'cassava' is analyzable in Akan as dua 'tree', a-dé 'yam' (Berry 1952, pg 147) but does not occur in Akan. The possibility arises that forms such as these were borrowed from an ancestral form of Akan, from which they have since been lost. In the absence of historical documentation such a hypothesis probably cannot be verified, but it reflects a problem which is likely to arise often in the study of borrowing in West African languages.

Difficulties also arise in the detection of possible translation loans, such as might possibly account for the Adangme stative construction, and probably does account for the Kpone version of it (6.1.3.2). In the West African context of widespread bilingualism and multilingualism, the potential incidence of this kind of borrowing is very great. The Gã tenses present the combined problem of suspected translation loan and possible obsolescence

in the source language. There can be more confidence that the Gã tenses are in fact loans of some kind than in the case of the Adangme stative, because unlike the stative they represent a distinct deviation from the common core of systems of the verbal group, but despite the semantic parallels with Akan and especially Awutu, very few of the markers involved can be shown to be either borrowed morphemes or indigenous morphemes put to new use in translation loans. It is suggested that situations of this kind are most likely to be clarified by means of detailed analysis of the relevant grammatical systems in all the languages which may be relevant, in this case, Akan, Awutu, and the related Tano and Guan languages.

In spite of these difficulties, the application of the comparative method seems to have been generally successful. A considerable amount of borrowed material has been identified. A proto-Gã-Adangme phonemic system has been reconstructed, although problems remain, particularly in the vowels (2.3.2.3). The disadvantage of the scarcity of historical documentation in African languages is made obvious by the fact that the sound changes *si > G ʃi (2.2.2.1) and *N-d > G n (2.5.2) could not have been established without the evidence in Protten, although they might have been suspected on the

grounds that $G \underline{s}:D \underline{s}$ does not occur before front vowels (2.2.1.1). and from the existence of pairs like Gã nĩ-ne 'hand' dɛ-ŋ 'palm', na-a 'mouth' da-ŋ 'inside of mouth'. Employing the results of the phonological reconstruction, it has been possible to draw conclusions concerning the morphology of the noun in the proto-language (2.45). There is also evidence to suggest that the shape CVCV in non-borrowed verbal bases is indicative of morphological complexity in the past, even though the proto-language included stems of this shape (4.3.2). A common inherited core in the systems of the verbal group has been identified, and conclusions drawn concerning the composition of the verbal group in the proto-language (5.2.3.1-2, 5.3.3.1).

Although not of central importance in a comparison of only two languages and closely related dialects, the reconstruction of the changes these languages have undergone in the process of separating raises a few points of interest in connection with problems of sub-classification. In the language written by Protten, it is fairly clear that most of the Gã consonant changes, including $*\underline{p} > \underline{f}$ and $*\underline{bw} > \underline{gb}$ (2.2.2.4) have occurred, and the Gã innovations of the present progressive and future tenses occur. Yet since that time the change $*N-\underline{d} > \underline{n}$ occurred, which must be postulated for both Gã

and Adangme (2.5.2). This need not be treated as a common innovation, however, if it is viewed as merely one aspect of the loss of the nasal nominal prefix. This prefix was lost in both languages, but the conditions under which it was dropped (before hy, hy, and g in Adangme but not in Gã) or assimilated to the following consonant are different, (2.5.2), so that it is not strictly speaking the same change in both languages.

In terms of the strict application of the comparative method, there are two possible models for the diachronic relationship between Gã and the Adangme dialects:

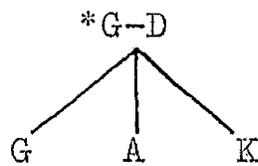


Fig. 1

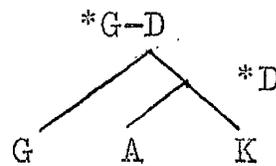


Fig. 2

The line *G-D - G in both diagrams represents a number of changes which have occurred in Gã only, including consonant changes (2.2.2.4), changes in the tone system (2.1.2), and innovations in the systems of the verbal group. The problem is whether the line *G-D - *D in Fig. 2 can be justified as representing changes that occurred in both A and K such that they may be treated as single changes in an earlier, more unified language, *D. ~~and *G-D - K of Fig. 1.~~ The Adangme consonant system

