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Studies in the grammar of Abbey

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UMI

TO MY FATHER

" jalɛgoJɛ amû Ñje ši kolo ə "

VITAE

On March 10, 1954, Gbéry Eddy Aimé was born in Yapo-Gare (Agboville), Republic of the Ivory Coast, as the first of four children of Essoh Gbéry Jerome and his wife Niangoran Apy Céline.

After graduating from "Lycée Moderne d'Agboville," he entered in 1974 the National University of the Ivory Coast where he studied Modern Literature. In 1977, he received a Bachelor degree in Modern Literature, with General Linguistics as Minor.

The following year (1978), while working as an adult literacy regional administrator for the "L'Office de la Promotion Ruraie" (Ivory Coast Ministry of Agriculture), he completed a Post-Bachelor Certificate in Psycho- and Sociolinguistics, and a Certificate in Communication Sciences.

In 1979, he was awarded under the sponsorship of "L'Institut de Linguistique Appliquée" (National University of the Ivory Coast) a full tuition scholarship for Higher Studies by the Ministry of Scientific Research of the Ivory Coast Government.

Upon his arrival in the U.S.A. in 1979, he completed an intensive English program at Georgetown University (Washington D.C.), and at the Summer Institute of Linguistics (Dallas, Texas).

In September 1980, he began graduate studies in the Department of Foreign Languages, Literature, and Linguistics at the University of Rochester (Rochester, New York). He received a Master of Arts degree in Linguistics in February 1982. On January 12, 1984, he passed the Doctoral Qualification Examination. During the years 1984 and 1985, he worked closely with Professor Dean Obrecht in reading and research in Adult Literacy. Since September 1986 he worked on the present dissertation with professor Ronald Harrington who became his new advisor upon Professor Obrecht's retirement.

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ABSTRACT

This dissertation characterizes major aspects of the grammar of Abbey (a Kwa language the Ivory Coast), namely, Phonology, Morphology and Syntax.

Following the introductory chapter that defines the aims and the theoretical model that governs the study, Chapter I presents a segmental phonology of Abbey. Within Stanley's (1967) framework, an examination of the morpheme structure conditions for lexical and grammatical morphemes , phonological rules, and an overview of Abbey tonology is undertaken. The chapter argues that it is futile to posit nasalized vowels as systematic phonemic segments in Abbey, and that contour tones are best represented as composite level tones rather than unitary tonal elements.

Chapter II qualifies Halle's (1973) three-component Morphological model. Furthermore, the chapter discusses four word-formation rules, namely, compound-noun formation, "gerunds," agent-nouns, and reduplication. It is argued that a transformational account of "gerund" nominals cannot be sustained outside Serial Verb Constructions. A lexicalist approach which supplies each entry of the Morpheme List with paradigmatic and syntagmatic information makes a superior account of "gerunds" formation in Abbey.

Agent-noun formation and morpheme root reduplication, respectively, qualifies the proposal that word-formation rules should have access to the Dictionary and that reduplication rules are integral parts of Abbey word formation rules rather than part of phonological rules.

Chapter III examines Serial Verb Constructions (SVCs) in Abbey. The constructions are a surface sentence containing two or more verbs without any connective element between them.

Eddy di džumã̂ lɔ̃ ši
Eddy did work gave father
"Eddy worked for his father"

The most controversial aspects of the verbal constructions are the characterization of the nature of its major constituents and its syntactic source. Transformational analysis of the verbal construction is made possible by deletion under identity (Equi-NP deletion), coordinate reduction, and movement rules.In light of a critical review of the literature on SVCs in African languages, the study argues that a transformational derivation of verb serialization from underlying multiple sentences (coordinate and embedded sentences) is not motivated in African languages in general and Abbey in particular. A non-transformational approach based on a rewriting rule that allows a single simple sentence with a complex predicate (directly dominated by the [S] node) makes a better and simpler account of the phenomenon.

Chapter IV summarizes each chapter of the study and presents some concluding observations.

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LIST of CHARTS

CONVENTIONS

A- Tone marking

´ :	High tone
	Mid tone (No marking)
` :	Low tone
ˇ :	Low - rising
^ :	High - falling

B- Transcription

ɔ	ʊ	
ɣ	g̱	
c	tš	
j	dž	
J	J	
y	j	
	ɛ̃	nasalized vowel

C- Abbreviations

[ ] :	Phonetic transcription
/ / :	Phonemic transcription
---> :	Rewriting
* :	Ungrammatical sentence
(???) :	Partially acceptable sentence

SCMs:	Serial Construction Morphemes
SVCs:	Serial Verb Constructions
GM :	Grammatical Morpheme
Nom. P :	Nominal prefix
Acc :	Accomplished
A-noun:	Agent noun
Hab :	Habituative
Pro :	Progressive
Imp :	Imperative
Inj :	Injunctive
Cond :	Conditional
Neg :	Negative
Det::	Determiner
WFR:	Word Formation Rule
Red :	Reduplication (morphological)
RED:	Reduplication (phonological)

INTRODUCTION

0.1 General Aims of the Study

Within the context of Transformational Generative Grammar, the following is an attempt to characterize major aspects of the grammar of Abbey, one of the Kwa subgroup of the Niger-Congo language family.[1]

Since this is the first in-depth study of the language, its major syntactic, semantic, and phonological aspects will be examined, within a particular theoretical framework, in order to provide both a basis for assessing the general structure of the language, and a permanent record which will provide a reference for any future study of specific details.

0.2 Abbey

Greenberg (1966) classifies Abbey as a member of the Kwa phylum; it includes four regional dialects which are mutually intelligible: Abbey-Khos, Abbey-vé, Abbey-Tiofo, and Abbey-Morié.[2] The present study is based on the Abbey-Tiofo dialect as it is spoken in the Yapo region of Agboville (Ivory Coast).

Three important characteristics of Abbey, which are typical of Kwa languages, are Tone, Vowel Harmony, and Serial Verb Constructions.

a-Tone: Three level tones operate lexically as well as grammatically:

[dɔ]	'gorilla'	[mə́ šì]	'my father'
[dɔ̀]	'a trap'	[mə̀ šì]	'your father'
[dɔ́]	'enough'		

b- Vowel Harmony: Vowels harmonize in tenseness within simple morpheme roots; vowels are either tense or lax:

[jalɛ] 'poverty'
[kʊba] 'fish-hook'
[teñi] 'door'
[loru] 'odor'

c-Serial Verb Constructions (SVCs): Serial Verb Constructions are surface phenomena whereby two or more verbs, standing next to each other without connective elements, express action or a state of being that can be captured by a single verb in languages such as English.

Following Greenberg (1961), general facts about grammatical phenomena in Abbey can be described as follows:

With regard to the basic order typology, the constituents of a simple declarative sentence are subject, verb, and object. Abbey then, is a SVO (Type II) language.

Apy ji nak^{w}atɩ
Apy went school
'Apy went to school.'

mə ve nak^{w}a
I bought book
'I bought a book.'

The order of nominals and nominal modifiers is that of modified-modifier:

jikpenə a Ñjenə [lɔ mə šiga]
man-Spe. came here gave me money
'The man who came here [gave me money].'

jikpe gbənə [a Ñjenə]
man big Spe. came here
'The big man [who came here].'

Within modifiers, the relative order is adjective-Numeral-Specifier(Spe)/Demonstrative:

Mbu elegbə añɔ̃nə
yam big two-Spe
'The two big yams'

Mbu Nten ɛ̂
yam this
'This yam'

0.3 Organization into Chapters

The organization into chapters of the present study is as follows: Chapter One examines the structure of morphemes and phonological rules in Abbey: it attempts to define the binary phonological features necessary to distinguish all sound segments, as well as the redundancies that result from the combination of phonological features within individual segments; it also attempts to characterize the constraints that are imposed on the combination of segments within morpheme roots. Chapter One concludes with an outline of phonological rules, tone patterns, and tone rules.

Chapter Two deals with the survey of word-formation processes. Two main processes characterize word-formation in Abbey: Agglutinative processes for the formation of compound nouns and gerunds, and derivational processes for the formation of agent nouns and reduplication.

Chapter Three examines verb serialization in Abbey. Serial Verb Construction (SVC) is a surface phenomenon observed in Abbey and other African languages. The construction is a verbal combination made up of a string of two or more phrases which form a single internally coherent structure as illustrated below:

Yavo dži Mpu bə lɔ Alate
Yavo cut food took gave Alate
'Yavo served food to Alate.'

Eddy a gɔ alakanə šie oro
Eddy came lifted trunk put head
'Eddy came to carry the trunk on his head.'

mə tu Ovo ji ve saka
I sent Ovo went bought rice
'I sent Ovo to buy rice.'

One view of the nature of SVCs is that the major components of the verbal combination have the status of a verb. This view is supported by Westermann (1930) and Ward (1952) among others. Westermann, for example, points to agreement in tense and mood among serial verbs as proof of their "verbness." However, Gilbert Ansre (1966) rejects that view on the ground that tense agreement is not always observed in SVCs. Therefore, some major constituents of the constructions might not be genuine verbs but rather "verbids."

Another issue up for debate is whether all SVCs should be derived from a convergence of different underlying structures, or whether they should be derived from a single underlying sentence. Since most theoretical frameworks hold the view that rules for rewriting simple sentences should allow only one verb per verb phrase, SVCs have been thought to derive from underlying embedded sentences or from coordinate sentences. The multiple sentence analysis of SVCs better accounts for the relationship between verbs, subjects, and objects in terms of reference, that is, the noun phrase a verb refers to. However, the multiple sentence analysis does present some problems. The transformational rules used to derive surface SVCs from coordinate or embedded sentences are not meaning preserving, e.g., "conjunction reduction" produces ungrammatical sentences: there are some serial constructions that do not have corresponding connective forms; Equi-NP deletion (deletion under identity) makes it possible for a single SVC to be derived either from coordinate sentences or from embedded sentences. The "precarious" nature of the transformational approach to SVCs necessitates a non-transfoemational analysis of the phenomenon.

The underlying representation of SVCs as it stands, requires more investigation, the result of which may have have far-reaching implication for the study as a whole, and more particularly for the lexical representation of the phenomenon, e.g., should the major components of a SVC be listed in the lexicon as separate verbs or as concatenations of verbs with idiomatic meaning.

The study concludes with Chapter IV which deals with the summary of the issues discussed in prevoius Chapters.

0.4 Theoretical Orientation

The theoretical framework within which the descriptive analysis of Abbey is pursued is that of Transformational Generative Grammar (TGG) as outlined by Noam Chomsky in Aspects of the Theory of Syntax (1965). While the theoretical framework of this investigation is based primarily on the 1965 model, recent revisions and reformulation of that model are taken into account.

0.4.1 Base Component

The Base here has a more reduced function than was proposed earlier.[3] It is composed only of the categorial rules, i.e., the subcategorization rules are eliminated from the Base Component and assigned to the Lexicon (cf. Chomsky, 1965, pp.120). The rules of the Base Component establishe the primary syntactic semantic relationships that characterize the deep structure of sentences in a given language. The Base Component rules are branching rules for rewriting similar to: S---> NP Predicate Phrase.

0.4.2 The Lexicon

Part of Chomsky's original Base Component has been transferred to the Lexicon. The Lexicon consists of the subcategorization rules, which function as lexical redundancy rules, and sets of lexical entries. The lexical items are inserted in preterminal strings derived from the Base Component. The Lexicon characterizes the individual properties of lexical items that are inserted in specified positions in Base Phrase Markers; i.e., the Lexicon Component contains all information relevant to the structural properties (semantic, syntactic, and phonetic specifications) of lexical items.

0.4.3 The Transformational Component

One of the major functions of the transformational rules is to map an abstract deep structure which expresses the content of a sentence onto a fairly concrete surface structure. This function either adds features to the matrices resulting from the operation of the Lexicon, or rearranges certain nodes in the derivation through the process of addition and/or deletion.

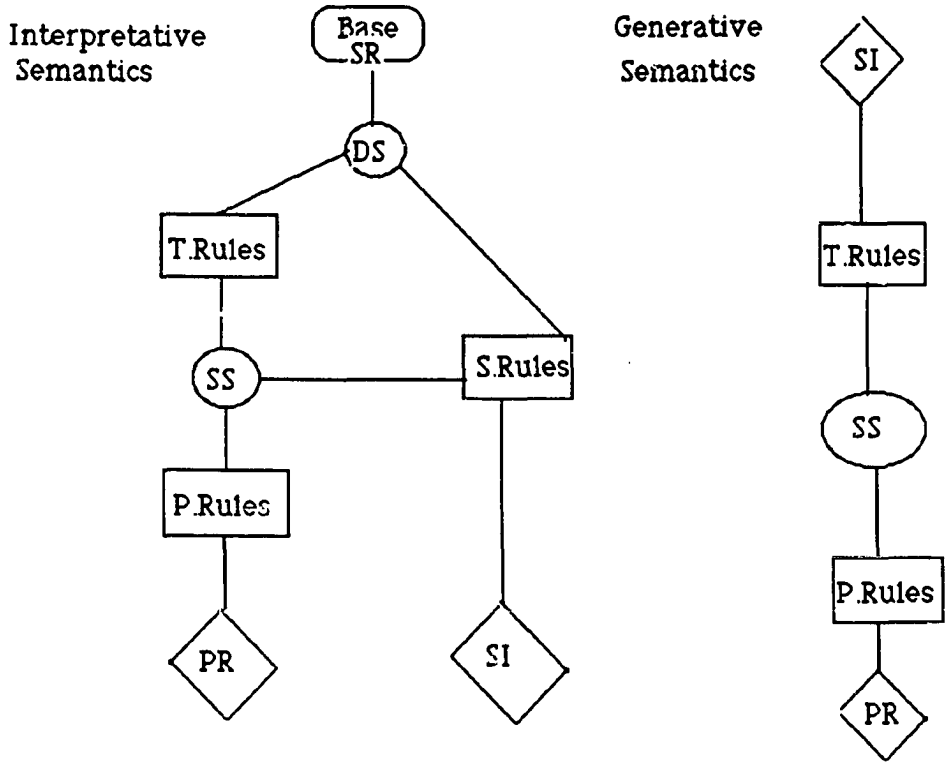
There is a difference of opinion among transformationalists as to the correct interpretation of the Transformational Component. Katz and Postal (1964) and other linguists have proposed that, except for rules pertaining to stylistic variation, all transformational rules are obligatory and meaning-preserving. This hypothesis implies that relevant information for semantic interpretation is in the Deep Structure. Therefore, sentences with the same underlying representation should have the same meaning. Barbara Partee (1971), among other linguists, has argued against the Katz-Postal hypothesis. She contends that there are transformational rules that affect meaning change. The Transformational Component, as originally defined, needed some revisions.

Chomsky (1972) and other so-called interpretative semanticists who postulate a syntactically based solution (syntax is thought to be autonomous) draw a distinction between the deepest syntactic analysis of a sentence and

its semantic interpretation. They hold the view that there are semantic rules that interpret the Deep Structure of a sentence to produce the semantic interpretation of that sentence; e.g., it is in the Deep Structure Phrase-Marker that the semantically relevant notion of "subject, object, and predicate" are defined and selection restrictions accounted for.

Lakoff (1971) and other generative semanticists who postulate a semantic solution argue that there is no need to postulate any distinction between the Deep Structure of a sentence and its semantic interpretation. The Semantic Component of the Katz-Postal hypothesis is eliminated, rendering semantic representation as the initial representation in the process of sentence generation.

The two hypotheses (interpretative semantics and of generative semantics) are diagrammatically represented as follows (cf. Pieter Seuren (1972) pp.251, and Lyons (1977), pp. 412-413):[4]



SR: Semantic Representation
DS: Deep Sructure
SS: Surface Structure
PR: Phonetic Representation
SI: Semantic Interpretation
T. Rules: Transformational Rules
S. Rules: Semantic Rules
P. Rules: Phonological Rules

Chart 1: Interpretative/ Generative Semantics

0.4.4 Phonological Component

Following the application of the transformational rules, morphemes are inserted into matrices that have been transformationally derived by the transformational Component. The rules of the phonological Component acts upon these matrices to change abstract forms into their actual phonetic forms.

In Abbey, morpheme roots are agglutinated to form compound nouns:

Nouns--->/Root + (Root)^{n}/
+Compound

1- Nde + duko---> Ndeduko ' banana paste '
banana paste

2- akpi + akɔ---> akpiakɔ ---> akpʲakɔ ' nut shell '
nut shell

As the formation of the item in (2) indicates, the agglutination of akpi and akɔ results in the formation of a vowel cluster, the first of which is [+high,-back]. In Abbey, such a vowel cluster is the basis for a preceding [-syllabic] segment to be palatalized. Thus, akpi + akɔ---> [akpʲakɔ]. From this point of view, the rules for the formation of the compound noun akpʲakɔ are part of the operation that produce phonetic representations in Abbey. In accord with suggestions made by Halle (1973), the type of rule described above will not be part of the Phonological Component, but rather part of an autonomous Morphological Component. The Morphological Component includes the redundancy rules for word-formation, while the Phonological Component includes rules that map abstract representations onto actual phonetic forms.

The necessity for an autonomous Morphological Component becomes clear when considering the process of Reduplication in Abbey. Reduplication is a process whereby a verb root is copied onto a dummy

symbol [Red] to coin new verbs, e.g., the verb root /ve/ 'to buy' is reduplicated onto [Red] to derive [veve].

ve--->/ve +Red/---> [veve] ' to buy many items '

The derivation of veve does not, strictly speaking, involve a change of level of representation (from systematic phonemic level to systematic phonetic level). It is rather a part of regular formalizable process of word-formation that constitutes a native speaker's intuitive knowledge of his language. Such rules, therefore, should be accounted for in their proper context; a Morphological Component.

0.5 Why the Transformational Generative Model ?

Judged by its aims, Transformational Generative Grammar is appropriate for this study. The Generative theory not only enables the analyst to classify and describe utterances, it also captures regularities, thus making predictions on those utterances. In addition, the integrative nature of Transformational Generative Grammar allows the discussion of the syntax, semantics, morphology, and phonology of a language within a single theory.

0.6 Conclusion

There are two reasons for the study of Abbey. First, it is basically, an uninvestigated language. The need to analyze any uninvestigated language no matter how many people speak it or its geographical location should be felt as an urgency. In the case of Abbey, this urgency is overdue. Due to past colonial policies (still perpetuated in one way or another) the language is steadily being influenced by French and other emerging local languages

such as Baoulé. Abbey and other Sub-Saharian ianguages have a number of linguistic features, the investigation of which may help advance the study of linguistics. One such feature, Serial Verb Construction, may, once investigated, further understanding of the internal process of sentence generation.

FOOTNOTES

1- This investigation is based primarily on material that I have provided as a native Abbey speaker, as well as taped material gathered from N'cho N'takpé Pierre (also a native speaker of Abbey). Additional material was obtained from a sketch of the grammar of Abbey proposed by N'Gessan Kouadio (1980) in Atlas des Langues Kwa.

2- Kwa, a subgroup of the Niger-Congo language family includes more than 50 languages. The Kwa languages are spoken in the tropical forest belt of West Africa, from Liberia through the Ivory Coast to Nigeria.
The latest available statistics (1980) on Kwa languages spoken in the Ivory Coast, cited in Atlas des Langues Kwa lists the following languages and number of speakers.

Abbey	73,851	Avikam	8,447
Abidji	26,695	Baoulé	1.226,337
Abouré	31,873	Ebrié	52,810
Abron	77,536	Ega	67
Adioukrou	54,617	Eotilé	3,345
Agni	331,966	Krobou	5,458
Aïzi	9,065	Mbatto	13,850
Alladian	12,575	Nzema	31,662
Attié	221,395		

3- The first version of the Base Component proposed by Chomsky is more complex than the second one. It can be schematized as follows:

I -Phrase- Structure rules . (Base rules)
The first definition of the Base has two types of rewriting rules;
A- Branching rules (with no complex symbols). These rules are of he form: A---> X where A is a single category symbol. and X is a string of category symbols.
B- Subcategorization rules (with complex symbols). These rules are of the form : A---> CS/Z_W.
Subcategorization rules rewrite category symbols as sets of syntactic features.
Subcategorization rules are either:
1- context free rules
2- or context sensitive rules .
When they are context-sensitive, Subcategorization rules are further subdivided into:

a-Strict subcategorization rules. They are usually restricted to local transformations.
b- Selectional rules.

II - Lexicon: Set of lexical entries with binary features.
This subcomponent of the Base functions with rules governing insertion of lexical formative.

4- We are not making a judgment here as to which Hypothesis is wrong or right. But it should be nevertheless pointed out that, in his new Extended Standard Theory, Chomsky (1972) has abandoned some of his previous interpretative semanticist view. He now accepts the possibility that the semantic interpretation of a sentence is to be determined jointly by its Deep Structure and its Surface Structure.

In addition, for languages allowing Serial Verb Constructions (such as Abbey) the Generative Semantic hypothesis provides a useful insight in dealing with lexical decomposition (cf. George Issac, 1975). If lexical entries such as "kill" and" apologize" can be substituted for by underlying structures containing, respectively, the sense components "DO CAUSE BECOME NOT ALIVE", and " REQUEST FORGIVE" (as is proposed by the generative semanticist Mc Cawley (1974)), then one would expect conversely that the serializing verbs [take come] (e.g., the Abbey serial verbs [bɔ̀ a] 'take come') to be substituted for by the verb "BRING". Note that for reasons that are not discussed in this introductory chapter, we have pursued a non-transformational approach to Serial Verb Constructions.

CHAPTER I SEGMENTAL PHONOLOGY

1.0 INTRODUCTION

The present description of the phonological system of Abbey is based on an extended and modified version of Generative Phonology as presented by Morris Halle and by Noam Chomsky (1968) in The Sound Pattern of English. The extensions and modifications, whose theoretical justifications will not be discussed here, are based on suggestions made by Richard Stanley (1967) in Redundancy Rules in Phonology.

1.0.1 STANLEY'S MODEL

Many linguists agree that the phonological component of a Generative Grammar operates on the surface structure of utterances to convert abstract representations into their systematic phonetic forms. In terms of a phonological analysis this assertion has a two-fold implication. First, it implies a precise and economical specification of the phonological and phonetic aspects of the utterances of the language under study. The phonological analysis of Abbey to be undertaken would be, maximally economical in terms of the distinctive features needed to specify segments, the segment units that characterize Abbey's morphemes, and the rules needed to state phonological generalizations about the language.
Second, the above assertion implies that the surface representation of sentences must include all syntactic features that are relevant to the way the sentences are pronounced, i.e, because of structural differences, it will be pertinent in the phonological analysis of Abbey to distinguish between lexical and grammatical morphemes.

Following Stanley's model, the description of the phonological system of Abbey is structured into two major components. First, the description characterizes the morpheme structure (MS) conditions, that is, the phonological redundancies in terms of the distinctive features that a phonemic segment encloses and in terms of the sequential constraints that are imposed on segments within lexical and grammatical morphemes.

Second, the description specifies the phonological rules, that is, the set of rules that convert abstract representations at the systematic phonemic level into their actual phonetic representations, as well as the tone rules and tone patterns that govern the Tonology of Abbey.

1.0.1.1 Morpheme Structure Conditions

Stanley has replaced the old Morpheme Structure (MS) rules proposed by Morris Halle (1959) in The Sound Pattern Of Russian with the morpheme structure (MS) conditions. Unlike Morpheme structure rules that treat mainly sequential redundancies, the morpheme structure conditions are a set of unordered conditions that state redundancies in the distinctive feature composition of individual segments as well as sequences of segments. These redundancies are captured by means of Conditions... "If-Then" Conditions, and "Positive" Conditions. (Stanley proposes additional "Negative" Conditions that we have found no need for in our description.)

a- If-Then Conditions

The "If-Then Conditions" predict the redundant feature values of segments and sequences of segments on the basis of a structural description, e.g., based on the fact that there are no phonemic consonants that are [+syllabic], a segment that is marked [+syllabic] can be predicted as redundantly [- consonantal].

Sgsc If: [+syllabic]
⇓
Then: [-consonantal]

b- Positive Conditions

"Positive Conditions" make straightforward statements about morpheme structures. For instance the structure /C (V) V (C)/ (which is the structure for possible syllables within lexical morphemes in Abbey) can be accounted for by the following Positive Condition:

PC: ⌈ C (V) V (C) ⌉
⌊-syll +syll +syll +con ⌋

which states that matrices which are part of the structure /C(V)V(C)/, e.g., /CVV/, /CVC/ are acceptable syllable structures for lexical morphemes, while other syllable structures; those beginning with [+syllabic] segment: /VCV/, /VVC/ should be rejected. " Positive" Conditions then, are statement about only permissible structures.

1.0.1.2 Phonological Rules

Unlike Morpheme Structure Conditions which are mainly used to fill blanks in distinctive feature matrices at the systematic phonemic level (See Stanley (1967) for details), the phonological rules (P-rules) are a set of rules which map representations of sentences at the systematic phonemic level onto representations at the systematic phonetic level.
To that end, phonological rules may be used:
a- to change the values of features.
A phonological rule may change the [+] value of a feature into [-] or vice versa. In Abbey, for example, a [-labial] consonant becomes

[+labial] when it precedes a vowel cluster with an initial [+round] vowel.

$$\text{P-rule} \quad \begin{bmatrix} +\text{cons} \\ -\text{labial} \end{bmatrix} \text{---> [+labial] /\_\_} \begin{bmatrix} +\text{syll} \quad +\text{syll} \\ +\text{round} \end{bmatrix}$$

b-to add or delete whole segments.

Vowels are deleted in the environment of following [+sonorant] consonants.

$$\text{P-rule} \quad [+\text{syll}] \text{--> Ø /\_\_} \begin{bmatrix} +\text{cons} \\ +\text{son} \end{bmatrix}$$

The P-rules are linearly ordered (labialization is ordered before nasalization), and are cyclical: P-rules are allowed to apply in a repeated order way when conditions are met.

Phonological rules will be formalized as follows:

$$A \text{---> } B \text{ / } X \text{ \_\_\_ } Y$$

Where : 1- A, B, X, Y are distinctive matrices.
2- A or B (but not both) may be null.
3- X or Y may be null, or they may be both absent when the rule applies in a non sensitive context, i.e., a context-free rule.

1.1 Organization of the Chapter

The chapter on segmental phonology is organized into three sections.The first section is an attempt to characterize the structures of morphemes in Abbey. This section will examine respectively:

1- The binary phonological features necessary to distinguish all sound segments in Abbey;

2- The contrasting segments; and
3- The redundancies that result from the combinations of phonological features:
   a- redundancies within individual segments: The Segment Structure Conditions (Sgsc).
   b- redundancies within individual lexical or grammatical morphemes as the result of sequential constraints on segments: The Sequential Structure Conditions (Sqsc).

The second section will examine some general phonological rules in Abbey.

The third section is a survey of tone patterns and tone rules.

In general, the formalism used in this description is patterned after that developed by Schachter and Fromkin (1968) in Phonology of Akan.

1.2 Phonological Features

Each morpheme at the systematic phonemic level that serves as input to phonological rules is represented by a systematic phonemic matrix in which each row corresponds to a distinctive feature and each column corresponds to a systematic phoneme of the morpheme. Every systematic phoneme is assigned a distinctive feature value (+) or (-) in the cells of the systematic phonemic matrix. When a segment is marked positive ([+]) for a feature, the negative ([-]) value of that feature is, by definition, absent in the quality stated, e.g., a segment cannot be assigned at the same time the features [+high] and [-high]. As suggested by Stanley, every matrix will be fully specified.That is, the model we are adopting does not allow redundant features to be left blank or to be filled by the symbol [Ø]. (We have nevertheless included in this study a chart that partially specifies phonemic segments for comparison.)

Twelve distinctive binary features [cons, syll, son, ant, cor, high, back, nasal, voiced, cont, low, tense, and tone] are needed to specify all 31 phonemic segments. Two additional non-distinctive features are introduced by phonological rules. They are round and palatal.

1.2.1 Segmental Features

1.2.1.1 Distinctive Segmental Features

The phonological features used for this description are essentially those proposed by Chomsky and Halle in Sound Pattern of English (1968). We have altered some of these features without making any theoretical claim. The phonological features are as follows:

±Consonantal: [+consonantal] are sounds produced with a sustained vocal tract constriction. This feature distinguishes obstruents (true consonants), nasals, and liquids from glides and vowels.

±Syllabic : Syllabic sounds are those that constitute syllabic peaks. In Abbey, only vowels will be marked positive for the feature syllabic. [-syllabic] include the glides and the consonants. There are, however, some nominal prefixes that are, realized at the surface level as syllabic nasals; they are represented at the phonemic level as
[+ consonantal, - syllabic].
(c.f. Nominal Prefix +/n-/+.)

±Sonorant: Sonorants are sounds produced with vocal cavity configuration in which spontaneous voicing is possible. The sonorants comprise the vowels, the glides,

the nasal consonants, and the liquids. The obstruents (stops and fricatives) are [-sonorant].

±Anterior : As defined by Chomsky and Halle (1968) , anterior sounds are those produced (articulatorily) with a stricture in front of the palato-alveolar area of the mouth. In Abbey, labial (including the labio-velar /kp, gb/) and alveolar consonants are marked positive for the feature [+anterior] . Palatal and velar consonants as well as vowels are [-anterior].

±Coronal: If one assumes that coronal sounds are those produced with the blade of the tongue raised from its neutral position, and if one regards the tip of the tongue as part of the blade of the tongue, then the front vowels /i,ɩ,e,ɛ/ should be marked [+ coronal]. The other [+coronal] segments include the alveolar consonants. [-coronal] comprises the labials, the palatals, the velars, the glides, and the non-front vowels /a,ə, u, ʊ, o, ɔ /.

±High: Sounds produced by raising the body of the tongue toward the palate. This feature is marked positive (+) for palatals, and velar consonants, high vowels, and the glides /w/ and /j/.

±Low: [+ low] is restricted to the vowels /ə,a/, and the glide /h/.

±Back: [+back] includes the velar consonants /k, g, kp, gb/, the glides /w/ and the back vowels /u,ʊ,o,ɔ/.

±Nasal: [+nasal] are sounds produced with the air passing outward hrough the nose. At the systematic phonemic level this feature distinguishes the nasal consonants /m, n, ñ/ from other segments. Nasalized vowels are not represented at the systematic phonemic level.

±Voiced: Sounds produced with (periodic) vibration of the vocal cords. [+voiced] includes the voiced consonants, the glides /w, j/ and the vowels.

±Continuant: [+continuant] segments are sounds produced with a free flow of air stream. Traditionally both liquids /l / and /r/ are classified as [+ continuant] . But in Abbey the free flow of the air is more accentuated in /r/ than in /l/ which exhibits a noticeable blockage. To capture this difference, we have decided to mark /l/ as [-continuant]. This distinction on the other hand, allows us to economize the feature of "laterality" from the number of distinctive features necessary to contrast all Abbey phonemes. The fricatives /f, v, s, g/, the liquid /r/, the glides, and vowels are [+continuant]. (For more details about the characterization of the consonants /l/ and /r/ with regard to feature [continuant], cf.Chomsky and Halle (1968) , pp. 318.)

±Tense: [+tense] is not used as defined by Chomsky and Halle (1968). The feature is used here as a cover for the distinctive feature that has been called variably "covered" by Chomsky and Halle (1968), "creaky" by Berry (1957) or "advanced tongue root" (ATR) by Stewart (1967). [+tense] then, are sounds produced with the tongue root pushed forward. [-tense] (or lax) sounds, on the other

hand, do not involve a forward movement of the tongue root. [+tense] includes the vowels /i, e, ə, u, o/, and the glide /h/. [-tense] includes the vowels/ ɩ, ɛ, a, ʊ, ɔ/, and the consonants.

± Tone: At the systematic phonemic level, tone is distinctive only for vowels. Abbey has three phonemic tones : High, Mid, and Low. The contrastive nature of tone, and its lexical significance are both stressed by the lexical and grammatical functions of tone in Abbey.

étši ' rope '
étší ' yesterday '
ètši ' tomorrow '

mə́ nɔ̃Jɛ́ 'my brother'
mə̀ nɔ̃Jɛ́ 'your brother'

1.2.1.2 Non-Distinctive Segmental Features

Non-distinctive segmental features are introduced by phonological rules.

± Round: [+round] Sounds produced with a rounding of the labial orifice. [+round] comprises back vowels, the glide /w/ and labialized segments. Contrary to Chomsky and Halle, this study defines /w/ as [+round]. An important reason for this change is that [w] undergoes the same surface restrictions usually associated with [+round]

segments in Abbey, e.g., [+round] consonants do not occur in the environment of [+high] front vowels.

±Palatal: [+palatal] are sounds produced with the tongue raised toward the hard palate. [+Palatal] includes the front vowels /i,ɪ, e, ɛ/ (-Low,-Back), the glide /j/, and the consonants /c, J, ñ/, and palatalized segments..

1.3 Non-Segmental Features

[=]	Syllable Boundary	[- Segment, +SB, [-WB, -FB]]
[+]	Formative Boundary	[- Segment, +FB, [-WB, +SB]]
[#]	Word Boundary	[- Segment, +WB, [+FB, +SB]]

The boundaries are hierarchical, e.g., a word boundary [+WB] implies a formative boundary and a syllable boundary [+FB,+SB], a formative boundary [+FB] dominates a syllable boundary [+SB], while a syllable boundary includes none of the above.

1.4 Contrasting Segments

-Syll	+Cons	-Son	obstruents (stops and fricatives) p,b,f,v,kp,gb,t,d,s,c,J,k, g
		+Son	liquid and nasal consonants l,r,m,n,ñ
	-Cons		glides w,j,h
+Syll			vowels i, ɪ,e, ɛ ,ə,a,u, ʊ,o, ɔ

Chart 2 : Contrasting Segments

Thirty one contrasting systematic phonemes are needed to differentiate all possible morphemes in Abbey:

13 true consonants: [+cons] /p, b, f,v, kp, gb, t, d, s ,c, J, k, g/
[-son]

2 liquids and 3 nasal consonants : [+cons] /l, r, m, n, ñ/
[+son]

3 glides [-cons] /w, j, h/, and
[-syll]

10 vowels [+syllabic] which are further divided into tense and lax.

Tense vowels : /i,e,ə,o,u/
Lax vowels : /ɪ,ɛ,a,ɔ,ʊ/

1.5 Morpheme Structure Conditions

The following is an attempt to characterize the structure of morphemes in Abbey. Morpheme Structure Conditions state the redundancies in the combination of features within an individual segment as well as the constraints on the combination of segments within morpheme roots.

1.5.1 Segment Structure Conditions

The division of the Segment Structure Conditions (Sgsc) into three sections [vowels, glides, and consonants] does not make any theoretical claim. In fact, it may happen that a specification of some redundancies within one of these categories can apply to another (e.g., incompatibility between [+high] and [+low] applies to vowels as well as to glides). We have nevertheless decided to separate them for the purpose of clarity.

Sgsc 1 to Sgsc 18 specify redundancies within individual segments. These redundancies are exclusively stated in "If-Then" Conditions.

1.5.1.1 Segment Structure Conditions for vowels

	- Back	+Back	-Back	+ Back
+ High	i	u	ɪ	ʊ
-High -Low	e	o	ɛ	ɔ
+ Low	ə		a	
	+ Tense		- Tense	

Chart 3: Systematic Phonemic Vowels

Sgsc 1- If : [+ syll]

⇓

Then: [- cons]
[- nas]
[+voiced]
[+son]
[-ant]
[+ cont]
[+ tone]

Sgsc 1- states that:

a- Vowels are redundantly [- consonantal]. That is, there are no syllabic consonants at the systematic phonemic level. (Nominal prefixes

produced as syllabic nasal at the systematic phonetic level are represented at the phonemic level as /n/ .)

b- There are no nasalized vowels at the systematic phonemic level.
c- There are no voiceless vowels in Abbey; all vowels are [+voiced].
d- Sgsc 1 furthermore states that vowels are redundantly [+continuant], [+sonorant], and [-anterior].
e- Only [+ syllabic] segments bear tone.

Sgsc- 2

$$\text{If: } \begin{bmatrix} +\text{syll} \\ +\text{low} \end{bmatrix} \Downarrow \text{Then: } \begin{bmatrix} -\text{cor} \\ -\text{back} \\ -\text{high} \end{bmatrix}$$

This condition states that the vowels /ə, a/, which are [+low], are redundantly [-cor, -back]. Sgsc 2 also states that vowels which are [+low] cannot at the same time be [+high].

Sgsc- 3

$$\text{If: } \begin{bmatrix} +\text{syll} \\ -\text{low} \\ \alpha\,\text{cor} \end{bmatrix} \Downarrow \text{Then: } [\ -\alpha\,\text{back}\ ]$$

The vowels [i, ɪ, e, ɛ] which are [-low,+ cor] are redundantly [-back]. And the vowels [u, ʊ, o, ɔ] ([-low,- cor]) are redundantly [+back].

The notation [-α] signifies the opposite value of the feature that is assigned to [α]. (c.f. L. Hyman (1975), pp. 121-122)

Sgsc -4

$$\text{If: } \begin{bmatrix} +\text{syll} \\ +\text{high} \end{bmatrix} \Rightarrow \text{Then: } [\ -\text{low}\ ]$$

Incompatibility between [+high] and [+low]. A segment cannot be [+high] and [+ low]. Sgsc 4 is necessary in addition to Sgsc 2 to state the incompatibility between [+high] and [-low] because the Alpha notation [α] cannot be utilized to coalese Sgsc 2 and 4 : there are vowels which are [-high] and [-low]. Only one Sgsc suffices to express the same condition for glides since there is no glide that is [-high] and [-low].

Redundant Features

Sgsc 5-

$$\text{If : } \begin{bmatrix} +\text{ syll} \\ \alpha\ \text{back} \end{bmatrix} \Rightarrow \text{Then: } [\ \alpha\ \text{round}\ ]$$

Back vowels are redundantly [+round], and non back vowels are redundantly [-round].

Sgsc 6-

$$\text{If : } \begin{bmatrix} +\text{syll} \\ +\text{low} \end{bmatrix} \Rightarrow \text{Then : } \begin{bmatrix} -\text{high} \\ -\text{back} \\ -\text{round} \end{bmatrix}$$

Low vowels are redundantly [-back], and [-round].

1.5.1.2 Segment Structure Conditions for Glides

	+ High	- High
+ Back	w	
- Back	j	h

Chart 4 : Systematic Phonemic Glides.

Sgsc 7-

$$\text{If: } \begin{bmatrix} -\text{cons} \\ -\text{syll} \end{bmatrix} \Downarrow \text{Then: } \begin{bmatrix} +\text{cont} \\ -\text{nas} \\ +\text{son} \\ -\text{ant} \\ -\text{cor} \end{bmatrix}$$

Sgsc 7 states that:

a- Glides [-syll,-cons] are redundantly [+cont], i.e., there is no glottal stop [ʔ].

b- There are no phonemic nasal glides.

c- Glides are redundantly [+son, -ant, - cor].

Sgsc 8-

$$\text{If: } \begin{bmatrix} \text{-cons} \\ \text{-syll} \\ \alpha\text{high} \end{bmatrix}$$

$$\Downarrow$$

$$\text{Then: } \begin{bmatrix} -\alpha\ \text{low} \\ \alpha\ \text{voiced} \\ -\alpha\ \text{tense} \end{bmatrix}$$

Sgsc 8 captures the incompatibility of [+high] and [+low]. It also states that the segments /j,w/ which are [+high], are redundantly [-low,+voiced, -tense]. The Sgsc 8 furthermore states that the glide /h]/ which is [-high] is redundantly [+low,-voiced,+tense].

1.5.1.3 Segment Structure Conditions for Consonants

	p	b	f	v	m	kp	gb	t	d	s	l	r	n	c	j	ñ	k	g
Cons	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Son	-	-	-	-	+	-	-	-	-	-	+	+	+	-	-	+	-	-
Anter.	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-
Corona.	-	-	-	-	-	-	-	+	+	+	+	+	+	-	-	-	-	-
High	-	-	-	-	-	+	+	-	-	-	-	-	-	+	+	+	+	+
Back	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	+
Nasal	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	+	-	-
Voiced	-	+	-	+	+	-	+	-	+	-	+	+	+	-	+	+	-	+
Contin.	-	-	+	+	-	-	-	-	-	+	-	+	-	-	-	-	-	+

Chart 5: Systematic Phonemic Consonants.

Sgsc 9- If: [+cons]
⇓
Then: [-syll]
[-low]
[-tense]

Sgsc 9 states that there are no phonemic syllabic consonants in Abbey at the systematic phonemic level. It also specifies that all consonants are redundantly [-low] and [-tense].