appears to have been conservative, and few if any of the small number of changes which have occurred have taken place under exactly the same conditions in both dialects (2.2.4, 2.3.2, 2.4.2). The pattern of loss or assimilation of the nasal nominal prefix is not inter-dialectally uniform (2.5.2). Even if these changes could be considered identical in both dialects; it would not be necessary to assume a more unified proto-Adangme situation than exists at present. It is entirely possible for changes of this kind to spread from one dialect to the other, and even from Gã to Adangme, as the situation in the reflexes of *hw demonstrates (2.2.2.3). The strongest evidence in favour of Fig.2 is the changes in the grammatical base of nouns (2.4.2, 2.5). All Adangme dialects have lost the morpheme boundary before nominal suffixes, some of which are still active in Gã, and all have made the vowel change, possibly also after a lost morpheme boundary, *V₁ > V (2.4.2). Also, all Adangme dialects have kept only one nominal plural suffix, -h₁, in place of two in Gã, -i and -dzi. If it could be conclusively demonstrated that the stative construction is an innovation; that would be further evidence for a proto-Adangme stage distinct from the present situation of mutually intelligible dialects, particularly if it could be shown that the Adã and Krobo stative suffixes

are from a single source.

With such closely related languages and dialects as Gã, Krobo and Adã these problems are perhaps somewhat artificial. They are interesting, however, because on a small scale they demonstrate the importance in linguistic classification of the recognition of loans, (including inter-dialectal loans), in an area of high multi-lingualism and receptivity to foreign vocabulary.

The sub-classification of Adangme is also of extra-linguistic historical interest. If there is any reality in a unified proto-Adangme, it would suggest that there was a period in which speakers of the precursor(s) of the Adangme dialects had little contact with speakers of the precursor(s) of Gã, but were in relatively close contact with each other. This does not appear to be the case at the present day, when Adã is somewhat isolated from the others. Yet social separation of Gã is not inconsistent with the relative geographical situations of the modern linguistic communities. It does not necessarily imply that the Gã immigrant bands crossed the Volta appreciably earlier than the others.

It has been suggested by Dr. Stewart (1966 (2), 2.3) that Gã was affected by borrowing (of the phonetic effects of a certain sound shifts) from "proto-Tano". This

theory is indirectly supported by the possibility that certain vocabulary items (see above) and some of the Gã tenses and their markers (5.2.3.34) may have been borrowed from a linguistic ancestor of Akan. These suggestions seem to place the beginnings of linguistic interference in Gã, by languages which are believed to have originated and spread west of the Volta river, earlier than the time implied by the traditions of immigration from east of the Volta, as reported by Azu and Reindorf. There is a glimmering of linguistic evidence, therefore, that these traditions either have telescoped the time span over which the events they relate took place, or they apply to an immigrant group or groups which adopted the language of the people they met at their new location.

7.2 Loans

All occurrences of Gã p are in loan words. This phoneme does not correspond to any Adangme phoneme (2.2.1.1) and a foreign source can be found for almost all the forms in which it occurs. Most of these sources are from Akan (cf. e.g. examples in 3.1.2.1, 3.1.2.41, 4.2.3.2, 4.3.1.1), and a few are from English (cf. e.g. 4.2.1.1).

There are a few nouns in which an initial vowel and final high tone suggest an Akan source, but Akan p

appears to have been borrowed into Gã as kp, e.g.

G	<u>okpɔŋɔ́</u>	Twi	<u>ɔ-pɔŋkɔ́</u>	'horse'
	<u>okpɔ́ɪɔ́</u>		<u>ɔ-pɔɪ</u>	'table'

A few such words are of Portuguese origin, e.g.

G	<u>akpɔ́ɔ́nɔ́ɔ́</u>	Twi	<u>pããnõõ</u>	'biscuit'
				bread
		Port.	"pãõ"	'biscuit'

It is suggested therefore that these words came into Gã after, or about the time of, the first Portuguese contact with the Gold Coast, but before the change proto-Akan *kp > Akan p¹ took place.

It is suggested that the difference between the tone systems of Gã and Adangme is attributable to the influence of Akan on Gã, in view of the close typological resemblance between the Akan and the Gã tone systems. (1.4.6). A decisive historical fact in this change was probably the assimilation of many originally Akan-speaking groups into Gã-speaking communities (0.3).