Sgsc 10-

$$\text{If: } \begin{bmatrix} +\text{cons} \\ +\text{back} \\ -\text{ant} \\ \alpha\text{cont} \end{bmatrix} \Downarrow \text{Then: } [\ \alpha \text{ voiced }]$$

The segment /k/ which is [+back, -ant, -cont] is redundantly [-voiced], i.e., the consonant [g] is not present at the systematic phonemic level. /g/ which is [+back, -ant, +cont] is redundantly [+voiced], i.e., the segment [ɣ] is not present at either level.

Sgsc 11-

$$\text{If: } \begin{bmatrix} +\text{cons} \\ +\text{cor} \\ +\text{cont} \\ \alpha\text{son} \end{bmatrix} \Downarrow \text{Then: } [\ \alpha\text{voiced }]$$

Sgsc 11 states that the consonant /š/ which is [+cor, +cont, -son] is redundantly [-voiced]; the segment [z] has no representations. Furthermore, Sgsc 11 specifies that the consonant /r/ which is [+cor, +cont, +son] is redundantly [+voiced].

Sgsc 12-

$$\text{If: } \begin{bmatrix} +\text{cons} \\ +\text{nasal} \end{bmatrix} \Downarrow \text{Then : } \begin{bmatrix} -\text{back} \\ -\text{cont} \\ +\text{ voiced} \end{bmatrix}$$

Sqsc 12 specifies that there is no back nasal consonant at the systematic phonemic level, and that nasal consonants are redundantly [+voiced], and [-continuant].

Sgsc 13-

If: [+cons]
| α cor |
[α ant]
⇓
Then: [-α high]

The segments /t, d, s, l, r, n/ which are [+cor,+ant] are redundantly [-high], and the /c, J, ñ, k, g/ which are [-cor,-ant] are redundantly [+high].

Sgsc 14-

If: [+cons]
[+son]
⇓
Then: [+voiced]

Segments that are [+consonantal] and [+sonorant] /l, r, m, n,ñ/ are also [+voiced].

Sqsc 15-

If: [+cons]
| +son |
[+cor]
⇓
Then: [+ant]

The consonants /l, r, n / which are [+ son,+cor] are redundantly [+ant]

Redundant Features

Sgsc 16-

$$\text{If: } \begin{bmatrix} +\text{syll} \\ +\text{back} \\ -\text{low} \end{bmatrix}$$

$$\Downarrow$$

Then: [-round]

Vowels which are [-low,+back] are [+round]

Sgsc 17-

$$\text{If: } \begin{bmatrix} +\text{syll} \\ +\text{back} \\ +\text{low} \end{bmatrix}$$

$$\Downarrow$$

Then: [- round]

All [+low] vowels are [-round]

Using the alpha notation Sgsc [16] and [17] are combined into

Sgsc 18-

$$\text{If: } \begin{bmatrix} +\text{syll} \\ +\text{back} \\ \alpha\text{–low} \end{bmatrix}$$

$$\Downarrow$$

Then: [- αround]

1.5.1.4 Phonemic Matrices

	p	b	f	v	m	kp	gb	t	d	s	l	r	n	c	ɟ	ñ	k	g	w	j	h	i	ɪ	e	ɛ	ə	a	u	ʊ	ɑ	ɔ
Cons	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−
Syll	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+
Son.	−	−	−	−	+	−	−	−	−	−	+	+	+	−	−	+	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+
Ant	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
Cor	−	−	−	−	−	−	−	+	+	+	+	+	+	−	−	−	−	−	−	−	−	+	+	+	+	−	−	−	−	−	−
High	−	−	−	−	−	+	+	−	−	−	−	−	−	+	+	+	+	+	+	+	−	+	+	−	−	−	−	+	+	−	−
Back	−	−	−	−	−	+	+	−	−	−	−	−	−	−	−	−	+	+	+	−	−	−	−	−	−	−	−	+	+	+	+
Low	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	+	−	−	−	−
Nas	−	−	−	−	+	−	−	−	−	−	−	−	+	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
Voi	−	+	−	+	+	−	+	−	+	−	+	+	+	−	+	+	−	+	+	+	−	+	+	+	+	+	+	+	+	+	+
Cont	−	−	+	+	−	−	−	−	−	+	−	+	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tens	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	+	−	+	−	+	−	+	−

Chart 6: Fully Specified Matrix (Stanley's Model)

	p	b	f	v	m	kp	gb	t	d	s	l	r	n	c	ɟ	ñ	k	g	w	j	h	i	ɪ	e	ɛ	ə	a	u	ʊ	o	ɔ
Cons	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	0	0	0	0	0	0	0	0	0	0	0
Syll	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	+	+	+	+	+	+	+	+	+	+	+
San.	-	-	-	-	+	-	-	-	-	-	+	+	+	-	-	+	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ant	+	+	+	+	+	+	+	+	+	+	0	0	0	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cor	-	-	-	-	-	-	-	+	+	+	+	+	+	-	-	-	-	-	0	0	0	0	+	+	+	0	0	-	-	-	-	-
High	-	-	-	-	-	+	+	0	0	0	0	0	0	0	0	0	0	0	+	+	-	+	+	-	-	0	0	+	+	-	-	-
Back	-	-	-	-	0	+	+	-	-	-	-	-	0	-	-	0	+	+	+	-	-	0	0	0	0	0	0	0	0	0	0	0
Low	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	+	+	0	0	-	-	-
Nas	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	+	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Voi	-	+	-	+	0	-	+	-	+	0	0	0	0	-	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cont	-	-	+	+	0	-	-	-	-	+	-	+	0	-	-	-	0	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	-	+	-	+	-	+	-	+	-	+

Chart 7: Partially Specified Phonemic Matrix (Standard Model)

1.5.2 Sequence Structure Conditions

On the basis of sequential constraints imposed on phonological segments, the feature specifications of other segments can be predicted. The sequential redundancies to be captured here either depend upon phonological contexts or are based upon the syntactic contexts in which the segments occur:

e.g., Sqsc

$$\text{If: } [=[\ C\text{-}\ \ V\ \text{-}\ \ C\ ]=\ ]$$

$$\Downarrow$$

$$\text{Then: } \begin{bmatrix} +\text{cons.-con} & +\text{cons} \\ \text{-syll.} & +\text{syll} & \text{-syll} \\ & & +\text{nasal} \end{bmatrix}$$

This condition states that a syllable final consonant is always [+nasal].

Sqsc

$$PC= +[((C)V)]+$$
$$\quad\ \ GM\ \ GM$$

This positive condition states that every grammatical morpheme is monosyllabic.

Sequential constraints throughout our description will be specified by a set of Sequence Structure Conditions (Sqsc). These conditions are in general expressed by "Positive" conditions (PC), except for the detail specifications of some syllable structures that are expressed with "If-Then" conditions.

1.5.2.1 The Structure of Lexical Morphemes

Discussion of the structure of lexical morphemes will cover three lexical categories: nouns, verbs, and adjectives.

1.5.2.2 The Structure of Major Syllables

The basic assumption in a phonological approach to the syllable is that there is an intimate relationship between the structures of morpheme roots and those of syllables. Thus, ideally, the sequence constraints which operate within a morpheme root should be operative within a syllable regardless of the position of that syllable within a larger unit (morpheme roots, words). Hence, specifying the structure of the syllable does make it easier to state generalities about sequential constraints on morpheme roots.

The canonical shape of the syllable within lexical morphemes in Abbey is captured by the following Positive Condition:

Sqsc 1- PC : =[C (V) V (C)]=

⌈ -syll	-cons	-cons	+con	⌉
|	+syll	+syll	-syll	|
|	+high		+cor	|
⌊			+nasal	⌋

1 a- Sequence Structure Condition 1 (Sqsc 1) states that the first segment of a syllable in Abbey is non-syllabic, i.e., a consonant or a glide.[1]

Sqsc 1a- If: ⌈ -segment [+segment] [+segment] ⌉
⌊ +SB ⌋

⇓

Then: ⌈ -segment -syllabic +syllabic ⌉
⌊ +SB -consonant ⌋

b- Sqsc 1 furthermore states that there are no consonant clusters in a syllable. The surface consonant cluster in words such as [mlɔ] 'courage ' and [mrɔ] ' drink ' are the result of an optional phonological rule that deletes a vowel before [+sonorant] consonants.

2- Sequence Structure Condition 1 (Sqsc 1) also states that closed syllables have for coda a [+coronal,+nasal] segment: that is the nasal consonant /n/ .[2] This condition is captured by the sequential structure condition below:

Sqsc 2

$$\text{If: } \begin{bmatrix} +\text{cons} & -\text{segment} \\ -\text{syll} & +\text{SB} \end{bmatrix} \Rightarrow \text{Then: } \begin{bmatrix} +\text{cor} & = \\ +\text{nasal} & \end{bmatrix}$$

All syllable final nasal consonants have a surface representation only when they occur morpheme medially.

3- Furthermore, Sqsc 1 specifies that the first segment of a vowel cluster (within a syllable) is redundantly [+ high]. That is either the vowels /i/, or /ɩ/ when the first segment of the cluster is [-back], and /u/, or /ʊ/ when it is [+back]. These initial segments are only present at the systematic phonemic level, and are responsible (in the environment of another vowel) for triggering, respectively, the palatalization and the labialization of the preceding non-syllabic segment.

Sqsc 3

$$\text{If: } [= \; X \; +\text{syll} \quad +\text{syll} \quad (Y) \; =] \Rightarrow \text{Then: } \begin{bmatrix} +\text{high} & -\text{high} \\ \alpha\,\text{tense} & \alpha\,\text{tense} \end{bmatrix}$$

where X and (Y) are [-syllabic] segments, and where (Y) can be null.

Sqsc 3 also indicates that the second segment of a vowel cluster is

[-high] and always agrees in tenseness with the first vowel (See vowel harmony for further details.)

4- Last, Sqsc1 can be read as a statement about the (four) possible phonological structures for the syllable in Abbey's lexical morphemes. These syllables are specified below, with additional specification where needed.

a- Sqsc 5 PC: ⌈=C V= ⌉ as in /=ba=/ [ba] ' hand '
⌊-syll +syll⌋ /= na=/ [nɑ̃] ' cola nut '
/=wɔ=/ [wɔ] ' to drive away '

Sqsc 5 allows the combination of most consonants and vowels, except in the following cases where a neutralization of opposition between segments has occurred. For example, while / l / and / r / are in contrast elsewhere, only / r / occurs in the environment of [+high] vowels. This restriction is captured by Sqsc 6 :

Sqsc 6

If: ⌈ +cons +syll ⌉
| +son +high |
⌊-nasal ⌋

⇓

Then: [+cont]

(cf. Additional Restrictions on Vowels (Sqsc 16 through Sqsc 20) for further details.)

b- Sqsc 7 PC: =C V V= as in /=kua=/ [k^{w}a] ' an enclosure '
/=vɩɛ=/ [vʲɛ] ' to look for '
/=cie=ki/ [tšʲeki] ' a knife '

Though the sequence of a syllable initial glide followed by a vowel cluster is permissible in a closed syllable, no syllable initial glides are found preceding a vowel cluster in an open syllable. The first segment of an open

syllable that encloses a vowel cluster, is always [+consonantal]. This condition is stated by Sqsc 8.

Sqsc 8

If:	=C	V	V=	
	[-syll	+syll	+syll]	
		⇓		
Then:	=+cons	+syll	syll =	
		+high	-high	

c- Sqsc 9

PC: = C	V	C =	as in / hen/	[hɛ̃]	' to shine '
⌈-syll	+syll	-cons ⌉	/dɔn=dɔ/	[dɔ̃ndɔ]	' a bird '
⌊		+nas ⌋	/kan=ga/	[kã̠ŋga]	' a crab'

Sqsc 9 states that the first segment of a closed syllable that does not enclose a vowel cluster is predictably [-syllabic, -nasal]. That is, there are no initial glides nor nasal consonants in closed syliable. Sqsc 9 furthermore, specifies that the syllable structure of Abbey does not allow the occurrence of two nasal consonants within a single syllable.
Sqsc 10 captures that condition.

Sqsc 10

If:	⌈ -syll	+syll	-syll ⌉
	⌊		+nas ⌋
		⇓	
Then:	[- nas		]

d- Sqsc 11

PC:	=C	V	V	C =	as in	/huen/	[hʷɛ̂] 'monkey'
⌈-syll	+syll	+syll	con ⌉	/hʊɔn/	[hʲɔ̃]	'viper'	
|	+hgh	-high	+cor |				
⌊	αtense	αtense	+nas ⌋				

Sqsc 11 specifies the syllable in its fullest form .

1.5.2.3 The Structure of Morpheme Roots

Lexical morpheme roots in Abbey are generally monosyllabic or disyllabic[3]. This is particularly true for verb roots. There are, however, a number of noun and adjective roots with three syllables. Though one can speculate in some instances that these roots might at one time have been derived from a complex morpheme root whose components are no longer part of Abbey's lexicon, we have nevertheless decided to analyze them as simple morpheme roots. For instance the noun root /becele/ ' vegetable soup ' (literally ' see through soup ') can be thought as a complex root composed of [be] '??' and [cele] ' clear, transparent '.

Thus, the following morpheme structure condition defines the number of syllables that a lexical morpheme maximally encloses.

Sqsc 12 PC: $+[\,C\ (V)\ V\ (C) = ([\,C\ (V)\ V\ (C)\,])_0^2$

(αtense) αtense (αtense) αtense

Sqsc 12 states that for all lexical morphemes there is a minimum of one syllable and a maximum of three syllables. (The exponent (2) on the last syllable signifies that the structure can be repeated to characterize trisyllabic morphemes, and the subscript (0) signifies that morpheme roots can be monosyllabic).

Sqsc 12 furthermore states that in a morpheme root, all the vowels agree in tenseness: that is, all the vowels are either tense or lax.

In what follows we shall explore further that particular restriction on vowels.

1.5.2.3.1 Vowel Harmony

Within a simple lexical morpheme, vowels in Abbey occur in two mutually exclusive sets. That is, vowels in a lexical morpheme root either agree in value for the feature [tense], or are totally identical in their feature specifications as the data below illustrates.

1- dɔkɔ 'fine piece of stick'
2- o+rugbo 'pestle'
3- o+rugbu 'night'
4- a+rʊkɔ 'bottom'
5- o+ruko 'a mouthful'
6- jalɛ 'poverty'
7- o+kpowu 'wall'
8- tšǰeki 'knife'
9- casɔ 'a gazelle'
10- e+reñi 'home, house'
11- kalɔ 'spoon'
12- levi 'black'
13- pule 'mushroom powder'
14- kʊba 'fish-hook'
15- loru 'odor'
16- dondo 'a type of drum'
17- dɔ̃ndɔ 'a type of bird'
18- duku 'handkerchief'
19- dada 'jaw'
20- moro 'urine'
21- mɔrɔ 'drink'
22- mereJe 'wild tarot'
23- Ŋ+gala 'sugar cane'
24- Ŋ+gələ 'arrow'
25- kpolo 'to scratch'
26- kpɔlɔ 'to slide'
27- kpɪrɪ 'to argue for a larger share'
28- kpuru 'wrestling'
29- kpala 'witchcraft'
30- kpele 'wild jam'
31- e+bele 'a club'
32- bɛlɛ 'tail'

The constraints imposed on vowel distribution within morpheme roots as the result of vowel harmony in African languages have been the object of various studies, including that of Stewart (1971) who makes the following remark about vowel harmony in Abbey:

> Languages such as Abe (Abbey) which have cross-height vowel harmony in its fullest form, have five vowels in each set, the relatively low vowels appear to be always [ɪ,ɛ,a,ɔ,ʊ] and their relatively high counterparts appear to be normally [i,e,ə,o,u] In these languages the vowels of simple stems are normally all of the same set, and all vowels in prefixes and suffixes normally harmonize with the vowels of the stem, with the result that the vowels of the whole word are normally all of the same set provided the word does not have a compound stem.

We will extend Stewart's observation and make a further distinction between partial vowel harmony and complete vowel harmony, both of which are characteristics of Abbey's simple morpheme roots.

Following suggestions made by Aoki Haruo (1968), a partial vowel harmony is defined as one in which vowels in a morpheme share at least one feature, or all lack a common feature. In Abbey, this common property for vowels within a morpheme root is the feature [± tense] .

In the data above, items 1-15 are illustrations of a partial vowel harmony, all the vowels within each morpheme root being either [+tense] or [-tense]. The redundant property of such a constraint on vowels can be captured by means of the following Positive Condition:

$$\text{Sqsc13- PC: } \left[\begin{array}{cccc} [\,C\,(V) & V\ (C) = ([C\ (V) & V & (C)])_0{}^2 \\ \alpha\text{tense} & \alpha\text{tense} & \alpha\text{tense} & \alpha\text{tense} \end{array}\right]$$

Sqsc 13 states that, within lexical morpheme roots, all vowels are either tense or lax . That is, vowels harmonize in tenseness not only within a syllable, but also within a simple morpheme root regardless of the number of syllable the morpheme encloses.

Sqsc 13 is rewritten as:

$$+[C\,(V) \quad V \quad (C) = C\ (V) \quad V \quad (C) = C\,(V) \quad V \quad (C)]+$$
$$(\alpha\text{tense}) \ \alpha\text{tense} \qquad (\alpha\text{tense}) \ \alpha\text{tense} \qquad (\alpha\text{tense}) \ \alpha\text{tense}$$

to account for morpheme roots such as +mologbu+ ' smoke '

+/mo= lo= gbu/+
+tense +tense +tense

As for "complete" vowel harmony (often referred to as vowel copying), it defines the condition in which all vowels in a morpheme root agree in all features. The items 16-32 exemplify such structures which are captured by Sqsc 14

Sqsc- 14 PC: +⌈ [C (V) V (C) = [C (V) V (C)]] ⌉

-syll	(+syll)	+syll	(+cons)	-syll	(+syll)	+syll	(+cons)
	αtense	αtense			αtense	αtense	
	β high	β high			β high	β high	
	ω back	ω back			ω back	ω back	
	δ low	δ low			δ low	δ low	

To be more economical, Sqsc 13 and Sqsc 14 can be coalesced into Sqsc 15.

Sqsc 15: PC: ⌈ C (V) V (C)]] ⌉3

	+syll	+syll		
	αtense	αtense		
⌈	βhigh	βhigh	⌉	
| |	ωback	ωback	|	
⌊⌊	δlow	δlow	⌋	⌋1

where [[ ]] does not mean " either or" but rather "in addition to. Sqsc 15 states that within a simple morpheme root (maximally trisyllabic), vowels harmonize in tenseness or in addition agree in all features.

Though with some irregularities, vowel harmony is also possible across morpheme boundaries, as the tense-laxness harmony between nominal prefixes and morpheme roots exemplifies in the data below:

o+ru=gbu	'night'	e+be=le	'a club'
a+rʊ	'worm'	a+bɛ=lɛ	'torture'
o+ro	'head'	a+ba=la	'branch'

1.5.2.3.2 Additional Restrictions on Vowels

This section deals with the constraints imposed on the distribution of vowels as the result of neutralization of phonemic oppositions.

One of Stanley's innovations is the treatment of neutralizations of segmental oppositions as sequential structure conditions rather than as phonological rules.

Sqsc 16

If: [+cons +syll]
[+son +high]
⇓
Then: [+cont]

Sqsc 16 states that the sequences [lu, lʊ, li, lɩ] are not permissible in Abbey.

Sqsc 17-

If: [+cons +syll]
[+cont -cor]
[+ant]
[-cor - [-high]]
[[-low]]
[[+tense]]
⇓
Then: [-voiced]

This condition states that, except for the vowel [o] [-high,-low,+tense] the segment /f/ is the only [+ cont, +ant] consonant that occurs in the

environment of [-cor] vowels, .i.e., the sequences [vu], [vʊ], and [vɔ] are not permissible.

Sqsc 18-

$$\text{If } \begin{bmatrix} +\text{cons} & +\text{syll} \\ +\text{nasal} & -\text{low} \\ & +\text{tense} \\ & -\begin{bmatrix} +\text{high} \\ -\text{back} \end{bmatrix} \end{bmatrix}$$

$$\Downarrow$$

$$\text{Then: } \begin{bmatrix} +\text{ant} \\ -\text{cor} \end{bmatrix}$$

Except for the vowel /i/ [+high,-back], the segment /m/ is the only nasal consonant that occurs in the environment of the class of vowels that are [-low, +tense] [e,u,o]. This condition is only true for lexical morphemes, but not for grammatical morphemes; the morpheme for the progressive tense is phonemically represented as +/ne/+.
For lexical morphemes the following sequences are not permissible phonemically as well as phonetically:[ne, nu, no, ñe, ñu, ño].