In both languages, nominals with an initial syllable of shape N are borrowed from Akan (2.5.2). In verbal bases, it has been shown that shapes CVV_x, CV_ɔ (3.1.2.1), CVN (3.1.2.2), CVNCV (3.1.2.41), which occur mainly in Gã are borrowed from Akan. One other Gã polysyllabic base type containing a syllable N is borrowed from English (3.1.2.41). The indigenous Gã-Adangme base

shapes are therefore CV_1 , CV_1V_2 , CVV_x , CVCV, and a few others arising from reduplication (3.1.2.4). In addition, deviation from the predominant patterns of phoneme combination in the second syllable of CVCV verbal bases frequently indicates an Akan loan (cf 4.2.1.5, 4.2.2.8, 4.2.3.2, 4.3.1.1).

As already mentioned (7.1) the rôle of Akan influence in the emergence of existing tenses of the Gã verb is problematic. The semantic correlation between the systems of Gã, Awutu and Akan cannot be tied to borrowed morphemes, except in the present progressive marker V_x- (5.2.3.31), or to old morphs put to new use, except possibly the present progressive marker míí- (5.2.3.31) and the negative perfect -ko (5.5). This situation has been related to Stewart's proposed Tano-Guan-Gã convergence group (7.1). Comparison of the verbal systems of the languages of the Tano group, of the kind performed for Gã and Adangme here, might contribute to an understanding of the situation.

Of the nominalizing affixes, only a in both languages and some instances of o- (all the Gã examples) (6.1.1.24, 6.1.2.21) appear to have been borrowed from Akan.

Clearly influence from Akan (and possibly from its ancestors) has played a major part in the linguistic differentiation of Gã from Adangme, although it has also had some effect on the latter language. The direct phonological influence of Ewe is limited to a somewhat higher frequency of v in both languages than might otherwise have been the case (2.2.1.1). In the verbal bases, only one Adangme form of untypical phonological shape has been found to have an Ewe source (gbúgbɔ 'lick' 4.2.2.8). It is possible that the phonologically unusual Adangme base vivye 'begreedy' (3.3.2), which fits Ewe reduplication patterns but apparently does not occur in that language, is another instance of the problem of obsolescence of a borrowed form in the donor language.

There is a possibility that the Adangme structures involving emphatic and adverbial dependent verbs (5.3.3.2) and the stative suffix (6.1.3.2) are instances of translation loaning from Ewe. It is the writer's opinion that they are more likely to have been inherited from the proto-language, since they fit into structure types present in both Gã and Adangme, i.e. the dependent verb, and the occurrence of nominalized verbs at NG in the predicate. Nevertheless, a final answer cannot be given. This is unfortunate, because if these structures

are borrowed, the influence of Ewe on Adangme would appear to have been important, resulting in Adangme innovations which distinguish it as a linguistic unit and promote reconstruction of a proto-Adangme stage. If they are not loaned, the influence of Ewe on Adangme as a whole (and on Gã) appears to have been slight. On the otherhand, the peculiarly Adã nominalization by reduplication has probably been borrowed from Ewe (6.1.3.3).

Evaluation of the relative importance of the influence of Akan and Ewe on the development of Gã and Adangme is qualified in this thesis by the fact that attention has been focussed on the verb and its systems. It is possible that greater attention paid to nouns and nominal constructions would produce slightly different results. It is likely that such differences would consist mainly of a greater degree of lexical borrowing from Ewe than has appeared in this thesis.

7.3. Typology and Change

A high degree of correlation between synchronic and diachronic pattern has emerged. In phonology, statistical frequency (1.2.3.1, 1.3.2.1) and analytic primacy (1.2.2.1) can be correlated with diachronic stability (2.2.2.4, 2.3.2.3). Generally, the primary

consonants are the statistically frequent consonants, and relative to the size of the sample and number of consonants in each language, similar types are of comparable frequency in the two languages (1.2.3.1). Disturbances in this pattern can be related to phonological change (1.2.3.3). Where there is no disturbance, the consonants have been diachronically stable. The exceptionally high frequency of l in both languages has been related to morphology (2.4.2, 4.3.1.1).

The vicissitudes of the Gã voiceless bilabial stop are interesting, because they demonstrate a tendency to preservation of typological pattern, at least with respect to the primary consonants. *p > f occurred in all environments, but in the modern language ^p occurs in all environments through the agency of Twi loans. Yet symptoms of the unstable past of this phoneme type in Gã are found in the fact that it has a lower than standard frequency, even though the frequency of Adangme p is, like most primary consonants, higher than standard (1.2.3.1), and in its irregular distribution in verbal bases (3.3.1).

The differences between Gã and Adangme in the structure of the nominal base (0.5.5) may be attributed to a tendency to loss of morpheme boundaries within the noun. This tendency appears in both languages but especially in Adangme. In both languages there has been

loss or phonological assimilation of the nasal nominal prefix (2.5.2). In Adangme, vocalic nominal prefixes have been mainly lost, with the exception of é- as a nominalizer of adjectives (2.5.1). In some words the vowel remains but, unlike in Gã, it is not followed by a morpheme boundary. Suffixes such as -ne and -le which in Gã are markers of number have either been lost altogether or are no longer morphemic in Adangme (2.4.2).

A similar tendency is evident in the verbal base. In both languages, phonological peculiarities of the verbal base, such as the marked difference in frequency of particular consonants at C_2 (3.3.2) and the restricted distribution of consonants at V_2 (3.4), as well as the non-occurrence of certain combinations in the first syllable is related to the fact that the extensions of the verbal base exhibit varying degrees of morphemic distinctiveness, from the almost fully productive extensions that occur in Gã (4.1) to the restricted occurrence of extensions like -sé (4.2.1.6, 4.2.2.6) to the often non-morphemic status of extensions beginning in k and t (4.2.1.10-1, 4.2.2.9).

In the verbal group, a diachronic process of narrowing of the freedom of occurrence of certain morphemes, manifested as a kind of "decay" of predicates

and verbal groups is apparent, This has been linked to rank and sub-class in the synchronic analysis, through the mediation of clines. The different realizations of the ranked classes predicate, verbal group, verb and particle, and of the sub-classification of verbs into dependent and independent are viewed as occupying places on clines (5.5), which suggests that the synchronic analysis in these terms represents abstraction from a fluid diachronic situation. The mechanism for diachronic lowering of the rank of the structure realized by a form depends upon synchronic predicate recursion, through which on the morphemic level an uninterrupted sequence of two or more verbal stems is possible, together with a diachronic tendency to semantic specialization in individual frequently occurring sequences of this kind. This process is most clearly visible in the structure of the Gã verbal group, where a group consisting of ingressive verb plus independent verb is more like a series of two groups (and therefore of two predicates) than is a group in which the negative verb, which has lost the government of the systems of class and polarity, is the only dependent verb. The Gã auxiliary verb, having lost government of all verbal systems, is closer to particle

status than are any of the Adangme independent verbs, and in this respect differs from the verbid only in that it is preceded by a subject element (cf. 6.2.2.3). The Gã negative perfect suffix probably represents a shift from independent verbal stem to particle in the second verb of a series (5.5). It is possible too that compound verbal bases and even some of the verbal extensions (4.2.3.4) have arisen through a similar process of serial occurrence and semantic specialization.

FootnotesIntroduction

1. The tribal enumeration figures (directly linguistic information is not available) according to the Ghana Government Census are:

Gã 236,210

Adangme 237,450

plus 86,720 unspecified Gã-Adangme. Apronti (1967, 1.1) feels that the Adangme figure is conservative. Among the Adangme groups the census figures are:

Adã 53,540

Shai 20,970

Krobo 162,940

237,450

2. See Field (1940 pp.72, 82-3). But Azu (1927 pg.242) implies that the Kpeshie came with the Adangmes from across the Volta, having joined them at Kpessi in modern Togo.

3. Kple music and dancing is performed only by certain Ga clans. My informants when questioned said that the Kple language was Twi, but since none of them are performers, this information is possibly unreliable.

4. In Stewart 1966 (1), items 2964, 906.

5. cf Zimmerman's (1858) Adangme Appendix.
6. Manoukian (1950 pg.69), information from J. Berry.
7. Azu (1927 pg.89). The people of Prampram are said to be descendants of Ashantis from Denkera (i.e. refugees) who stayed on Krobo Mountain before moving on to the coast. These statements presumably relate only to a part of the populations of these towns.
8. See examples in Apronti, pp.229, 232.
9. As given by Manoukian (1950 pg.69). The list in Berry (1952) is slightly different, but Manoukian's linguistic information was obtained from Berry. Neither gives supporting data.
10. E.G. examples in Apronti (1966 pp.229, 232).
11. The following are Bowdich's list and the modern equivalents. He says that the Adangme numbers other than for 'one' are about the same as Gã, which is true of the modern languages.