Sqsc 19

$$\text{If: } \begin{bmatrix} -\text{syll} & +\text{syll} \\ & +\text{low} \\ & +\text{tense} \end{bmatrix}$$

$$\Downarrow$$

$$\text{Then: } [\ +\text{cons}\ ]$$

Only [+consonant] segments occur in the environment /ə/ , i.e., there are no glide segments that occur in the environment of a following /ə/.

Sqsc 20 If: [-cons +syll]
[-syll +high]
[-back]

⇓

Then: [+high]
[-back]

Among the glides only the segment /j/ occurs in the environment of [+high,+front] vowels /i,ɩ/: the sequences [wi,wɩ] and [hi,hɩ] are not permissible. (The noun [wɩtɩwɩtɩ] 'mosquito' is classified as an onomatopoeia, therefore not representative of Abbey lexical entries.)

1.5.2.4 The Structure of Grammatical Morphemes

Grammatical morphemes are morphemes that do not stand by themselves, therefore are used in connection with major lexical roots. Grammatical morphemes (GMs) are either added to lexical roots by transformations or by morphological rules. These morphemes are subjected to further changes in the environment of other grammatical morphemes, .e.g., a- The negative morpheme is optionally added to finite verbs by the negative insertion rule.

b- When the negative morpheme is inserted into a finite verb in the progressive tense, the Progressive morpheme is replaced by the Accomplished tense morpheme.

Grammatical morphemes are not grammatical function words as defined in Normative Grammar (pronouns, articles), but rather inflectional and derivational suffixes attached to lexical roots.

Three types of grammatical morphemes are discussed. They are, those dominated by nouns, those dominated by verbs, and those dominated by adjectives.

1.5.2.5 The Structure of Minor Syllables

The possible syllable structures for grammatical morphemes is captured by the following Positive Condition:

Sqsc 21

$$PC: \; +((C)\ (V)\ + \quad \begin{bmatrix} +cons & +syll \\ & -high \end{bmatrix}$$

Sqsc 21 states that all grammatical morphemes are monosyllabic. Condition 21 furthermore specifies that the initial segment of a grammatical morpheme is always [+consonantal] when the grammatical morpheme is not a single vowel morpheme; there are no glides as initial segments in grammatical morphemes. Sqsc 21 also states that there are three possible

syllable structures for grammatical morphemes:

1- =CV= as in adjectival prefix +le+ [le+vi] 'black'
2- =V=, =C= a single segment syllable, (that is, a morpheme root made up only of either a single vowel, e.g., the nominal prefix+/e-/+, or a single consonant, e.g.,the nominal prefix +/n/+.
3- =Ø= Sqsc 21 furthermore, states that some grammatical morphemes have not a phonetic form. Such morphemes will be symbolized as =[Ø]= . Phonetically, morphemes that do not have a phonetic representation are actualized by the tonal effects of the floating tones. The grammatical morphemes for the Accomplished tense and the Injunctive tense which have no phonetic form, (therefore, symbolized as [Ø]), are nevertheless actualized by floating tones. These tonal effects are respectively [+low] tone on anaphoric subjects conjoined to a verb in the Accomplished tense, and [+high] tone for the Injunctive.

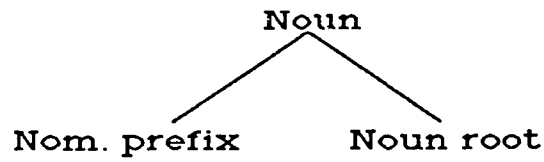
Accomplished: [Ø]

mə Ø ji éridži ---> mə Øji éridži ---> [məji éridži]$_h$ '

Injunctive [Ø]

mə Ø ji éridži---> mə Øji éridži ---> [məji éridži]
I Inj go farm 'I would go to the farm

1.5.2.6 Nominal Grammatical Morphemes



The only grammatical morphemes added to noun roots are the nominal prefixes.[4] There are no grammatical morphemes for number (singular-plural), for gender (masculine-feminine), or any grammatical morpheme distinguishing human nouns from non-human nouns. The singular-plural distinction for nouns is determined by the context in which they are used. Thus:

Aka ve wɔsɔ
'Aka bought chicken'

is interpreted as " Aka bought a chicken" or "Aka bought some chickens" depending on the context .[5]

In general, for plural/singular representations, a noun root in the lexicon is marked either as [+ plural] if it is a count noun and [- plural] if it is a non-count-nouns (mass nouns), and this regardless of the presence or absence of a nominal prefix.

1.5.2.6.1 Nominal Prefixes

The principal function of nominal prefixes is to assign a nominal status to lexical morpheme roots to which they are prefixed. To that effect, nominal prefixes usually have a deverbal function. For instance, the verb root [sʊsʊ] ' to pain ' becomes a noun [asʊsʊ] ' a torture ' when the nominal prefix [a-] is prefixed to it; the noun [akpɛkpɛ] ' hard ones ' is derived from the predicative form

of the adjective [kpɛkpɛ] ' hard '

sʊsʊ	' to pain'	asʊsʊ	' a torture'
pɩ	' to borrow'	apɩ	' a loan'
kpɛkpɛ	' to be hard '	akpɛkpɛ	' hard ones '
lɛlɛ	' to be bitter'	alɛlɛ	' bitter ones'

There are five nominal prefixes (Nom-P) in Abbey all of which conform to Sqsc 22.

Sqsc22 PC: +[(+segmenr)]+
Nom-P Nom-P

Sqsc 22 states that Nom-P are monosyllabic, and that the Nom-P syllable has three readings:

a- The nominal prefix syllable is a single [+high] vowel that bears low tone.[6]

The condition is captured by Sqsc 22 a :

Sqsc 22 a If : [V]
Nom-P Nom-P
⇓
Then: ⌈ +syll ⌉
| -high |
| ⌈+tone ⌉ |
⌊ ⌊ +low⌋ ⌋

b- A syllable with a single [+nasal] consonant : Sqsc 22b

Sqsc 22 b If : [C]
Nom-P Nom-P
⇓
Then: ⌈ +cons ⌉
|+nasal |
⌊ +cor ⌋

c- Furthermore, Sqsc 22 states that some nominal prefixes will not be given a phonetic representation. They are consequently symbolized as +/Ø/+:

Sqsc 22 c If: +[Ø]+
Nom-P Nom-P
⇓
Then: [-segment]

Nom Prefixes are represented in the Dictionary as follows.

1- Nom-P +/a-/+ as in /a+taro/ ---> [ataro] ' pipe '

The Nom-P [a-] is particularity used to deverbalize verbs or to change the predicative form of an adjective into a noun:

[kpɛkpɛ]	' to be hard '	[akpɛkpɛ]	' hard ones '
[ra]	' to insult '	[ara]	' an insult '
[rara]	' to scratch '	[arara]	' itchy ones '

2- Nom-P +/e-/+ as in /e+kue/---> [ek^{w}e] ' stem '

3- Nom-P +/o-/+ as in /o+ria/---> [o+rʲa] 'spirit'

4- Nom-P +/n/+ as in /n+de/ ---> [Nde] 'banana'
/n+bu/---> [Mbu] 'yam'

The nominal prefix /n/ is phonetically realized as a syllabic nasal consonant [N-] homorganic with the initial segment of the following morpheme root.

[N+da] ' news '
[M+bɔ] ' words '
[Ñ+je] ' here '
[Ŋ+gu] 'the sun'

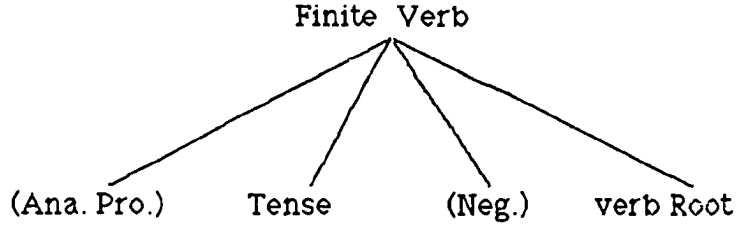
By representing syllabic nasals at the systematic phonemic level by non-sylabic segments, a great deal of feature saving is acheived: the class of [+cons, + syll] segments is discated as phonemic. Thus, there is no need to contrast syllabic consonants against non-syllabic seggments on one hande and vowel on the other hand.

5- Nom-P [Ø-] as in /Ø+saka/ ---> [saka] 'rice'

Nom-.P [Ø] has no phonetic representation. It symbolizes the (nominal) status of nouns that do not carry nominal prefixes, e.g., it distinguishes at the phonemic level between verbs (not marked for lexical category) and nominal roots that do not allow a nominal marker.

1.5.2.7 Verbal Grammatical Morphemes

Verbal grammatical morphemes are those that are added to verb roots to form finite verbs.



Verbal grammatical morphemes comprise an optional anaphoric pronoun subject, the obligatory morpheme for tense, and an optional negative morpheme.

All verbal grammatical morphemes conform to sequence structure condition 23.

Sqsc-23 PC: +[((C) V)] +
+cons +syll
-high
-back

Sqsc 23 states that verbal grammatical morphemes are monosyllabic and that all vowels in verbal grammatical morphemes are redundantly [-high,-back]. It also specifies that the syllable structure for verbal grammatical morphemes has three readings:

1- =C V= : a consonant-vowel sequence syllable as in:
- the anaphoric pronoun =/kə/= 'they'
- the progressive tense morpheme =/ne/=

2- =V = : a single vowel syllable as in
-the morpheme for the Habituative tense =/e-/=
- the negative morpheme =/a/=

3- = Ø =: (zero morpheme) for verbal grammatical morphemes without phonetic representation:
- the Accomplished tense =/ Ø̀ /=
-the Injunctive =/Ǿ /=

1.5.2.7.1 Anaphoric Pronoun Subjects

Anaphoric pronoun subjects are optional morphemes that are transformationally added to the leftmost part of a finite verb. In Abbey, the anaphoric pronoun placement rule operates on finite verbs preceded by plural noun subjects (1a) , or composite noun subjects (2a), or composite personal pronoun subjects (4). The Anaphoric pronoun placement rule is an optional transformation, the function of which is to prefix an anaphoric pronoun to a finite verb, at the same time allowing for the transfer to the anaphoric pronoun the syntactic features (person, and number (+plural)) of the antecedent subject or subjects. The transformation fails to apply to verbs whose subject is a single personal pronoun, regardless of whether the pronoun is plural or singular.

1a- ejigɔbonələ kəti nɛ̃
young girls they sang
'The young girls sang.'

1b- ejigɔbonələ _ti nɛ̃
young girls __ sang
'The young girls sang .'

2a- Yavolɛ Jɛləlɛ kəji kpeleru
Yavo with sons with they went wild yam harvesting.
'Yavo and his sons went to harvest wild yams.'

2b- Yavolɛ Jɛləlɛ _ji kpeleru
Yavo with sons with __ went wild jam harvesting.
'Yavo and his sons went to harvest wild yams.'

3- kə _ji Ogboba
They went Agboville
'They went to Agboville'

4- məlɛ fəlɛ eji Ogboba
I with you with we went to Agboville
'I went to Agboville with you
(' We went to Agboville '.)

Anaphoric pronouns are phonetically identical to the root of the personal pronoun corresponding to the subject of the verb to which it is attached.

Personal Pronouns				Anaphoric Pronouns	
mə	'I'	elə	'we'	e	'we'
fə	'you'	Ññə	'you' (Pl)	ñə	'you'
nə	'he/she'	kələ	'they'	kə	'they'

As in the case of personal pronoun subjects, the last vowel of the second and third person anaphoric pronoun is deleted when it is followed by a morpheme with an initial [+syllabic] segment, or by a single segment (+syllabic) morpheme.

ejikpebonə e+ji nɛ̃gbe mitši kʷa pode
Young men
ejikpebonə kəji nɛ̃gbe mitši kʷa pode
'Young men they+Hab+go dancing every day.'

All anaphoric pronouns conform to the following Sequence Structure Condition:

Sqsc 24 PC: +[(C) V]+
+cons +syll
-high
-back
+tense

Sqsc 24 states that anaphoric pronouns are monosyllabic, and have two syllable readings:

1- = C V = as in =kə= ' they '
2- = V = as in =e= ' we '

Sqsc 24 furthermore, states that vowels within anaphoric pronouns are all [+tense] and [-high,-back].

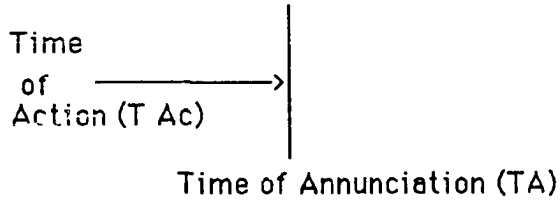
1.5.2.7.2 Tense

The grammatical morphemes dominated by Tense are those that relate the time of an action or a state referred to in a sentence to the actual time of annunciation. The time of annunciation serves as an axis around which gravitate all the aspectual morphemes; Aspect then can be contrasted in Principal tenses (Accomplished, Habituative, Future, Progressive), and Derived tenses (Imperative, Injunctive, and Conditional).

1.5.2.7.2.1. Principal Tenses

1.5.7.21.1 The Accomplished

-segment
+tone
+low



The Accomplished tense states an action that has taken place before the moment of annunciation.

Eddy Øji eridži etši
Eddy Acc go farm yesterday
' Eddy went to his farm yesterday.'

mə Ødi džumə̃
I Acc [ ] work
' I worked'

In some instances, the Accomplished can be used as a "non-temporal"

marker for stative verbs, and predicative form of adjectives.

akɔmɔ̂nə Ø̀ɔ amɔ̂
well def Acc[ ] deep
' The well is deep'

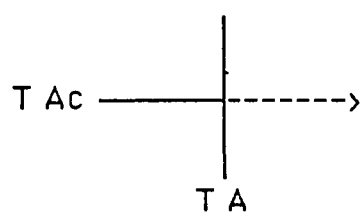
tinə Ø̀kpɛkpɛ
wood def Acc hard
' The wood is hard'

The Accomplished tense is marked by a morpheme without phonetic representation; symbolized as [Ø̀]. The tense is nevertheless differentiated from others by the tonal effects of the last vowel of the preceding pronoun subject or anaphoric pronoun. For example, the Accomplished and the Injunctive, which have no phonetic representation, are respectively materialized by a low and a high floating tone that effects the tone of the final vowel of a preceding morpheme.

1.5.2.7.2.1.2 The Habituative

(Hab) +/e-/+
+syll
-low

The Habituative is marked by the prefix [e-].



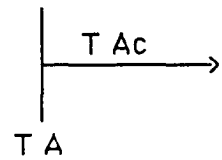
The Habituative relates habitual or repetitive actions or states to the time of annunciation:

megʊ sɛ etšigba (k^{w}a) pode
I Hab[ ] body morning (every) all
' I take a bath every morning'

midži enɔ̃
water Hab walk
' It rains '

1.5.2.7.2.1.3 The Future

(Fut.) +/ a-/+
+syll
+low



The Future tense is used to state an anticipated action or state to take place in a time posterior to the time of annunciation:

Aka bə+a+ji nak^{w}atɩ agbɔhɔ̃f^{w}ɔ
Aka baji nak^{w}atɩ agbɔhɔ̃f^{w}ɔ
Aka Fut go school year next
' Aka will go to school next year '.

etši mə+a+di džumɛ̃
etši madi džumɛ̃
tomorrow I Fut [ ] work
' I will work tomorrow '.

The grammatical morpheme for the Future tense is +[a-]+. For the third person singular, the first and the third person plural, the morpheme for the Future tense has an additional morpheme +[bə]+ whose obvious principal function is to distinguish morphologically the Future tense from the Conditional.

Future: Eddy bə +a+ve tomobinə
Eddy bave tomobinə
' Eddy will buy the car '.

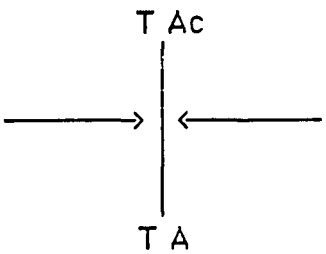
Conditional: Eddy +a+ve tomobinɔ
Eddy ave tomobinɔ.....
' (If) Eddy buys the car.... '

The final shwa of the morpheme [bɔ] is deleted when the morpheme is conjoined to the future tense marker +/a/+.

kɔ + bɔ + a + ji o ------> kɔbaji o
They [ ] Fut go village They will go to the village

1.5.2.7.2.1.4 The Progressive

(Pro) +[n e] +
+cons +syll
+nasal -low
+cor



The Progressive tense is used to underline the unfolding of an action or a state at the time of annunciation.

Yapi ne+ve Nde
Yapi neve Nde
Yapi Prog buy banana
' Yapi is buying some bananas.'

The Progressive is marked by the grammatical morpheme +[ne]+. It should be noted that there is a " Progressive Future"-like construction (comparable to the French "aller + verb") that is derived from serial verbal constructions.(cf. Serial verbal Constructions).

Ako ñã ji o
Ako arrive go village
' Ako is about to go to (his) village'

For the obvious syntactic reason we have discarded such constructions as part of tense marking in Abbey.

1.5.2.7.2.2 Derived Tenses

Derived tenses are those derived from (underlying) principal tenses. They do not particularly relate the Time of Occurrence to the Time of Annunciation but rather in some degree (they) inject the speaker's attitude in the statement that is being made. Derived tenses in this sense are closer to what has been termed Mood or Mode in Normative grammar, e.g., the Imperative indicates the desire of the speaker to have an action performed.

1.5.7.2.2.1 The Imperative [Imp]

The Imperative is derived by transformation. The transformation has the effect of stripping a finite verb of some of its components, namely the Tense morpheme and the Anaphoric pronoun subject, at the same time affecting the tone pattern of the verb root. That is, the Imperative amounts only to a verb root that carries a mid tone for monosyllabic roots, and mid and low tones respectively on the first and the second syllable for disyllabic or reduplicated verb roots.

The Imperative in Abbey marks an action desired by the speaker to be performed by an addressed person or a group of persons.

ve Nde
buy bananas
' Buy some bananas !'

eve Nde
pl. buy bananas
' Buy some bananas ! (plural)'

As in many languages, the Imperative in Abbey has no phonetic representation, and will therefore be symbolized as [Ø] . This zero morpheme representation differentiates itself from that of the Accomplished and the Injunctive, in that it is not subject to any tonal effects.

When there is a direct command given by the speaker to a group of listeners, the affix / e-/ is added to the verb root. There is no evidence to suggest that this affix is a pronoun, though it is identical to the root of the first person plural pronoun:

/e+lə /----> [elə] 'we'

Most verbs do not show any alternations between Imperative and any other finite form, except for the verb [a] 'to come' which has the suppletive form [wa] for its Imperative singular form, while retaining [ea] 'come!' for its Imperative plural form:

Singular: wa gbe
Come here !

Plural: ea gbe
Come here !

A second type of Imperative is obtained by means of Serial Verb Constructions. In these constructions, the speaker gives an order or command to be performed by himself and his listener(s).

a- n ɔ̃ bə+e+ji
nɔ̃ beji
hurry go
let's go !

b- n ɔ̃ bə+e+ve
n ɔ̃ beve
hurry buy
let's buy !

The first verb of the verbal construction is the Imperative form of the verb [nɔ̃] ' hurry up, walk ', while the second verb of the construction has a root prefixed with the concatenation of the [bə] (usually used in connection of the future tense and the Injunctive), and the Habituative tense marker [-e-]. Constructions such as the ones in (a) and (b) are not analyzed as aspectual markers in Abbey, rather, as part of the over all Serial Verb Constructions.

1.5.2.7.2.2.2 The Injunctive
(Inj) +/ a /+

The Injunctive is used in an embedded sentence to express a desire, a wish, a consequence or a result after verbs such as [kolo] ' want ', [vivi] ' ask ':

mə kolo Ñje Eddy bəØve eridžinə.
I want that Eddy Inj buy farm def.
' I would like Eddy to buy the farm.'

Sopi Ølɔmə šiga alɛ məØji Ogboba
Sopi gave me money so I Inj go Agboville.
' Sopi gave me some money so that I would go to Agboville.'

Like the Accomplished tense, the Injunctive has no phonetic representation. At that level it is nevertheless differentiated from other tenses by tonal effects. As has been observed with the Future tense, in the third person singular, the first person and the third person plural, the Injunctive carries an additional morpheme [bə] .

The Injunctive is not present in Abbey deep structure. It is derived by a transformation that applies in an embedded sentence to delete any Future tense morpheme [a-] while leaving in place other constituents of the future tense, i.e. tone (high) and the morpheme [bə].

1.5.2.7.2.2.3 The Conditional

(Cond) +/ a- /+.