	<u>Bowdich</u>	<u>Modern Adangme</u>
'one'	"kakee"	<u>kakè</u>
'house'	"aosoos"	<u>wē</u>
'fire'	"odza"	<u>la</u>
'man'	"ossa"	<u>nyũ-mũ</u>
'woman'	"ossě"	<u>yo</u>

'victual'	"odě"	<u>ní-yè-ni</u>
'father'	"attay"	<u>tšě</u>
'mother'	"awoo"	<u>nyě</u>

The words Bowdich gives for 'father' and 'mother' are probably ataá and awó, now used only in religious or ceremonial contexts, in both Gã and Adangme. The words for 'fire' (as Bowdich points out) and 'victual' are reminiscent of the Twi words ogya and ɔ-didi respectively. The words 'man' and 'woman' are quite unlike any modern Adangme words, but similar to Awutu o-fãni, pl. n-šã, Larteh ɔ-sě, 'man, human being', and Avatime o-dʒe 'woman'. The word for 'house' resembles Larteh ɔ-wu (or English). Either there has been a radical change in Adangme vocabulary in the last hundred and fifty years, and the Prampram language before 1819 was very different from that of Kpone, not five miles away, forty years later, or Bowdich was misled by his informant, or some residents of Prampram at that time spoke some other language than Adangme. Since two words plus the numbers are recognizably Adangme but Twi words are also included, it seems most likely that the informant gave wrong information. Bowdich also claims that the "Inkran" (Accra) and "Adampe" (Adangme) languages are entirely unrelated.

It seems unlikely that an intelligent observer could reach this conclusion unless his information were faulty.

12. Apronti (op.cit. pg.29), concerned with the nominal, sets up two units where only one is used here. His Nominal Phrase corresponds to the Nominal Group of this analysis, and his Nominal Group is between Phrase and Word. Since the distinction is not necessary for analysis of the verb, or verbal base, it is not adopted here.

Chapter 1

1. According to Apronti (1967, 4.2.4. pg.181) hl is just one phone, [l̥], a voiceless lateral fricative. hwl is phonetically [lu] (pg.182).

2. It has been said, in Berry (1952, pp.38-9, and Kropp (1966), that Gã (but not Adangme) has morphs of shape CVV_x, with level tone. In this thesis all nouns and adjectives of this shape are considered to be di-morphemic, on the grounds that the final -V_x alternates with at least one other morpheme, such as nominal plural, and therefore itself realizes a morpheme, such as nominal singular (2.4.2.2). The only mono-morphemic bases of shape CVV_x where both vowels have the same tone are verbal bases, and these are probably borrowed from Twi (3.1.2.11).

3. Berry's figures, apparently based on a rough estimate, are slightly lower but roughly the same, i.e. Gã 50 %, Adangme 60 % (Berry 1952: pg. 79 fn 1).

4. According to Berry (1951 pg.9) a flapped l occurs after m, gb, kp, ɔm. This was not noted. According to the same work, the voiced alveolar fricative also follows palatal consonants, but informants used the alveolar flap, which also occurs where Berry specifies the rolled lingual. The latter was apparently used by the present writer's informants only in emphatic utterances.

The comma diacritic signifies frontness.

5. As far as I am aware, the combination of methods used for typological analysis and comparison of phonemic systems is my own. It is based partly on the methods of prosodic phonology, but mainly on the method of statement of sound change according to shift in order or series in Indo-European philology, as exemplified in such works as Buck 1948. Analysis of consonants by means of a horizontal axis (series) and a vertical (order) for typological purposes has been developed by Martinet, see for instance Martinet 1961, pg.77. The theory of this type of analysis is

discussed in Revzin 1966, Chapter 2. The calculations of 1.2.2.2 and 1.2.2.3 are adapted from matrix measurements suggested by Revzin, op.cit. pp. 34-5.

6. In Akan they are related diachronically, for according to Dr. J. Stewart there has been a sound shift Proto-Akan *kp > Akan p (personal communication; cf also Stewart 1967). In many Twi words borrowed into Gã kp has been substituted for p, thus Akan mpáe 'libation' → Gã mpae, pkpái (but see 7.2).

7. This analysis is essentially that presented in Kropp 1968.

8. Either classification of Gã gives the same results, since the number of sub-orders in one equals the number of sub-sub-orders in the other.

9. Formula for standardized score (normalization of differentiation, z-score):

$$z = \frac{X - \bar{X}}{s}$$

where: X = score (number of times a phoneme occurs in sample)

\bar{X} = average score

s = standard deviation:
$$\sqrt{\frac{S(X - \bar{X})^2}{N}}$$

S = sum of

N = number of scores (i.e. of phonemes)

In this calculation, the standard for a set of scores is fixed at zero, and individual scores are ranged above and below it, according to the degree to which each deviates from the standard.