The Conditional expresses a condition, a supposition, or a hypothetical state.

alə fə+a+ji eridži dži Nde semə
alə faji eridzi dzi Nde semə
If you Cond go farm cut bananas bring me
' If you go to the farm bring me some bananas.'

Eddy alɔmə šiga mə̀ve Mbab^{W}a
Eddy Cond give me money I Inj buy shoes
' If Eddy gives me some money I would buy some shoes.'

As a derived tense, the Conditional is generated by a transformation that applies to the Future tense. Unlike the Injunctive, the conditional transformation does not delete the Future tense morpheme [a] per se,, rather it changes its tone pattern from High tone to Mid tone, at the same time deleting the morpheme [bə] that is added to [Fut] in the third person singular and the first and third person plural. At the phonemic level, there is no meaningful way to distinguish between the Future, the Injunctive, and the Conditional.

Conjugation Table

Principal Tenses

Accomplished /Ø/		
mə+Ø+ve	mə̀ve	I bought
fə+Ø+ve	fə̀ve	you bought
nə+Ø+ve	nə̀ve	he/she bought
e +Ø+ve	e̋ve	we bought
Ññə+Ø+ve	Ññə̀ve	you bought
kə+Ø+ve	kə̀ve	they bought

nə̀ve
e̋ve
Ññə̀ve
kə̀ve

Habituative /é/		
mɔ+e+ve	meve	I buy
fɔ+e+ve	feve	you buy
nɔ+e+ve	neve	he/she buys
ɛlɔ+e+ve	ɛleve	we buy
Ññɔ+e+v	Ññeve	you buy
kɔ+e+ve	keve	they buy
Future /á/		
mɔ+a+ve	mave	I will buy
fɔ+a+ve	fave	you will buy
* +bɔ+a+ve	bave	he/she will buy
ɛ+bɔ+a+v	ɛbave	we will buy
Ññɔ+a+ve	Ññave	you will buy
kɔ+bɔ+a+ve	kɔbave	they will buy
Progressive /né/		
mɔ+ne+ve	mɔneve	I am buying
fɔ+ne+ve	fɔneve	you are buying
nɔ+ne+ve	nɔneve	he/she is buying
ɛ+ne+ve	ɛneve	we are buying
Ññɔ+ne+ve	Ññɔneve	you are buying
kɔ+ne+ve	kɔneve	they are buying

Derived Tenses

Imperative /Ø/		
ve	ve	buy !
e+ve	eve	buy (plural) !
Injunctive /á/		
mɔ+Ø+ve	mɔ́ve	I would (should) buy
fɔ+Ø+ve	fɔ́ve	you would (should) buy
* +bɔ+Ø+ve	bɔ́ve	he/she would (should) buy
ɛ+bɔ+Ø+ve	ɛbɔ́ve	we would (should) buy
Ññɔ+Ø+ve	Ññɔ́ve	you would (should) buy
kɔ+bɔ+Ø+ve	kɔbɔ́ve	they would (should) buy
Conditional /á/		
mɔ+a+ve	mave	If I buy
fɔ+a+ve	fave	If you buy
nɔ+a+ve	nave	If he/she buys
ɛlɔ+a+ve	ɛlave	If we buy
Ññɔ+a+ve	Ññave	If you buy
kɔ+a+ve	kave	If they buy

*: A personal pronoun is not permissible.

1.5.2.7.3 The Negative

(Neg) +/ a /+

In surface structures, the negative morpheme is an optional constituent of the finite verb that occurs immediately before Tense.

Eddy a+Ø+ve wɔsɔ
Eddy ave wɔsɔ
Eddy Neg Past buy chicken
' Eddy didn't buy a chicken'

Eddy a+e+ve wɔsɔ
Eddy eeve wɔsɔ
Eddy Neg Hab buy chicken
' Eddy does not buy a chicken'

The underlying form of the Neg morpheme /a-/ harmonizes in every features with the following tense marker when the latter has a phonetic representation.

/ Alate a+e+lɛ ∂b∂ / ----> [Alate eelɛ Mb∂]
Alate Neg hab speak words Alate doesn't speak

/Alate a+Ø+lɛ ∂b∂/ ---> [Alate alɛ Mb∂]
Alate Neg Acc speak words Alate didn't speak

Negation is permissible in surface structures only with the Habituative, the Accomplished, and the Imperative. That is, Negation insertion is the operation of a transformational rule that replaces certain tenses (principal or derived) by others. Examine the affirmative sentences (1-7) and their negative counterparts.

	Affirmative	Negative
Acc. 1-	Aka _di džumâ ' Aka worked'	Aka adi džumâ ' Aka didn't work'
Hab. 2-	Aka edi džumâ ' Aka works'	Aka eedi džumâ ' Aka doesn't work'
Fut. 3-	Aka badi džumâ ' Aka will work'	Aka eedi džumâ ' Aka doesn't work' (' Aka will not work')
Pro. 4-	Aka nedi dzûmâ ' Aka is working '	Aka adi džumâ ' Aka didn't work' (' Aka is not working')
Imp. 5-	a- _di džumâ ' Work ! '	adi džumâ ' Don't work !'
	b- edi džumâ ' Work ! '	eadi džumâ ' Don't work! (plural)'
Inj. 6-	Aka bədi džumâ ' Aka would work '	Aka eedi džumâ ' Aka doesn't work' (' Aka would not work')
Cond. 7-	Aka adi džumâ ' (If) Aka works'	Aka _adi džumâ ' Aka didn't work' ' (If) Aka doesn't work'

From the sentences above, the following observations can be made: in a negative sentence:

a- the Progressive tense is replaced by the Accomplished tense by means of a rule that is characterized as follows:

SD:	X	Neg	Pro	VRoot	Y
	1	2	3	4	5
SC:	1	2	Acc	4	5

Affirmative

Pro. kəneji nak^{W}atɩ ' They are going to school '

Acc. kəji nak^{W}atɩ ' They went to school '

Negative

Pro. kaji nak^{W}atɩ ' They are not going to school'

Acc. kaji nak^{W}atɩ ' They didn't go to school '

The Negative Insertion Rule ensues the replacement of the Progressive tense by the Accomplished tense.

b- The Future tense is replaced by the Habituative tense

SD :	X	Neg	Fut	VRoot	Y
	1	2	3	4	5
SC:	1	2	Hab	4	5

Affirmative

Fut. kəbave tomobinə ' They will buy the car'

Hab. keve tomobinə ' They buy the car'

Negative

Fut. keeve tomobinə ' They will not buy the car'

Hab. keeve tomobinə ' They do not buy the car'

c- The Injunctive is replaced by the Habituative

SD:	X	-	Neg	-	Inj	-	VRoot	-	Y
	1		2		3		4		5
SC:	1		2		Hab		4		5

Affirmative

Hab. Eddy eɑɛɑɛ nak^{W}a 'Eddy writes'

Inj. [...] Eddy bɔɑɛɑɛ nak^{W}a 'Eddy would write'

Negative

Hab. Eddy eeɑɛɑɛ nak^{W}a 'Eddy does not write'

Inj. Eddy eeɑɛɑɛ nak^{W}a 'Eddy wouldn't write'

d- The Conditional is replaced by the Accomplished

SD:	X	-	Neg	-	Cond.	-	VRoot	-	Y
	1		2		3		4		5
SC:	1		2		Acc.		4		5

Affirmative

Cond. Eddy adi džumẽ '(If) Eddy works'

Acc. Eddy di džumẽ 'Eddy worked'

Negative

Cond. Eddy adi džumẽ '(If) Eddy doesn't work'

Acc. Eddy adi džumẽ 'Eddy didn't work'

The tense changes are summarized in the following rules.

1-	SD:	X	Neg	Hab Fut Inj	VRoot	Y
		1	2	3	4	5
	SC:	1	2	Hab	4	5

2-	SD :	X	Neg	Cond Acc Pro	VRoot	Y
		1	2	3	4	5
	SC:	1	2	Acc	4	5

The above transformations have the effect of obliterating deep-structure aspectual differences in the presence of Negation, with the result that two aspectually different deep structures have the same surface structure realization.

1.5.2.8 Adjectival Prefixes

Adjectival prefixes are those directly dominated by true adjectives: (adjectives for basic colors, size, and age). Besides being a category marker, adjectival prefixes subcategorize the class of adjectives into adjectives that have exclusively attributive functions from those adjectives that in addition to their attributive functions are capable of predication.

1.5.2.8.1 The Structure of Adjectival Prefixes

Adjectival prefixes conform to the following Sequence Structure condition:

Sqsc 25 $\quad PC = +[\,C \quad V]+$

$$\begin{bmatrix} +\text{cons} & +\text{syll} \\ +\text{son} & -\text{high} \\ -\text{nas} & \\ -\text{cont} & \end{bmatrix}$$

Sqsc 20 states that all adjectival prefixes are monosyllabic, and have a single syllable structure reading: =[CV]= where the initial segment is a [+sonorant, -nasal, -continuant] consonant, that is the segment /l/, and the following vowel a [-high] segment /e, a, o /.

1.6 PHONOLOGICAL RULES

1.6.1 Introduction

This section outlines some generalizations about phonological processes in Abbey , e.g., labialization, palatalization, nasalization. It does not pretend to exhaust all phonological rules in Abbey.

Unlike Morpheme Structure Conditions which state redundancies only at the systematic phonemic level, phonological rules (P-rules) map phonemic representations of strings of morphemes that serve as its input into systematic phonetic representations: the actual phonetic transcription of a sentence . Phonological rules have the function of adding, changing, deleting, permuting, or coalescing systematic segments to produce the final phonetic form of utterances . P-rules apply cyclically, and in order.

1.6.2 Labialization

Labialization in Abbey is a process by which a [-syllabic] segment acquires the feature [+round]. The segment (symbolized as [C^W]) is produced with a slit narrowing of the labial orifice. The process is very productive in the sense that labialization rules apply to any segment whenever the conditions are met.

The data below illustrate some occurrences of labialized segments in Abbey :

1-	[p^W]	----	[p^Wɔ]	' alive'
2-	[b^W]	----	[ab^{W}a]	' lion'
3-	[t^W]	----	[t^Wa]	' roof '
4-	[d^W]	----	[(ya)d^Wa]	' where '
5-	[k^W]	----	[lak^{W}a]	' wrong '
6-	[g^W]	----	[Ŋg^{W}e]	' pomade '

7- [f^W] ---- [f^Wa] ' to protest '

8- [m^W] ---- [m^Wɔ̃] ' to bind '

9- [h^W] ---- [ah^Wɔ̃] ' bird '

10- [gb^W] ---- *[ogb^Wɛ] ' red palm nut'

11- [b^W] ---- *[b^Wagɩ] ' foreigners, barbarians '

12- [p^W] ---- [p^Wu] ' to bite '

13- [d^W] ----- [d^Wuk^Wu] ' handkerchief '

14- [t^W] ----- [t^Wʊ] ' to send for '

* Words with compound stems.

1.6.2.1 Labialization Rules

It is generally accepted that [-syllabic] segments are labialized when followed by [+ round] segments. Such phonological process is traditionally captured by phonological rules similar to P-rule 1 . (cf. Schachter and Fromkin 1968).

P-rule 1 : [-syll]---> [+round] /___ [+round]

In Abbey, P-rule 1 can indeed account for a number of labialized consonants. But observe the following data:

15- [Mpo] ' camp '

16- [Ntɔ] ' fight '

17- [koko] ' neck '

18- [tolo] ' soup '

19- [hɔlɔ] ' hip '

20- [wu] ' see '

As data 15-20 indicate, even though conditions are met, P-rule 1 does not apply. As a matter of fact, labialization is not perceivable in the environment of all [+round] segments. Without instrumental evidence, labialization is auditorily perceivable only when [-syllabic] segments precede [+high,+round] vowels, i.e., the segment /u/ and /ʊ/. P-rule 1, then, needs to be modified and replaced by P-rule 2.

$$\text{P-rule 2}: \quad \begin{matrix} -\text{syll} \\ -\text{round} \end{matrix} \text{ ---> [+round] } / \_\_\_ \quad \begin{matrix} +\text{syll} \\ +\text{high} \\ +\text{round} \end{matrix}$$

If the proposal made above is true, it is highly plausible that the lexical entries in data 1-11 have an underlying representation that include a vowel cluster whose initial segment is [+high,+round], e.g., [p^{w}ɔ] ' alive' or [ek^{w}e] ' stock' would have respectively the following underlying representation: /pʊɔ/ and /e+kue/. (Note that the proposed underlying representations are consistent with Abbey's syilable structure.)

When labialization takes place in the environment of a vowel cluster, the operation of P-rule 2 allows the application of P-rule 3 that deletes the initial segment of the vowel cluster.

$$\text{P-rule 3:} \quad \begin{matrix} +\text{syll} \\ +\text{high} \end{matrix} \text{ ---> } \emptyset \, / \_\_\_\_ \, [+\text{ syll}]$$

Application of the of the labialization rules to the underlying representation of the lexical items listed below would produce the following derivations: [p^{w}ɔ] ' alive ,' [h^{w}ɛ̃] ' monkey,' [p^{w}u] ' to bite,' [ek^{w}e] ' stock .'

Underlying Rep.	/pʊɔ/	/hʊɛn/	/pu/	/e+kue/
After P-rule 2	$p^wʊɔ$	$h^wʊɛn$	p^wu	$e+k^wue$
P-rule 3	$p^wɔ$	$h^wɛn$		$e+k^we$
Surface forms	[$p^wɔ$]	[$h^wɛ̂$]	[p^wu]	[ek^we]

It may seem surprising that the verb [p^wu] 'to bite ' is not given an underlying representation that would include a vowel cluster (/puu/) whose first segment is deleted after the labialization process has taken place (as it has been proposed for words such as [$p^wɔ$] ' alive'). Doing so, however, would violate some provisions of the syllable structure proposed for Abbey, i.e.,

Sqsc 3 If: X +syll +syll (Y)

⇓

Then: X +high -high (Y)

α tense αtense

Within a vowel cluster, both vowels cannot be of the same height, and for that matter the second vowel of a vowel cluster cannot be [+high] because the first segment of a vowel cluster within a morpheme root is always [+high].

1.6.3 Palatalization

The consonants /p, b, t, d, f, v, h, r, J, c, s, n, m, gb/ are palatalized in syllable initial position when they occur before a sequence of two vowels, the first of which is [+high, -back] that is /i/ and /ɩ/. As was observed with Labialization, the first vowel of the sequence is later deleted after the palatalization process has taken place. (Palatalized segments are phonetically transcribed as: [Cʲ]).
The data below illustrates some occurrences of palatalized segments in Abbey.

1- /pie/ ---> [pʲe] ' to come from ' 8- /rie/ ---> [rʲe] ' to be afraid '
2- /bie/ ---> [bʲe] ' age class ' 9- /acɩɛ/---> [atšʲɛ] ' fork '
3- /tɩɛ/ ---> [tʲɛ] 'selfishness ' 10- /Jia/---> [džʲa] ' main street '
4- /ndɩɛ/ --> [Ndʲɛ] ' ripe banana' 11- /sie/ ---> [šʲe] ' to carry'
5-/efie/ ---> [efʲe] ' bone' 12- /kanɩɛ/--> [kanʲɛ̃] 'lamp'
6- /vɩɛ/ ---> [vʲɛ] 'to look for ' 13- /mia/---> [mʲã] ' tie '
7- /hʊɔn/ ---> [hʲɔ̃] 'viper ' 14- /gbia/---> [gbʲa] ' to weep'

1.6.3.1 Palatalization Rules

[-syllabic] segments are palatalized in the environment of a sequence of two vowels the first of which is [+high,-back]. P-rule 4 captures that generalization

P-rule 4: [- syllabic] ---> [+palatalized] / ___ ⌈+syll +syll ⌉
| +high -high|
⌊-back ⌋

Parallel to labialization, the application of P-rule 4 allows the operation of P-rule 3 that deletes the initial segment of the underlying vowel cluster. (See Labialization).

P-rule 3 $\begin{bmatrix}+\text{syll}\\+\text{high}\end{bmatrix}$ ---> Ø /___ [+syll]

The process described above applied to Abbey data would produce the following derivations.

Underling form:	/pie /	/vɩɛ/	/sie/
after P-rule 4	pʲie	vʲɩɛ	sʲie
after P-rule 3	[pʲe]	[vʲɛ]	sʲe

The underlying representation proposed above might look abstract because there are no instances of surface vowel clusters within simple morpheme roots in Abbey. However, the claim that palatalization is triggered by an underlying vowel cluster whose initial segment is [-back,+high] is substantiated by evidence from complex-root morphemes. Observe the item below:

[akpi + akɔ] ---> /akpiakɔ/--->[akpʲakɔ]
type of nut shell nut shell

Similarly to labialization, the type of derivation proposed for palatalization allows the elimination of palatalized segments at the systematic phonemic level, thus a great deal of economy is achieved in terms of the number of segments necessary to characterize Abbey sounds, and in terms of the number of rules necessary to generate surface representations, i.e., such derivation utilizes both an existing rule and a rule that parallels that of labialization.

1.6.4 Nasalization

One of the problems an analyst has to face when dealing with nasalization in Abbey is to decide whether to posit nasalized vowels, nasal consonants, or both at the systematic phonemic level.

The following argues that only nasal consonants should be represented at the systematic phonemic level, while nasalized vowels should be analyzed as instances of oral vowels that have become nasalized in the environment of an underlying nasal consonant. Two main factors support that decision:

a- Abbey speakers are known to substitute nasalized vowels in borrowed foreign words with their oral counterparts. It is well known that such substitutions are directly attributable to the phonological properties of the native languages. For instance the nouns "Abidjan" or "commandant" are produced in Abbey without nasalized vowels.

[abidžã̲] ' Abidjan ' ---> [abidža̲]

[k͡mãdã̲] ' commandant ' ---> [komada̲]

(cf. Atlas des Langues Kwa - Abbey- pp. 20)

b- The second reason for not positing nasalized segments as phonemic is internal to the structure of Abbey, as will be seen.

1.6.4.1 Nasal Distribution at the Systematic Phonetic Level

1.6.4.1.1 Nasal Consonant Distribution

At the systematic phonetic level, nasal consonants occur:

1- Syllable initial:

a- before nasalized vowels: [= C V]

$$\begin{bmatrix} +cons & +syll \\ +nas & +nas \\ & -tense \end{bmatrix}$$

1- [tinɔ̃]	' a combe '	7- [komã]	' axe '
2- [amɔ̃]	' a nut '	8- [ñɔ̃]	' to swell '
3- [nã]	' cola nut '	9- [ñũ]	' hot '
4- [nɛ̃]	' a song '	10- [ñã]	' to divorce '
5- [m^{w}ɔ̃]	' to tie '	11- [mʲã]	' tied up / in difficulties '
6- [Ntɛnĩ]	' this one '	12- [nĩ (bə)]	' to choose '

b- before non-nasalized vowels : [C V]

$$\begin{bmatrix} +cons & +syll \\ +nas & -nas \end{bmatrix}$$

11-	[mi]	' grave '	18-	[nɛnɛ̃]	' to promulgate '
12-	[eñi]	' fetish'	19-	[nanã]	' elder leader '
13-	[midži]	' water '	20-	[nak^{w}a]	' paper '
14-	[mereJe]	' yam '	21-	[omɛrɛ]	' ancestors '
15-	[moro]	' urine '	22-	[nɔpʲe]	' meat, animal '

16- [mɔrɔ] ' drink ' 23- [narj̇e] ' shadow '
17- [lomu] ' small '

2-In syllable final: [C (V) V C=]
⌈ +cons ⌉
⌊ +nasal ⌋

In syllable final position all nasal consonants occur morpheme- medially before voiced homorganic consonants.

24- [kãŋgɔ] ' collar-bone '
25- [bombolo] ' alley '
26- [gbɔ̃ŋgɔ] ' horse '
27- [fulãŋga] ' flag '
28- [bendefj̇e] ' very big, huge '
29- [atšj̇eñJe] ' stove '

1.6.4.1.2 Nasalized Vowel Distribution

a-At the systematic phonetic level nasalized vowels occur after nasal consonants.

30- [mɛ̃] ' to swallow '
31- [nã] ' cola nut '
(See word list above 1-10)

b- After the glide [h] : [h V]

⌈ -cons +syll ⌉

⌊ -syll +nasal ⌋

32- [hɟɔ̃] ' viper '

33- [h^{w}ɛ̃] ' monkey '

34- [hã] ' type of cassava '

35- [hɛ̃] ' shine '

c- Nasalized vowels occur as the sole constituent of a morpheme root.

+[V]+

⌈ +syll ⌉

⌊ +nasal ⌋

36- [la+ɛ̃] ' red '

37- [a+ɔ̃] ' house '

38- [a+ɛ̃] ' eye '

(+[la]+ Adjectival prefix)

(+[a]+ nominal prefix)

d- Nasalized vowels precede syllable final nasal consonants:

39- [kãŋga] ' crab '

40- [dɔ̃ndɔ] ' type of small bird '

41- [kpɛ̃mba] ' agouty '

(See data 24-29).

The above description of nasals distributions does not per se answer the question as to whether nasalized vowels at the systematic phonetic level are consequences of underlying oral vowels that have become nasalized, or whether nasal consonants are manifestation of non-nasal consonants that have become nasalized in the environment of underlying nasalized vowels. The second alternative has been ruled out because, even though nasal consonants occur in the environment of nasalized vowels, oral consonants do not occur in the environment of nasalized vowels. (There are instances of oral consonants occurring in the environment of nasalized vowels only within syllables that end with a nasal consonant. cf. Regressive vowels nasalization.) An analysis that would not posit nasal consonants as phonemic segments would have to resort to abstract P-rules to account for the items in (11- 23). That is, to postulate underlying nasalized vowels in the environment of which oral consonants are nasalized: P-rule 5

$$\text{P-rule 5-} \quad [+\text{cons}] \text{ ---> } [+\text{nasal}] / \underline{\quad} \begin{matrix} +\text{syll} \\ +\text{nasal} \end{matrix}$$

The operation of P-rule 5 would necessitate an additional P-rule to denasalize all [+tense] nasalized vowels.

$$\text{P-rule 6} \quad \begin{matrix} +\text{syll} \\ +\text{nasal} \\ +\text{tense} \end{matrix} \text{ ---> [-nasal] / } \begin{matrix} \\ +\text{cons} \\ +\text{nasal} \underline{\quad} \end{matrix}$$

Even if such analysis were to be adopted, it would not account for words such as [nɔpj̀e] ' animal ' , [nanɛ̃] ' elder ', where nasal consonants precede [-tense] vowels.

Moreover, the arbitrary selection of an underlying representation is another problem inherent in the analysis that would postulate an oral underlying

representation for nasal consonants. The following derivation of (15) [moro] ' urine ' exemplifies the difficulties that one encounters if nasal consonants were to be derived from oral consonants.

Surface form:	[moro]
Underl. representation:	/* bõro /
or	/ *põro / ?
P-rule 5 : Cons. nasalization	mõro
P-rule 6: Vowel denasalization	[moro]

The fact that , at the surface level, there are no occurrences of oral consonants in the environment of nasalized vowels underscores the fact that the selection of /põro/ or /bõro/ as the underlying representation of [moro] can't be other than arbitrary.

1.6.4.2 Generalization about Nasalization

On the basis of the data provided so far, the following are generalizations that can be made about nasal segments and nasalization in Abbey:

1- Only lax ([-tense]) vowels are nasalized (in the environment of nasal consonants):

[nɪ̃ (bə)]	'to choose'
[nɛ̃]	'to play'
[nɐ̃]	'cola nut'
[nʊ̃]	'to be at'
[nɔ̃]	'to drink'

2 a- While [-tense] vowels are nasalized in the environment of nasal consonants, the same [-tense] vowels remain oral in the environment of

nasal consonants when they occur in an opened syllable, morpheme medially. That is, within a simple morpheme root with more than one syllable, vowel nasalization occurs in the last syllable .

[nã]	' cola nut '	[nɔ̃]	' mother '
[ko=mã]	' axe'	[nɔ=Jɛ]	' brother'
[na=k^{w}a]	' paper'	[nɔ=pʲɛ]	' meat/ animal '
[kãŋ=gɔ]	' collar bone'	[dɔ̃n=dɔ]	' type of bird '
[ne=nɛ̃]	' promulgate'	[me=gbə]	' eagle '
[mɛ̃]	' eagle'	[mʊsʊ]	' strength '

b- [+tense] vowels are never nasalized regardless of the position of the syllable they occur in within a simple morpheme root.

[mi] ' to turn'
[mimi] ' to turn repeatedly '
[lomu] ' small '
[midži] ' water '
[merɔJe] ' tarot '
[bendefʲe] ' big/ huge '

3- All syllable final consonants are [+nasal]. These nasal consonants have a surface representation word medially only, and are homorganic with the initial consonant of the following syllable (cf. homorganism).)

[kãŋ=gɔ] ' collar bone'
[dɔ̃n=dɔ] ' type of bird '
[a+tom=bu] ' tarot '
[a+ceñ=Je] ' stove'

4- In true cases of reduplication (verb root reduplication), nasalized vowels are copied in every syllable (or morpheme root).

[mɔ̃] ' to climb '

[mɔ̃mɔ̃] ' to walk across, to climb '

[mɛ̃] ' to swallow '

[mɛ̃mɛ̃] ' to swallow rapidly or repeatedly '

[mũ] ' to push hard'

[mũmũ] ' to pound repeatedly with pain'

Nasalization in reduplicated morpheme roots serves as evidence for rejecting words such as [nanã] ' elder ', [nɛnɛ̃] 'to promulgate ' as cases of reduplication which might have been subject to the constraint spelled out in generalization (2a). Thus, [nanã] and [nɛnɛ̃] would have, respectively, the following underlying representation: /nɛnɛ/ and /nana/, while true cases of reduplication, e.g ,[nɛ̃nɛ̃] ' to choose ' would have an underlying representation that encloses the reduplication suffix [Red]: /ne+Red/.

Based on the data and the different generalizations outlined above, vowel nasalization will be characterized either as progressive or regressive.

1.6.4.3 Nasal and Nasalization Rules

1.6.4.3.1 Progressive Vowel Nasalization

In morpheme final position, [-tense] vowels are nasalized under the influence of the preceding nasal consonant.

P-rule 7- $\begin{bmatrix} +\text{syll} \\ -\text{tense} \end{bmatrix} \rightarrow +\text{nasal} \; / \; \begin{bmatrix} +\text{cons} \\ +\text{nasal} \end{bmatrix} \_\_\_\_ \#$

It is very important to include word boundary (#) in the formulation of P-rule 7. Such an inclusion blocks P-rule 7 in non-final syllables, for applying to vowels preceded by nasal consonants: e.g., [nakʷa], [nɔpʲe], [mɩsɩ]; Even though these words have [-tense] vowel that occur immediately after nasal consonants, P-rule 7 fails to apply because vowels that follow nasalconsonats are not morpheme final. Specifying that P-rule 7 applies only to vowel in word final position, not only would account for the presence of an oral vowel in the environment of a nasal consonant in such words as [nɛnɛ̃] and, [nanã], but also would explain why such words are not cases of root reduplications.

1.6.4.3.2 Regressive Vowel Nasalization

[-tense] vowels are nasalized by the effect of the following nasal consonant.

P-rule 8- $\begin{bmatrix} +\text{syll} \\ -\text{tense} \end{bmatrix} \rightarrow +\text{nasal} \; / \; \_\_\_\_ \; \begin{bmatrix} +\text{cons} \\ +\text{nasal} \end{bmatrix}$

The regressive vowel nasalization rule applies in two settings:
1- When a syllable ends with a nasal consonant, the preceding [-tense] vowel is nasalized.

/dɔn=dɔ/---> [dɔ̃ndɔ] '(small) drum'

/kan=ga/ ---> [kãŋga] 'crab'

2- When nasalized vowels surface without nasal consonants in the vicinity, (i.e., nasalized vowels preceded by glides, or single nasalized vowel morpheme roots), an underlying final nasal consonant must be posited in syllable final position.

32- /hɩɔn/---> [hɟɔ̃] 'viper'

33- /hʊɛn/ ---> [$h^{w}\tilde{\varepsilon}$] 'monkey'

37- /a+ɔn/---> [aɔ̃] 'house'

The posited final nasal consonant is deleted after vowel nasalization has taken place in those instances where the morpheme root coincides with a syllable.

1.6.4.3.3 Nasal Consonant Deletion

P-rule 9 $\begin{bmatrix} +\text{consonant} \\ +\text{nasal} \end{bmatrix}$ ---> Ø | ___#

Nasal consonants are deleted only in word final position. The deletion rule does not apply to nasal consonants that are morpheme media. Since most simple morpheme roots to which P-rule 8 and P-rule 9 apply are monosyllabic, the distinction between syllables and morpheme roots is difficult to establish because both structures coincide. Nevertheless, there is

motivation for P-rule 8 and P-rule 9 based on the fact that in surface structures, syllable final nasal consonants are actualized only morpheme medially, i.e., there are no surface representations of nasal consonants at the end of a morpheme root.

It might seem artificial to set up for example an underlying representation /a+ɔn/ for [aɔ̃] ' house ,' but if one considers any alternative analysis of nasalization in Abbey, the probable outcome would be, in addition, to nasal consonants to posit nasal vowels as phonemic segments. Such analysis would be costly in terms of the additional phonemic segments we would have to add to our phonemic matrix.

1.6.4.3.4 Homorganism

Two instances of nasal homorganism are observed in Abbey:

1- Within morpheme medial position, a nasal consonant occurring in syllable final assimilates the feature specification of the place of articulation of the following consonant.

/dondo/---> [don=do] ' type of drum'
/kanga/---> [kãŋ=ga] ' crab'
/kunbo/---> [kum=bo] ' blowing-horn'
/acenJe/---> [a+ceñ=Je] ' stove'

P-rule 10

$$\begin{bmatrix} +\text{cons} \\ +\text{nasal} \\ +\text{cor} \end{bmatrix} \rightarrow \begin{bmatrix} \alpha\,\text{ant} \\ \beta\,\text{cor} \\ \gamma\,\text{back} \end{bmatrix} / \_\_\_ = \begin{bmatrix} +\text{cons} \\ \alpha\,\text{ant} \\ \beta\,\text{cor} \\ \gamma\,\text{back} \end{bmatrix}$$

2- Within word boundaries the nominal prefix +[N-]+ (represented as /∂. at the systematic phonemic level) is homorganic with the initial consonant of the morpheme root to which it is attached.

Nbu ---> [M+bu] 'yam'
Nde ---> [N+de] 'banana'
Ngañɔ ---> [ɴ+gañɔ̃] 'sand'
Nje ---> [Ñ+je] 'here'

P-rule 12

$$\begin{bmatrix} +\text{cons} \\ +\text{syll} \\ +\text{nasal} \\ +\text{cor} \end{bmatrix} \rightarrow \begin{bmatrix} \alpha\,\text{ant} \\ \beta\,\text{cor} \\ \gamma\,\text{back} \end{bmatrix} / \_\_\_ \begin{bmatrix} +\text{cons} \\ +\alpha\,\text{ant} \\ \beta\,\text{cor} \\ \gamma\,\text{back} \end{bmatrix}$$

For the sake of this study, the nominal prefix [N-] is represented phonemically as /n-/. The motivation that lead to such representation (syllabic nasal [+cons, +syll, +nasal] for nasal consonant [+cons, -syll, +nasal]) are two fold:

a- Syllabic nasals do not occur in lexical morphemes, they are the only segments that occur exclusively in grammatical morphemes, (every other segment is shared both by lexical and grammatical morphemes).

b- More importantly, a great deal of simplification and economy is achieved by deriving syllabic consonants from a non-syllabic consonant. Instead of three classes of segments:

1- [+consonantal] for consonants

2- [+syllabic] for vowels

3- $\begin{bmatrix} -\text{consonantal} \\ -\text{syllabic} \end{bmatrix}$ for glides

a fourth class of segments: 4- $\begin{bmatrix} +\text{consonantal} \\ +\text{syllabic} \end{bmatrix}$ would have to be postulated if syllabic nasals were phonemic.

The application of P-rule 12 is made possible by a prior phonological rule (P-rule 11) that derives [N-] from the underlying +/n/+.

P-rule 11- $+/\ n\ /+ \text{ ---> } [\ +\text{syll}\ ] / \_\_\_ +[\text{Noun Root}]+$

$+\text{G.M.}$

$\begin{bmatrix} +\text{cons} \\ +\text{nasal} \\ +\text{cor} \end{bmatrix}$

Thus, the following exemplifies (the simultaneous) operations of P-rule 11 and P-rule 12:

Under. Form	P-rule 11	P-rule 12	
n+ de	N+de	[Nde]	' banana '
n+ bu	N+bu	[Mbu]	' iam '
n+gañɔ	N+gañɔ̃	[ŋgañɔ̃]	' sand '
n+je	N+je	[Ñje]	' here '

This illustrates the operation of nasalization rules in Abbey:

Under. R.	/kɔma/	/mʊsʊ/	/gbɔnɡɔ/	/han/	/ a+ɔn/	/nje/
P-rule 7	kɔmã					
P-rule 8			gbɔ̃nɡɔ	hãn	aɔ̃n	
P-rule 9				hã	aɔ̃	
P-rule 10			gbɔ̃ŋgɔ			
P-rule 11						Nje
P-rule 12						Ñje
Surface F.	[kɔmã]	[mʊsʊ]	[gbɔ̃ŋgɔ]	[hã]	[aɔ̃]	[Ñje]

1.6.5 Additional Phonological Rules

1.6.5.1 Vowel Deletion

Within single morpheme roots, (i.e., morpheme roots that are not compound or reduplicated roots), vowels are optionally deleted when they immediately precede a [+sonorant] consonant; that is the liquids /l, r/, and the nasal consonants.
The vowel deletion rule can be stated as :

P-rule 13- [+syll] ---> Ø / __ = ⌈+cons ⌉
⌊ +son ⌋

Two facts render the vowel deletion rule optional:
1- P-rule 13 is a performance rule, it applies in the context of a casual speech. In a careful and well articulated speech the rule tends not to apply: the noun [mɔrɔ] ' drink' is produced as [mrɔ] in a casual speech, and [mɔrɔ] in a slow speech.

Slow speech	Casual speech	
mənənə	mnənə	'stutter'
mararo	mraro	'ash'
mɔrɔ	mrɔ	'urine'
Nsʲɔmɔlɔ	Nšʲɔmlɔ	'soap'
džʲara	džʲra	'lion'
miñe	mñe	'root'
kpəbələ	kpəblə	'dark forest'
mfʊnɛ̃	mfnɛ̃	'stars'

2- a- Within a trisyllabic morpheme root, P-rule 7 does not apply to every vowel that meet its conditions.

mnə̲nə	'stutter'
mra̲ro	'ash'
N+šj̲ə̲mlɔ	'soap'
bə̲mlo	'corridor'

b-The rule does not apply to certain words even though the conditions for vowel deletion are met. These words remain unchanged whether or not they are uttered in slow or fast speech:

N+gələ	'arrow'	a+kɔrɔ	'mat'
N+tolo	'cotton'	a+kala	'residue'
kpala	'witchcraft'	tʊrɛ	'to cross'
kala	'liana'	Ŋ+kɔrʊ	'a punch'

1.6.5.2. /g̲/ and [g]

There is a total complementary distribution between the velar fricative /g̲/ and its oclusive counterpart [g]. In surface structure, the occlusive velar [g] occurs exclusively preceded by a nasal consonant. The fricative velar /g̲/, on the other hand. occurs elsewhere.
This generalization can be captured by the following P-rule:

P-rule 14- $\begin{bmatrix} +\text{cons} \\ +\text{back} \\ +\text{cont} \end{bmatrix} \text{---> /} \begin{bmatrix} -\text{cont} \\ -\text{ant} \\ +\text{voiced} \end{bmatrix} \begin{bmatrix} +\text{cons} \\ +\text{nasal} + \end{bmatrix} = \_\_\_$

[kãŋ=ga]	' crab '		
[Ɲ+gʊ]	' salt '	[g̱ɔ]	' hog '
[Ɲ+gu]	' sun '	[g̱ʊ]	' to struggle '
[kãŋ=gɔ]	' collar bone '	[e+g̱a]	' skunk '
[Ɲ+gañɔ̃]	' sand '	[e+g̱e]	' chair '
[Ɲ+gɔ]	' nose '	[g̱o]	' dog '
[Ɲ+gala]	' sugar cane '	[g̱ɛg̱ɛ]	' to write '

1.6.5.3 /s/ and [š]

The segment / s / which is [+continuant,+coronal,-high] becomes [+high] (that is [š]) in the environment of [+high, +tense] vowels. There is a total complementarity of distribution between /s/ and [š]. At the surface level, while [š] occurs exclusively before [+high,+tense] vowels, the segment [s] occurs elsewhere. This generalization is captured by P-rule 15.

P-rule 15

$$\begin{bmatrix} +\text{cons} \\ +\text{cont} \\ +\text{cor} \\ -\text{high} \end{bmatrix} \text{---> [+high] / \_\_\_} \begin{bmatrix} +\text{syll} \\ +\text{high} \\ +\text{tense} \end{bmatrix}$$

[s]		[š]	
1-	[mʊsʊ] ' strength '	7- [naši]	' to tear off '
2-	[se] ' bring '	8- [ši]	' father '
3-	[sɛ] ' body '	9- [šu]	' to arrive '
4-	[sɔ] ' to bear fruit '		
5-	[so] ' to stay '		
6-	[sʊ] ' to pain '		

1.6.5.4 / c, J / and [t š, dž]

In surface structures, the consonants [c, J] ([-cor, +pal, -nas]), and [tš, dž]([+cor,+pal, -nas]) occur in mutually exclusive environments. [tš] and [dž] are attested only in the environment of [+high,+tense] vowels ([i,u]); [c] and [J] occur elsewhere.

P-rule 16

$$\begin{bmatrix} +\text{cons} \\ -\text{cor} \\ +\text{pal} \\ -\text{nasal} \end{bmatrix} \text{---> [+cor] /} \begin{bmatrix} +\text{syll} \\ +\text{high} \end{bmatrix}$$

[midži]	'water '	[cʊ]	' to pick '
[džumã]	' work '	[ce	' to drive'
[dž^{j}a]	' street '	[cɔ]	' goat '
[dži]	' cut '	[Ja]	' to fall '
[tš^{j}e]	' to listen '	[Je]	' gazelle '
[tšu]	' gun '	[Jʊ]	' sweet '
[etši]	' yesterday '	[Jɔ]	' story '

1.6.6 Phonetic Segments

Consonants

					+Consonantal																
					+Ant						-Ant						+Ant				
					-Cor			+Cor			-Cor										
					-Back									+Back							
						+R	+P		+R	+P					+R	+P		+R	+P		
-syll	-nas	-son	-cont	-voic	p	p^w	p^j	t	t^w	t^j	tš	$tš^w$	$tš^j$	c			k	k^w		kp	kp^w	kp^j
				+voic	b	b^w	b^j	d	d^w	d^j	dž	$dž^w$	$dž^j$	j			g	g^w		gb	gb^w	gb^j
		+son						l													
			+cont					r	r^w	r^j											
		-son		-voic	f	f^w	f^j	s			š	$š^w$	$š^j$									
				+voic	v		v^j										ɡ					
	+nas	+son	-cont		m	m^w	m^j	n	n^w	n^j				ñ			ŋ					
+syll					M			N						Ñ			Ŋ					

Chart 8: Systematic Phonetic Consonants

+R= Round

+P= Palatalized

Vowels

	- Back	+Back	-Back	+ Back	- Back	+ Back
+ High	i	u	ɪ	ʊ	ĩ	ʊ̃
-High -Low	e	o	ɛ	ɔ	ɛ̃	ɔ̃
+ Low	ə		a		ã	
	- Nasal				+ Nasal	
	+ Tense		- Tense			

Chart 9: Systematic Phonetic Vowels

1.7 Tonology

The following analysis is an overview of tone distribution within nouns, verbs and adjectives. The analysis does not tackle tone rules in relation to sentences or to particular grammatical morphemes, e.g., tone changes in terms of the effects of Tense or Negation. In addition, the underlying representation of contour (glide) tones is examined. At issue is whether contour tones to be represented at the phonemic level as level tones, or as unitary tonal element.

A linguistic description of Abbey must posit the existence of tone as the data below illustrate.

1- Eddy ɔ šiga dɔ́
Eddy has money enough
'Eddy has a lot of money'

2- dɔ so ünə ogoši
gorilla is tree under
'a gorilla is under the tree'

3- Eddy eš̀ješ̀je dɔ̀
Eddy sets traps
'Eddy sets animal traps'

The contrasting tones of dɔ provide evidence that Abbey has " lexically significant, contrastive, but relative pitch on each syllable " (Pike 1948, P. 43).[7] In Abbey, then, words meanings are dependent on pitch level.