Results in this and in subsequent calculations were rounded off to two decimal places.

10. Formula for coefficient of correlation (r):

$$r = \frac{S_{xy}}{N s_x s_y}$$

where: $x = X$ (number of times a particular phoneme occurs in the Gã sample). - \bar{X} (average number of occurrences of phonemes in Gã sample).

$y = Y - \bar{Y}$ (ditto for Adangme sample).

s_x = standard deviation of scores in Gã.

s_y = standard deviation of scores in Adangme.

Alternative writing for computer:

$$\begin{aligned} RHO &= \frac{NS_{xy} - S_x S_y}{\sqrt{NS_x^2 - (S_x)^2} \sqrt{NS_y^2 - (S_y)^2}} \\ &= (EN * S_{XY} - S_X * S_Y) / \text{SQRT} (EN * S_X^2 - S_X * S_X) \\ &\quad * (EN * S_Y^2 - S_Y * S_Y) \end{aligned}$$

where: SX = sum of x SXS = sum of x^2
 SY = sum of y SYS = sum of y^2
 SXY = sum of SX and SY
 SQRTF = square root function
 EN = total number of pairs of variables (pairs
 of like phonemes).

11. Berry (1952, pg.37) states that "the pronunciation of these vowels differs little between the 2 languages..." The positions of the Gã vowels ɛ and ɔ, as shown on the chart (of oral vowels only) in Berry 1951 (pg.3) are slightly closer than the positions of Adangme ɛ and ɔ as shown on the chart in Apronti 1966 (pg.127), and those of Gã e and o are slightly more open than the positions of Adangme e and o according to Apronti, which are exactly at cardinals 2 and 7 respectively.

The display of vowels in Berry 1952 (pg.37) would seem to imply that in both languages ẽ and õ (in Berry 1952, ẽ and õ) are closer than cardinal vowels 3 and 6 respectively, whereas according to Apronti (op.cit. pg.127) Adangme ẽ and õ are slightly more open, but closer than Adangme ɛ and ɔ.

12. By deliberate speech is meant the type used in

answer to the question "How do you say...?" It is not necessarily hesitant or particularly slow. By "discursive speech" is meant the speech of text and conversations.

13. Terraced-level languages, which mean essentially languages with phonemic tone and downdrift, were first defined in Welmers (1959).

14. Especially in J. Stewart with Schachter and Welmers (1965).

15. Ansre (1961). Pages 22-3 are particularly relevant.

Chapter 2

1. Berry (1952 pg.33) states that tʃw is found in Gã "almost exclusively in loanwords from Twi".

2. This hypothetical intermediate stage receives direct attestation in Proppen's form "Fiande" 'afternoon', cf modern Gã ʃwané, modern Adangme pyaní 'afternoon'.

3. A short word list of Se-Zogbadji was collected by the author while on a visit to Lomé in August 1965. The informant was a seventeen-year-old boy who had grown^{up} in Se-Zogbadji and^{had} recently arrived in Lomé on a visit.

4. Barbot (1746, pg.448) mentions "the village Ponni, at the end of the Gold Coast". Meredith (1812) marks

"Pony" on a map. But in 1858, Zimmerman writes "Kpoñ".

Chapter 3

1. Tone marking of verbal bases in isolation is based on the tone of the base in independent verbs with all grammatical systems unmarked (see 5.2).

2. Akan hw is phonetically very similar to Gã fw, and Akan hy to Gã f.

3. That is, the number of filled spaces in the chart was divided by the total number of spaces in the chart. Each language was calculated separately, so that if a consonant did not occur in CV verbal bases of a particular language, it was not included in counting the total number of places on the chart for that language. Thus the total number of possible CV-shape verbal bases in Gã does not include CV where C is p.

Chapter 4

1. A procedure similar to the subtractive procedure for obtaining shape and meaning of extensions defined in Guthrie (1962) is adopted here. However, since most extensions in Gã or Adangme are non-productive and semantically irregular, and the purpose of this discussion is to indicate the possibility of greater productivity in the past, Guthrie's comparative criterion of semantic regularity is not used.