Besides its lexical function, tone in Abbey is grammatically significant as well.[8]

4 a- Eddy jí M̀pó
Eddy went camp
Eddy went to his camp

b- Eddy lə Mpó $p^{w}ɔp^{w}ɔ$
Eddy built camp new
Eddy built a new camp

5 a- Ngu ehɛ̂
sun shines
'The sun shines'

b- Eddy só Ngu
Eddy sat sun
'Eddy sat under the sun'

6 a- Eddy jí éridží
Eddy went farm
Eddy went to his farm

b- Eddy tú èridží lɔ́ mə
Eddy framed farm gave me
'Eddy worked the farm on my behalf'

7 a- mə́ ši
my father

b- mə̀ ši
your father

8 a- mə Øjí Ogboba---> mə̀ji Ogboba
I Acc. go Agboville I went to Agboville

b- mə Øjí Ogboba---> mə́jí Ogboba
I Inj. go Agboville I would go to Agboville

In sentences (4b), (5b), and (6b), the High tone the nominal prefix of the nouns Mpó, Ngu, and eridži bear, indicates the "locative" form of these nouns. In comparison the contrastive Low tone on the nominal prefix of the same nouns in (4a), (5a), and (6a) indicates the normal nominal form. In items (8a), and (8b) the tense and the mode of the verb [ji] 'to go' is indicated by tonal effect on the personal pronoun [mə] 'I'. The tonal effect is that of a floating High tone that indicates the Accomplished tense, and a floating Low tone for the Injunctive. These tones are the only surface feature that materialized the Accomplished, and the Injunctive (tense) marker

1.7.1 Tone Rules and Tone Representation

Our investigation has not yielded a great number of generalizations in the tone pattern and tone rules of Abbey, though we believe that further analysis might well disclose greater complexity and generalization. However, within lexical entries, tone distribution seems to differ according to lexical categories.

1.7.1.1 Permissible Tone Sequences

Nouns

High	Mid	Low
9- [há] ' cassava '	10- [kpe] ' medicine '	11- [kpè] ' kapok-three '
[bá] ' basket '	[hɔ̃] ' tortle '	[bà] ' hand '
[gó] ' dog '	[Je] ' gazelle '	[jè] ' emetic '
[hé] ' liana '	[dɔ] ' gorilla '	[dɔ̀] ' a trap '

Verbs

12- [dí] ' to eat '
[tʊ́] ' to be fast '
[rú] ' to fly '
[é] ' to kill '

In monosyllabic nouns, all three level tones (High, Mid, and Low) are permissible. Monosyllabic verbs in the other hand carry only High tone. The High tone changes to Mid tone when the verb is in the Imperative form.

13- [di] ' eat ! '
[tʊ] ' hurry up ! '
[ru] ' fly ! '
[e] ' kill ! '

The obvious implications for these remarks is that tone will not be marked for monosyllabic verbs at the lexical level.

Disyllabic

Nouns

HH	LL	MM
14-[kpátá] ' lizard '	15-[kùkù] ' insect '	16-[gɛmɛ̂] ' elder '
[džúmā́] ' work '	[lɔ̀hɔ̃] ' six '	[dɛgɛ] ' crocodile '
[kókó] ' neck '	[kā̀ŋgɔ̀] 'collar bone '	[kpaka] ' type of basket'
[fáñí] ' mountain '	[gbàjì] ' a week '	[jikɔ] ' sister in law '

HL	LM	MH
17-[kā́ŋgà] ' crab '	18-[tìnɔ̃] ' comb '	19- [rɔnɛ̂́] ' ant eater '
[dúkù] ' handkerchief '	[kɔ̀ñJɛ] 'guinea-fowl '	[pulé] 'mushroom powder'

HM	LM	ML
20-[jígɔ] 'woman '	21-[kpɛ̂mba] 'agouti'	22-[jibù] ' brother in law '
[jíkpe] ' man '	[nɔ̀Je] ' brother '	[nɔbù] ' uncle '
[rŭnɔ̃] ' finger '	[mìdži] ' water '	[govì] ' monkey '

Verbs

Reduplicated root	Non-reduplicated root
HL	HL
23-[kɛ́kɛ̀] ' to share '	24-[kírì] ' to scrub '
[JéJé] ' to try '	[bídì] ' to cover '
[vívì] ' to ask '	[púlə̀] ' to wake up '
[jájà] ' to instruct '	[fúlə̀] ' to swell '

25-Adjectives

[lòmù] ' small '

[lègbə̀] ' big '

[fùrù] ' yellow '

[lòfù] ' white '

In disyllabic lexical entries, all nine tone sequences are permissible for nouns. Disyllabic verbs and adjectives however are restricted to only a single permissible tone sequence each. Within disyllabic verbs, whether the verb has a simple or a complex root (reduplicated verb root), the permissible sequence is High-Low. As for adjectives the permissible tone sequence is Low-Low, that is, a Low tone marking on both the adjective prefix and the adjective root.

1.7.1.2 Impermissible Tone Sequences

Within lexical entries, with more than two syllables (mostly nouns with complex root), morpheme medial Mid tones are not permissible. This gap in tone distribution becomes apparent when one examines the rules leading to the formation of "gerunds" and compound nouns.

"Gerund" [Noun root + Verb root]

26- kpèle +rú---> kpèlèrú ' wild-yam harvesting '
wild-yam harvest

àɔ̃+lə́ ---> àɔ̃lə ' house building '
house build

sɛ+gʊ́---> sɛ̀gʊ́ ' a bath '
body bath

kəkə+dí---> kə̀kə̀dí ' stupidity '
stupid eat

Compound-nouns [Noun root +Noun root]

jígɔ+Jé---> jígɔJé ' young girl '
girl small

tèñi+šìgbə ---> tèñišìgbə ' door way '
door way

šìgbə + lá---> šigbəlá ' cross road '
way branch

àlɔ+Jé---> àlɔJé ' small mortar
mortar small

The followings schematizes tone changes morpheme medially.

M + H ---> L H
L M + H ---> L L H
H M + H ---> H L H
L M + L M ---> L L L M

As the rules above indicate, it is not clear whether the constraint on Mid tone morpheme medially is due to the influence of a particular tone or a tone sequence; Mid tone changes to Low tone whether it is in the environment of High or Low tones: generally, when the last tone element of the first member of a compound is a Mid tone, it appears in the compound as a Low tone.

1.7.1.3 Tone Representation

Given the three contrasting level tones assigned to dɔ in (1) through (3) above, and the contrasting tone the word etši displays in (27) below, it seems fairly certain that one must posit at least three phonemic tones at the lexical level in Abbey.

27- ètši maji Jɛku
tomorrow I will go market
'I will go to the market tomorrow '.

məji Jɛku étši
I went market yesterday
'I went to the market yesterday '.

ètší eveve ètši edi
homonym sells ropes
'The man I am named after sells ropes'

But observe the following data:

28- [pɛ̂] 'tired'
[fɛ̂] 'meat'
[kpâ] 'woodpecker'
[kpɔ̂] 'to boo, to shout after'

29- [kpɛ̂kpɛ́] 'hard ones'
[vîvi] 'black ones'
[dîdi] 'heavy ones'

As the data (28 ,-29) above indicate, in addition to the level tones previously mentioned, contour (glide) tones must be posited in Abbey. The immediate question that needs to be answered is, how would glide tones be represented at the systematic phonemic level ? That is, should contour tones be decomposed into sequences of tones, or be represented as a unitary tonal element ?

The debate over contour tone representation is not new. A number of proposals have been made for the phonological representation of contour tones. Gruber (1964),Wang (1967), for example propose that contour tones should be treated as units because they associate tones with syllables rathher than segments. Woo (1969), Leben (1973) on the other hand claim that tonal elements are assigned to segments units. They postulate that the universal system of tone features includes only tone elements. Therefore, contour tones are to be analyzed at the lexical level as sequences of level tones.

We ruled out the unitary analysis of contour tones, because so far there is no evidence to associate tone with the syllable in Abbey. Deriving contour tones in Abbey from an underlying sequence of level tones in the other hand seems to be supported by some facts:

a- The reduced number of lexical entries that bear glide tones , and the predictability of the occurrence of those particular tones in certain contexts strongly suggest that glide tones are not phonemic in Abbey.

b- Within lexical morphemes, glide tones occur in in a single pattern: High-Low. In that setting a common single underlying level tone can be posited with an ascending or descending pitch attached to it. That is, glide tones are to be treated as an underlying level tone that shifts value over the course of its production. If such analysis is accepted, in data (28-29), contour tones would be represented at the underlying level as an underlying High tone that surfaces with a descending pitch. The problem with such an analysis is that in Abbey positing an underlying Low tone that surfaces with an initial High tone is equally possible. Contour tones cannot be reduced to a common denominator without making an arbitrary choice.

c- Another explanation for the presence of contour tones would be to assign contour tones to an underlying vowel cluster, and analyze the surface glide tone as a composite of an underlying level tone and a "shadow" tone, i.e., a tone left behind after a vowel deletion. Such a solution was proposed by Goldsmith (1975, pp. 135) who makes the following remark about tones in African languages :

> When a vowel desyllabifies or is deleted by some phonological rule, the tone that it was bearing does not disappear--rather, it shifts its location and appears on some other vowel .

Though radical such a proposal seems to be, it is verifiable in Abbey in a specific context.

In Abbey, morpheme final [ə] is deleted when it immediately precedes a grammatical morpheme that has a vowel morpheme initially (P-rule 17).

P-rule 17- [ə] ---> Ø /___#[+syllabic]

Then, observe the following sentences and their respective derivation below:

30- mǎ ' I came '
31- jikpenǒ anə ' The man who came '
32- mĕévé ' I will not buy/ I don't buy "

Derivations

30

Underl representation:	mə Ø á I Acc come
Mid tone lowering (cf. Impermissible tone pattern)	mə Ø á
Tone assimilation (copy)	mə á
[ə] deletion	m á
Surface form	mǎ

31

Under. representation	jikpenə ó ánə
Mid tone lowering	jikpenə ó ánə
[ə] deletion	jikpen ó ánə
Surface form	jikpenǒ ánə

32

Under. representation	mə évé
Negative Insertion	mə éávé I Hab Neg buy
Negative morpheme assimilation	mə éévé
Mid tone lowering	mə éévé
[ə] deletion	m éévé
Surface form	mĕévé

If the proposed derivations of glide tones above is correct, it would support the claim that glides tones in Abbey are to be represented at the underlying level by a sequence of two level tones.

The proposed derivation, if accepted, rises a fundamental issue as to tone assignment; tone as a feature on segments (segmental view of tone), or tone

as the feature of a larger units such as syllables or sentences (suprasegmental view).

So far, the impression in this study is that tone is a feature of the segment it is assigned to. If this were the case, why is that tone is not deleted alltogether with the segment it is assigned to ? This question can be answered by including in a tonology of Abbey the proposal made by Goldsmith (1975) whereby tones should be viewed as " segments on an equal rank with phonological segments." That is, tone is an entity that behaves independently of the syllabic segment it is assigned to.

FOOTNOTES

1- There are actually a restricted number of monosyllabic lexical morpheme roots which have a single vowel constituent, or an initial vowel followed by a consonant , i.e., =v(c)= morpheme roots. To account for these morphemes one would have to render optional the initial consonant in the syllable structure =C(V)V(C)= we have proposed for lexical morphemes. I have discarded such a proposal, and instead listed lexical morphemes with =V(C)= structure as exceptions to Sqsc 1. This decision is motivated by the fact that lexical morphemes with =V(C)= structure constitute a minute percentage of the total number of items in the lexicon. Only nine words (listed below) have been found to have the structure =V(C)=):

1-	o +/o/+	[oo]	' village '
2-	a +/a/+	[aa]	' story '
3-	a +/ɛn/+	[aɛ̃]	' eye '
4-	a +/ɔn/+	[aɔ̃]	' house '
5-	la +/en/+	[laɛ̃]	' red '
6-	+/o/+	[o]	' to pick fruits '
7-	+/e/+	[e]	' to kill '
8-	+/ha=o/+	[hao]	' fog '
9-	+/ɔ/+	[ɔ]	' have'

The syllable structure =V(C)= then does not constitute a generality and should not be posited as a representative syllable structure for lexical morphemes.

2- In surface structures, syllable final nasals are materialized only morpheme medially, where they are homorganic with the following consonant. That is, syllable final nasals assimilate to the following consonat and are realized as [m], [n], [ñ], or [ŋ] depending of the feature specification for the place of articulation of the following consonant. Following Trubetzkoy (1939), the syllable final nasals [m, n, ñ, ŋ] are contextual varial of the same phoneme /N/. Traditionally such archiphoneme would not be marked for for place of articulation in systematic matrices. But to comply with Stanley's requirement that every matrix be fully specified, we have arbitrarily decided to specify it as [+coronal].

3- We have discarded all morphemes with more than three syllables because they are all instances of foreign words, onomatopoeia , or reduplicated roots.

Onomatopoeia
o+fu=ru=mun=du+ [ofurumundu] ' donkey '

reduplication /onomatopoeia
ko=ro+ko=ri# [krokori] ' toucan '
#gbu=ru+gbu=ru# [gburugburu] ' wooden lorry /wagon'

4- There is actually the suffix [-nə] that can be classified as as nominal grammatical morpheme. When suffixed to a lexical item, [-nə] expresses the definite quality of that item. The absence of [-nə] at the of a noun for example, marks the indeterminate status of that noun.

mə ve tomobi
I bought car
'I bought a car '

mə ve tomobinə
I bought car Det.
' I bought the car '

Within relative clauses, the status of [-nə] as a determiner extends beyond marking the definitness of a single word to the whole relative clause where it is suffixed to the left-most constituent of the clause:

tomobinə Aka venə
'The car that Aka bought '

tomobinə Aka ve Jɛku gbonə
car Det. Aka bought market at
'The car bought at the market '

(The absence of [-nə] at the end of the last constituent of a relative clause remove the "relative" reading of the clause).
We have not classified [-nə] as a nominal nor as a verbal grammatical morpheme, because it seems to be more a feature on phrases (verbal or nominal), rather than a feature on an individual word:

aɔ̃nə jɛsɛ
'The house is beautiful .'

aɔ̀ gbəndə jɛsɛ
house big Det. beautiful
'The big house is beautiful.'

5- There are few nouns (generally nouns pertaining to humans) that show an alternation between their singular and plural forms.

Singular		Plural	
jiki	' human being '	Ŋgiki	' human beings'
gɛmɛ̂	' elder '	Ŋgɛmɛ̂	' elders'
jikpe	' man '	ejikpe	' men'
jigɔ	'woman '	ejigɔ	' women'

In such instances, the plural form is indicated by the addition of a nominal prefix to the singular (which ordinarily does not surface with one.)

6- As specified by Sqsc 22, all nominal prefixes bear low tone at the phonemic level. However, a number of words (exhaustively listed below) are phonetically represented with high tone. Judged from the fact that nouns with nominal prefix that carry low tone have occasionally the low tone changed to high tone to indicate grammatical assignment of tone (Ǹpó 'a camp ' , and Mpó ' at/to the camp '), it would not be highly speculative to say t the high tone on nominal prefixes results from a grammatical assignment of tone that is no longer functional.

[á+dʊJɛ]	'pineapple'
[á+laka+]	'trunk'
[á+kañɛ̂]	'shrimp'
[ó+rugbu]	'night'
[ó+ro]	'head'
[Ǹto]	'rat'
[Ǹde]	'banana'

7- High tone is indicated by an acute accent, Low tone by a grave accent, and Mid tone by the absence of any tone marking.

8 - There is no meaningful way to describe or characterize all grammatical use of tone. Nevertheless, accounts of the way tone manifests grammatical function falls into two categories:

a- Floating tone

In the sentence below, the Accomplished tense is indicated by a floating Low tone in lieu of a tense marker.

mɔ̀ Ø ca mla
I Acc. sleep
I slept

b- Grammatical assignment of tone.

Schuh (1978) describes a grammatical assignment of tone as the morphological placement of tone on a morpheme to mark a specific gramatical feature. In Abbey for example, the tone assigned to the possessive [mɔ] is in the first or second person singular,

mɔ́ nɔ̃
'my mother'

mɔ̀ nɔ̃
'your mother'

CHAPTER II MORPHOLOGY

2.0 Introduction

In spite of long-renewed interest in Morphology, the field still embodies a number of unresolved controversial issues; the definition of the nature of morphemes and words, for example, is still governed by theoretical considerations .[1] And there is still no consensus whether Morphology should be approached as a separate entity, as suggested by Morris Halle (1973), or as part of the phonological component as proposed by Chapin (1970) or by Aronoff (1981). In what follows, we will not concentrate on these issues per se, but rather look into the mechanism that supports word-formation in Abbey.

It is a well known fact that speakers of a language have an intuitive knowledge of what represents an actual word, i.e., an internalized knowledge of what constitutes a genuine word of the language and how morphemes are linearly ordered for the derivation of new words. If one accepts the notion that a grammar should reflect the intrinsic and formalized knowledge of what a speaker knows about his or her language, the grammar we are proposing for Abbey, then, should include not only the list of Abbey morphemes and words but, more importantly, should also incorporate the rules that formalize the ways in which morphemes concatenate to generate new words, i.e., to capture an Abbey speaker's intuition of lexical relatedness.

A speaker of Abbey can readily identify the word [funɔ̃rogbə] ' big toe ' as an agglutination of the noun [fu] ' foot ', the noun [nɔ̃] ' mother/ principal ', the noun [(o)ro] ' head ', and the adjective [(le)gbə] ' big '.

Noun ---> [Noun +Noun + Noun + Adjective]

funorogbə ---> fu nɔ̃ (o)ro (le)gbə
big toe foot principal head big

The internal structure displayed by the noun [funɔ̃rogbə] and a large number of other Abbey nouns can be captured by general rules that have characteristics different from those of phonological or syntactic rules.

1- Eddy ji ve Nde
Eddy went buy bananas
' Eddy went to buy some bananas. '

2- Eddy ji Ndeve
Eddy went bananas-buying
' Eddy went to buy some bananas. '

The fact that the substantive [Ndeve] ' banana-buying' is not an isolated occurrence of a noun derived from the agglutination of a verb and its object in an inverted order (sentence---> subject-verb-object), but rather part of a category of gerunds, has to be captured by rules that are not phonological or merely syntactic, but part of the operation of word-formation. In addition, leaving this type of word-formation unexplained makes it difficult to account for the formation of other words, e.g., the understanding of the operation of Agent Noun formation requires a prior knowledge of Gerund formation.

Agent Noun--> Gerund+go

2.1 Morris Halle's Framework

The Morphological description we are advocating is based on Morris Halle's (1973) Prolegomena to a Theory of Word Formation. This model presupposes an autonomous Morphological Component with three sub-components.

2.1.1 The Morpheme List

The morpheme list includes morpheme roots of major lexical categories, e.g., noun roots, verb roots, adjective roots, and derivational and grammatical morphemes. Each morpheme in the list is supplied with the grammatical information that allows the morpheme to be substitutable only in certain slots in a sentence, e.g., the verb root [ru] '__' in the morpheme list will be marked [+verb, +transitive] that is, a verb in Abbey with an obligatory object noun complement on which such it is semantically dependent.

2.1.2. Word Formation rules.

The second sub-component is a set of unordered word-formation (redundancy) rules, that tell, among other things, how the morphemes (from the morpheme list) are to be arranged in sequence. The list of morphemes together with the rules of word formation define the set of potential words of the language. To that effect the Morphological component we are proposing is not a word-based approach, as suggested by Mark Aronoff (1981), but rather a morpheme-based approach. Word-formation rules are cyclical (recursive), i.e, the new words generated by the word-formation rules are bracketed internally:

[Mbɔlɛgo] 'a talkative person, a speaker'

[Mbɔ] lɛ] - go]
speech speak - person

To operate properly, word-formation rules must contain some information about the subcategorization and selectional restrictions to which the words are subject, and have access not only to the Dictionary (the formation of certain words presupposes the existence of others), but also to the rules of the phonological component.

2.1.3. The Exceptional Filter

The third sub-component of Morphology is an exceptional filter which, with the information it contains (the idiosyncratic properties of individual words or groups), reduces the number of potential words after they have been generated by the word-formation rules, to the actual number of occurring words. These actual words are those listed in the Dictionary. The filter supplies a special markers indicating that the words in question are to be treated in a special manner: ± lexical insertion, or ± abstract.