2. Personal communication.
3. The high tone of the first syllable is the negative marker (5.2.1.3).
4. This verb is quoted from Okunor (1962, 2.4.2).
5. Berry (1952 pg.57). Christaller (1933) also gives verb stems with s and t at C₂.
6. J.M. Stewart, personal communication. According to Dr. Stewart, Awutu h corresponds to Akan f and to Gã f, Adangme p. cf Stewart 1967.

Chapter 5

1. That is, at primary delicacy, the work or words occurring between pronoun and independent verb are all members of the sub-class 'dependent verb'. At secondary delicacy there are sub-classes of dependent verb, according to the order in which the verbs occur (5.2.1.1-3, 5.2.2.1-6). This is not paratactic linear recursion, such as occurs in a clause containing several predicates (5.4), because the structure is multivariate (cf Huddleston (1965)).
2. In Kropp (1964) these are "series A" pronouns.
3. See Apronti (1967, 3.2.2.). The Series B pronouns of Kropp (1964) are eliminated by this analysis.
4. In PuPlampu (1952) and in Kropp (1964, A.1.22.) it is

stated that wē can occur in either position, but this is probably not true of any mono-dialectal speaker.

5. See 6.1.1.11, fn 1.

6. Unless it is a back vowel and the consonant is labialized. This includes w in Krobo but not in Adã.

Thus Krobo wu-í → wí, but Adã wu-í → wúi.

7. Christaller (1875 pp.59-60). In Asante, only the length variant and not the -re- forms are used.

8. It is suggested in Stewart (1966(2),2.3), that Gã was influenced by proto-Tano, the common ancestor of Akan, Nzema and Bawule. Since ⁱⁿthe geographically nearest dialect of Akan, Akwapim, the length variant of the present tense marker is not usual, as it is in the geographically more distant Asante^(Ashanti), it seems likely that the borrowing, if it is a borrowing, occurred before these dialects had attained their present character.

9. pí has a restricted occurrence at vs in the first of two groups.

10. For previous use of the term "ingressive" see Christaller 1875 96 pg.61.

11. By Ansre (1966(2), 3.3.1.2.1.2, 3.3.1.2.1.3), particles aug and rep. All Ewe examples and information in this chapter are from this source.

Chapter 6

1. A similar assimilation takes place when the Command system is realized by -m̃ (5.2.2.6), thus
sum̃ 'love' → súu-m̃ 'love!'
2. The forms éfei, éfeifei are listed by Zimmerman (1856), but are now obsolescent. Concerning the suffix -i, see 6.1.1.25 below.
3. I am indebted for most of these examples to Mr. A.O. Kodwo-Mensah.
4. This example is from Apronti (1967, pg.121, 3.3.4).
5. See also Apronti (1967, 6.3.3.1).
6. In Ansre (1966) especially 3.3.1.2.1.2-3. The Ewe example given here is from that work.
7. Ansre cites as rare example (3.3.1.2.2.3) the clause
me nɔ-a mɔ zɔ-m' 'I used to walk'
nɔ is analyzed as a past tense particle, and zɔ as the only verb present. Yet -a is normally suffixed to verb stems, and nɔ is homophonous with a verb stem (3.3.1.2.1.1 fn 21). Such an example suggests that the Ewe construction may once have been closer to the Adangme type than it is at present.
8. As described in Ansre (1963). The examples are drawn from that paper.
9. Ansre 1966(1) and (2).

Chapter 7

1. See Chapter 1 fn 6.

Works Referred To:

- Accam, T.N., Adangme Vocabularies, Legon 1966.
- Ansre, G., The Tonal Structure of Ewe, Hartford, Connecticut, 1961.
- 'Reduplication in Ewe', J.A.L. Vol.2.No.2,1963.
- 'The 'Verbidl', a Caveat to Serial Verbs', J.W.A.L. Vol.3.No.1, 1966(1).
- The Grammatical Units of Ewe, Ph.D. Thesis, University of London, 1966(2).
- Apronti, E.O., A Phonetic and Phonological Study of the Nominal Piece in Adangme, Ph.D. Thesis, University of London, 1967.
- Armstrong, R.G., 'Yala (Ikom): a Terraced Level Language with Three Tones', J.W.A.L., Vol.4.No.1, 1968.
- Azu, N.A.A., 'Adangbe History Part I', G.C.R., Vol.2.No.2, 1926.
- 'Adangbe History Part II', G.C.R., Vol.3,1927.
- Bamgbose, A., A Grammar of Yoruba, Cambridge, 1966.
- Barbot, J., Description of the Coasts of North and South Guinea, London, 1746.
- Berry, J., The Pronunciation of Ga, Cambridge, 1951.
- Structural Affinities of the Volta River

- Languages, and their significance for linguistic classification, Ph.D. Thesis.
University of London, 1952.
- Bowdich, T.E., Mission from Cape Coast Castle to Ashantee,
London, 1819.
- Buck, C., A Comparative Grammar of Greek and Latin,
Chicago, 1948.
- Canu, G., 'Remarques sur Quelques Emprunts Lexicaux en
Mòre, J.W.A.L. Vol.5.No.1, 1968.
- Christaller, J.G., A Grammar of the Asante and Fante
Languages called Twi, Basel, 1875.
A Dictionary of the Asante and Fante
Language called Twi, 2nd edit.,
Basel, 1933.
- Cornevin, R., Histoire du Togo, Paris, 1962.
- Field, M.J., Social Organization of the Ga People, Accra
and London 1940.
- Frayzinger, Z., An Analysis of the Awutu Verb, M.A. Thesis,
University of Ghana, 1965.
- Greenberg, J.H., The Languages of Africa, Bloomington 1963.
- Guthrie, M., 'The Status of Radical Extensions in Bantu
Languages', J.A.L., Vol.1.No.3, 1962.

- Hoenigswald, H., Language Change and Linguistic Reconstruction, Chicago, 1960.
- Huber, H., The Krobo, The Anthropos Institute, 1963.
- Huddleston, R.D., 'Rank and Depth', Language Vol.41.No.4, 1965.
- Kropp, M.E., 'The Morphology of the Adangme Verb Complex',
J.A.L., Vol.3.No.1, 1964.
'The Morphology of the Gã Aspect System',
J.A.L., Vol.5.No.2, 1966.
'An Analysis of the Consonant System of Gã',
J.W.A.L., Vol.5.No.1, 1968.
- Ladefoged, P., A Phonetic Study of West African Languages,
Cambridge, 1964.
- Manoukian, M., The Akan and Ga-Adangme Peoples of the Gold Coast.
O.U.P. 1950.
- Meredith, H., An Account of the Gold Coast of Africa,
London 1812.
- Martinet, A., A Functional View of Language, O.U.P. London 1961
- Okunor, V., Tone in the Gã Verb, Legon 1967.
- Proppen, C., En nyttig Grammaticalsk Indledning til Tvende
Hidindtil gandske ubekjendte Sprog, Fanteisk
og Acraisk, Copenhagen, 1764.
- Puplampu, D., Dangme Munyu Tubo, MacMillan, 1952.

- Reindorf, C.C., The History of the Gold Coast and Asante,
2nd. edit. 1889, reprinted 1966.
- Revzin, I., trans. Owen and Ross, Models of Language,
London 1966.
- Schachter, P., 'Phonemic Similarity in Tonemic Analysis,
with Notes on the Tone System of Akwapim
Twi', Language Vol.37, 1961.
- Sprigge, R.G.S., Eweland's Adangbe, unpublished manuscript.
- Stewart, J.M., Comparative African Wordlists No.1,
Awutu, Larteh, Nkonya and Krachi,
Legon 1966 (1).
'Akan History: Some Linguistic Evidence',
G.N.Q. 9, November 1966 (2).
'A Note on Akan-Centred Linguistic
Acculturation', Research Review Vol.3.
part 2, Institute of African Studies,
University of Ghana, 1967.
- Stewart, J.M., with
Schachter and Welmers, The Typology of the Twi Tone System,
Legon.
- Welmers, W.E., 'Tonemics, Morphotonemics and Tonal Analysis',
General Linguistics, 4, 1959.

- Westermann, D., transl. A.L. Bickford-Smith,
A Study of the Ewe Language, London 1930.
- Westermann, D., and
 Bryan, M.A., The Languages of West Africa, O.U.P.
 London, 1952.
- Wilkie, M.B., Ga Grammar Notes and Exercises, O.U.P.
 London 1930.
- Zimmerman, J., A grammatical sketch of the Akra-or-Gã-
language, with some specimens of it from the
mouth of the natives, and a vocabulary of the
sanw, with an appendix on the Adarime dialect.
 2 vols. Stuttgart, 1858.

- O.U.P. Oxford University Press
- G.C.R. Gold Coast Review
- G.N.Q. Ghana Notes and Queries
- J.A.L. Journal of African Languages
- J.W.A.L. Journal of West African Languages