If Halle's proposal is correct, the following would be a sample of the mechanism of word-formation in the Morphological component:

In Abbey, the bound morpheme [-fa] (*'place', 'room'*), a formative that is not meaningful in its own right or used as a separate item in a sentence, is suffixed to a simple or complex noun root (e.g., gerund nouns, or simple root nouns) to generate compound nouns that designate a specific room.

The following morphemes are part of the Abbey morpheme list.

rɛ (ši)	'to sleep '
sɛ	'body '
gʊ (sɛ)	'to take a bath '

tɩ	'house, chamber '
le (tɩ)	'to put in prison '
Mpʊ	'food'
ši (la)	'cooking '
wɔsɔ	'chicken '
vjañɔ̃	'sheep '
ru	'cow'
kpe	'medicine'
-fa	*'room'*

Consider the following word formation rule that stipulates that the bound morpheme [-fa] is suffixed to nouns to generate compound nouns that specify the specific designation of a room.

WFR 1: [Noun root + -fa] ---> [Noun]
[+semantic1]

[+semantic 1]= place where something is kept or done.

The word formation rule (WFR 1) applied to items in the morpheme list would generate the following potential words:

širɛfa	'bedroom'
sɛgʊfa	'bathroom'
tɩlefa	'prison'
wɔsɔfa	'hen house'
vjañɔ̃fa	'shed for sheep'
rufa	'shed for cows'
*ekpefa	'medicinal clay'
*Mpʊšilafa	'kitchen'

(Some of these nouns have been subjected to other word formation rules prior to the the application of WFR 1, e.g., the Gerund Noun Formation rule).

As expected, some items in the list of potential words above, in spite of the fact that they are well formed, either do not occur in Abbey (e.g., *Mpqsilafa), or present some semantic idiosyncrasies (e.g., ekpefa). The words with idiosyncratic behavior (those marked with an asterisk) are listed in the exceptional filter through which the words have to pass after they have

been generated by the word formation rule. In the case of [*Mpʊšilafa], which does not exist in Abbey in spite of the fact that it is "not semantically nor syntactically or phonologically" anomalous (and therefore an accidental gap according to Halle), it would be reflected in the grammar as not being subject to lexical insertion. The information provided in the exceptional filter would indicate that [*Mpʊšilafa] cannot occur in any Abbey sentence and would, therefore, be marked [-lexical insertion]. As for [ekpefa] 'medicinal clay,' that presents a semantic idiosyncrasy (its meaning being not a room where medications are kept, but rather a type of clay that is used as medicine), the exceptional filter would supply the appropriate indication about its semantics and would be marked [+abstract].The nouns [*Mpʊšilafa] and [ekpefa] indicate that indeed a special filter is needed in Abbey morphology.
The words listed below :

širɛfa	'bedroom'
sɛgʊfa	'bathroom'
tʊlefa	'prison'
wɔsɔfa	'hen house'
vɟañɔfa	'shed for sheep'
rufa	'shed for cows'
ekpefa	'medicinal clay'

would be the actual reduced number of words generated by WFR I that actually occurr in Abbey sentences. These are the words that would be listed in the Dictionary.

2.2 Word-Formation

The process of word-formation in Abbey is a binding process that consists of joining to an existing clearly identifiable simple or complex morpheme root another morpheme root or a derivational morpheme. Descriptively speaking, the process of word formation in Abbey can be divided into two types:

1- Compound morpheme root word-formation.

The compound word formation is an agglutinative process (usually used for the formation of compound nouns and gerunds) that consists of adding to an existing lexical morpheme root another morpheme root. Data 1 through 5 below illustrate that process.

[Noun]--->[[Root]+[Root]]

2- Derivational Word Formation.

The Derivational word formation consists of adding a derivational morpheme (a morpheme that does not occur independently, e.g., [-go] or [Red] (Reduplication)) to an existing simple or complex morpheme root. Items 6 through 10 below exemplify that process.

[Noun]---> [[Root]+[derivational morpheme]]

1- nak^{w}a+ši ---> nak^{w}aši ' male teacher '
paper +father (master)

2- nak^{w}a+nɔ̃ ---> nak^{w}anɔ̃ ' female teacher '
paper + mother

3- saka+dži ---> sakadži ' rice harvest '
rice harvest

4- nɛ̃+ti ---> nɛ̃ti ' singing '
song sing

5- ti+miñe ---> tree roots	timiñe	' tree roots '
6- nɛ̃ti+gɔ ---> singing person	nɛ̃tigɔ	' singer '
7- sakadi+gɔ---> rice eating person	sakadigɔ	' rice eater'
8- kəkədi+gɔ---> stupidity person	kəkədigɔ	' a stupid person '
9- ve+Red ---> buy (Reduplication)	veve	' to buy many items'
10- ki+Red ---> kick (Reduplication)	kiki	'to kick repeatedly'

In what follows, we will examine four different word formation processes: Noun Compound formation, the Gerund formation (both of which are agglutination processes.) , the Agent noun formation, and verbroot Reduplication. These last two processes are derivational. In general, it will be argued that Abbey combines both agglutinative and derivational processes for word-formation, and that the latter is productive . In addition, we will argue that a lexicalist analysis of Gerunds makes a stronger claim about Abbey than a transformationalist approach.

2.3 Agglutinative Processes

2.3.1 Noun Compound Formation

11- abata a + ba + ta 'palm of the hand'
Nom-P hand stand, print

12- funɔ̃ Ø + fu+ nɔ̃ 'the toe'
Nom-P foot mother

13- abafu a + ba + fu 'shoulder'
hand foot

14-abadži a + ba + dži 'the back of the hand'
hand back

15- agbɔdduko a +gbɔ + duko 'corn paste'
corn paste

16- Mbuduko M + bu + duko 'yam paste'
yam paste

17- orofʊ o + ro + fʊ 'hair'
head hair

18-aɛ̃fʊ a + ɛ̃ + fʊ 'eye lashes'
eye hair

20-dadafi̇e Ø + dada +fi̇e 'jaw bone'
jaw bone

21-orofi̇e o + ro + fi̇e 'head bone'
head bone

22-amɛ̃mɛ̃bafi̇e a+ mɛ̃mɛ̃ + ba + fi̇e 'rib'
chest side bone

23-sakaro Ø + saka + ro 'rice residue'
rice head (residue)

24- midžiro	Ø + midži +ro water head	' source of a river '
25- sak^{W}ɛmidži	Ø + sak^{W}ɛ + midži pomade water	' perfume '
26- tik^{W}e	Ø + ti + k^{W}e tree stem /stock	' a tree stock '
27- opuk^{W}e	o +pu + k^{W}e belly stock/stem	' grudge '
28- Ngʊdžiba	N+ gʊ + dži +ba sal water bank	' sea side '
29- CañJage	Ø + cɛ̃ñJa + ge ladder chair	' high chair '
30- funɔ̃rogbɔ	Ø + fu + nɔ̃ + ro + gbɔ foot +mother+head+ big	' the big toe '
31- Nderʊfʊ	N + de + rʊfʊ banana roasted	' roasted banana '
32-Mburugbo	M + bu + rugbo yam boiled	' boiled yam '
33- opugbɔ	o + pu + gbɔ belly big	' stomach'
34- opuvi	o +pu + vi belly black	' wickedness '

In light of the data above, the formation of compound nouns can be described as a process by which a head noun root on the left is linked to either a verb root (11), to another simple or complex noun root (12-30), or to an adjective root (30-34). The non-head root plays a qualifying role for the preceding root:

17- [orofʊ] 'hair' refers to the hair of the head.

31- [Nderʊfʊ] 'roasted banana' stands for a banana that has been roasted over a fire.

Because the compounding rule is recursive, more complex compound structures are possible as well, i.e., to an existing compound root another root can be agglutinated. This process amounts to a stem formation process by which a complex root is broadened to coin a new word as long as the newly formed word makes sense and is phonetically pronounceable. For example, the compound noun [funɔ̃rogbə], which surfaces as a simple formative, is in fact, an agglutination of four roots [fu], [nɔ̃], [-ro], [-gbə] , which not only are individual words but also combine to each other to form other compound nouns.

[fu]	' foot '
[funɔ̃]	' toe '
[funɔ̃ro]	' the tip of the toe '
[funɔ̃rogbə]	' the big toe '

[funorogbə] is derived from the addition of the adjective root [gbə] 'big' to the compound noun [funɔ̃ro] 'the tip of the toe', which in turn comes from the agglutination of the nominal root [ro] (from the noun [oro] 'head'), to the compound noun [funɔ̃] 'the toe', which in turn is derived from the combination of the noun [fu] 'foot' and the noun root [nɔ̃] 'head'. The agglutination of these four morpheme roots can be elongated by adding to the head noun [funɔ̃rogbə] other morphemes to form other types of nouns, e.g., Gerund nouns and Agent nouns:

[funɔrogbə] +[dži] ---> [funɔrogbədži]: ' big toe cutting '

[funɔrogbədži]+ [ɡo] ---> [funɔrogbədžiɡo]: ' big toe cutter'.

However, as far as our investigation reveals, derived words enclosing more than five composite morphemes (though they would be authentic Abbey words) are seldom used in actual conversation.

The whole process of agglutination is terminated by a rule that adds a nominal prefix to the leftmost constituent of the compound structure.[2] For most cases, the Nominal Prefix added is the same as that of the head noun. We have ruled out an analysis that would add (transformationally) nominal and adjectival prefixes at the level of lexical insertion because we are working within a theoretical framework that allows the Dictionary to contain fully-formed words.

The Compound Noun Formation Rule can be formalized as follows:

WFR 2

$$[+\text{Compound Noun}] \rightarrow \text{Nom Pre} + [\text{Noun root}] + \begin{matrix}\text{Noun root}^{(n)} \\ \text{Adjective root} \\ \text{Verb root}\end{matrix}$$

where the exponent $^{(n)}$ specifies that the addition of the non-head morpheme root can theoretically apply indefinitely.

To a large degree, words generated by the compound word formation rules in Abbey are semantically transparent, i.e., the meaning of the compound noun amounts to the sum of the meanings of the morphemes that are constituents of the compound.

Thus [teñišigbə] ' the door-way' amounts to the operation of a word formation rule that puts together the lexical morpheme roots [teñi] ' door ', and [šigbə] ' the way, the road'. However, some compound nouns pertaining to "feelings" or parts of the human body have meanings

that do not amount to the sum of their constituent morpheme roots. For example, the compound-nouns [opuk^{W}e] ' grudge', and [anɔmu] ' heart ' whose constituents are respectively [(ɔ)pu] ' belly ' and [(e)k^{W}e] ' stock ', and [(a)nɔ̃] ' kidney-bean' and [(o)mu] ' whole' have meanings that do not amount to the sum of the meaning of their constituents. As has been pointed out above, these words will be entered in the exceptional filter through which they would be supplied with the feature marker [+abstract] that would signal that these particular words have an idiosyncratic semantic behavior and therefore should be treated differently.

2.3.2 "Gerund" Formation

Consider the sentences below:

1- Eddy ji ru kpele
Eddy went harvest wild-yams.
'Eddy went to harvest wild yams'

2- Eddy ji kpeleru
Eddy went harvesting wild-yams
'Eddy went wild-yam harvesting'

The verbal phrases of these two sentences are essentially the same, except that in sentence (1) [ru] is a verb (that is part of a Serial Verbal Construction), and [kpele] its object. On (2) , [ru] is no longer a verb, but part of a substantive which is the reversed order of the VP in sentence (1). The verb [ru] is deverbalized and linked to [kpele] in a reversed order to form a noun comparable to the English gerund nominal [verb+ing].

The process of the "gerund" formation as described can be formalized as follows:[3]

SD:	V	-	NP
	1		2
SC:	2		1

The process is very productive. Any transitive verb can be nominalized by changing the order between the verb and its object.
It is believed by those advocating a transformational account of gerundive nominals (Lees 1960) that the nominal [kpeleru] is derived by transformation from an underlying sentence like:

3- Eddy ji Eddy ru kpele
' Eddy went Eddy harvest wild-yam '

Equi NP deletion applies and deletes the subject of the second verb to produce a serial verb construction sentence:

4-a Eddy ji ru kpele
Eddy went harvest wild yam
' Eddy went to harvest wild yam.'

The gerund transformation then applies and inverts the order of the second verb and its object and agglutinates them, producing:

4 -b Eddy ji kpeleru.
Eddy went wild-yam harvesting

But this derivation soon proves faulty when we consider the following sentence:

5- polisəpj̇enə le jikpenə tɩ
' The policeman put the man in prison '

and the ill-formed gerunds that would result from it when the transformation described above were applied.

5 a-*polispj̇enə jikpenə tɩle

5 b-*polispj̇enə tɩle jikpenə

It is obvious that the transformational derivation of Gerunds stated above is not a good line of analysis to pursue. If so, the transformations described would have to be blocked from applying to (5). In Abbey, when a sensible transformational approach to gerunds is obtained, the chance is that the sentence that includes these gerunds is a Serial Verb Construction, e.g., sentence (1). Any attempt to apply the transformation to a simple sentence (with a single verb) results in ungrammatical sentences, e.g., (5 a) and (5 b).

Also, a transformational approach to "gerunds" would be difficult to sustain when when a gerund nominal functione as the subject of a verb.

6- Mburu ɔ mɪsɩ
Wild yam harvesting be strenght
' Wild-yam harvesting is difficult'

Sentence 6, for example, cannot be subjected to the type of derivation proposed above.

If syntactic transformations do not handle gerunds properly, then one must look at the relationship between the different constituents of a Gerund in morphological terms: e.g., the relationship between le and tɩ in [tɩle] (4a,4b), and Mbu and ru in [Mburu] (5b).

It is evident that if one chooses to derive gerunds by means of an agglutination process, some problems would arise if one fails to state the relationship that exist between the noun root and the verb root; because of selectional constraints, not every noun root can enter into combination with every verb for the Gerund Formation. Morphemes, then, in the morpheme list should be supplied with paradigmatic and syntagmatic specifications. If this is true, the framework under which we are working should allow for the morpheme list to be supplied with grammatical information that determines, among other things, the grammatical category of the morpheme and the slot

determined which noun can be part of a paradigm in the selection of the object of a verb, i.e., from the information provided to each morpheme in the morpheme list it can be determined that the verb ve 'buy' can accept as object complement nouns such as [Nde] 'banana', [tarʲɛ] 'cloth', while at the same time rejecting many words translating abstract concepts such as [mla] 'sleep', [akɔda] 'thought'.

Thus, the Gerund formation can be formulated as follows:

> Take a verb root in the morpheme list, select a noun root that can be its potential object in a sentence, reverse the order of the verb and its object complement as they would have occurred in a regular verb phrase (VP), and put them together

2.4 Derivational Morphology

2.4.1 Agent Noun Formation

sakadi+gọ ---> rice eating person	sakadigọ	' rice eater '
Ntɔdi+gọ ---> fighting person	Ntɔdigọ	' fighter '
akɔmɔ̃dži+gọ ---> well digging person.	akɔmɔ̃džigọ	' well digger '
Mbəlɛ+gọ ---> speaking person	Mbəlɛgọ	' speaker, talkative person '
obunɛ̃+gọ ---> running person	obunɛ̃gọ	' runner '

The morphological process that dictates Agent Noun (A-Noun) Formation in Abbey, unlike that of the Compound Noun (described above), is a productive[4] process that consists of adding the derivational morpheme [go][5] to a base noun with an internal structure that translates into a gerund as the data (1-5) illustrate. Nouns derived from the agent noun formation rule semantically amounts to the "DOER" of an act described by the verb composite of the Gerund Noun base.

So far, the Word Formation rules that we have stated have applied to morphemes drown from the morpheme list. However, in the formation of the Agent -Nouns (1-5) we have clearly applied a morphological rule to a base gerund (noun)listed in the Dictionary.[6]

On the other hand, the Agent Noun Formation can be thought of as a global Word Formation rule that applies simultaneously with the Gerund Noun Formation rule in the coining of the words in (1-5). Such a derivation

would not reach the level of explanatory adequacy, because we do have clearly in the derivation of a word such as [Ntɔdigo] ' a fighter ' a two step word formation process, i.e., a noun derived from another noun already listed in the Dictionary:

First step: Ntɔ+di ---> Ntɔdi ' fighting '
Second step: Ntɔdi+ɡo---> Ntɔdiɡo ' fighter '

The fact that the Agent Noun Formation rule has to apply to a word that is listed in the Dictionary but not to a morpheme from the morpheme list, as proposed in Morris Halle's framework, appears at the outset to invalidate the rule for Agent Noun Formation as a morphological rule. For the Agent Formation Rule to be applicable, it has to have some information not found in the morpheme list: namely, that [Ntɔdi] is a Gerund. The likely place to have this information is in the Dictionary. Thus, it is self evident that Agent noun formation qualifies the proposal that on some occasions word-formation rules should have access not only to the morpheme list but also to the Dictionary.

WFR III : Agent Noun---> [[Gerund] +[-ɡo]]

2.4.2 Reduplication

Past studies have dealt with the process of Reduplication in purely phonological terms. Paul Schachter in his 1968 description of Akan languages states the general rule of (monosyllabic) reduplication as follows:

The general rule of monosyllabic reduplication applies to a RED prefix that immediately precedes a monosyllabic VR (or VR1). The rule operates to replace the RED symbol by a syllable that is identical with the following VR (or, more specifically, identical with the representation of the VR at the point in the P.rules (Phonological Rules) at which the rule of monosyllabic reduplication applies)...

It is this study's contention that treating reduplication in Abbey in terms of phonological rules would fail to capture an important morphological generalization; more specifically, the morphologization process whereby new verbs are coined on the basis of existing verb roots.

Besides, reservations can be stated in the treatment of Reduplication as a phonological rule; e. g., if one goes on the principle that phonological rules apply to a level of representation onto another (the systematic phonemic level onto the systematic phonetic level), then Reduplication in Abbey cannot be thought of as a phonological process because the chance that results from the application of the Reduplication Rule is not that of a change of one level of representation into another, but rather that of the formation of a new verb as the difference in meaning between the base verb root to which the rule has applied and that of the output complex verb root illustrates.

mɔ̃	'to climb'	mɔ̃+Red --->	mɔ̃mɔ̃ 'to climb across'
mɛ̃	'to swallow'	mɛ̃+Red-->	mɛ̃mɛ̃ 'to swallow rapidly'
ve	'to buy'	ve+Red--->	veve ' to buy many items'
su	'to pain'	su+Red	susu 'to pound painfully'

Schachter's phonological analysis of Reduplication has not been completely rejected. In fact, in addition to Morpheme Root reduplication (analyzed here as a verbal morphologization process), in Abbey there are other cases of reduplication that cannot be analyzed as word formation processes:

1- Verb Repetition

Observe the following sentences:

7- Eddy ki teninɔ ki ki ki ki ki... (mɛ̃ pɛ)
' Eddy kicked the door (and) kicked kicked kicked kicked...(till he became tired)'

8- Eddy kiki teninɔ.
' Eddy kicked the door repeatedly'
' Eddy kicked the doors'

Though sentence (7) and sentence (8) appear at first to carry the idea of repetition and multiplicity, we believe that they are functionally two different processes. Sentence (7) involves a rhetorical (stylistic) process that repeats a number of time a verb in a sentence to mark an emphasis on the repetition or the duration of an action or a state. In fact, we are proposing that sentence (7) should be analyzed as a rhetorical style construction comparable to that used in story telling; e.g.," The bad wolf chased the young girl, and she ran, and ran ran ran ...

As for sentence (8), the verb [kiki] 'to kick repeatedly' (reduplicated form of the base verb [ki] 'to kick' signifies rather the multiplicity of an action. We have to acknowledge that the difference in meaning between verb root reduplication and verb repetion is subtle in some instances, but if an accurate description of Abbey grammar is to be achieved, the functional difference between these two constructions must be stressed.

2- Syllable Reduplication (syllable copying) within Morpheme Root.

As it was pointed out in the section "Structure of the Morpheme", there are indeed cases where Reduplication can be analyzed only as a phonological rule.

koko	'neck'	JeJe	'infant'
dada	'chin'	ododo	'bell'
lele	'rainbow'	Mfofo	'lung'
kɔkɔ	'idiocy'	fj̇ɔfj̇ɔ	'sweat'
fɔfɔ	'tsetse fly'		

The items above cannot be analyzed as derived from a Word Formation rule whereby a rule has applied to reduplicate a morpheme because they do not fall into the general semantic rule that dictates Morpheme Root reduplication. Instead they should be analyzed as instances where a syllable has been reduplicated (or copied) onto another syllable within a morpheme root. For instance, the nouns [koko] 'neck' and [dada] 'chin' would have, respectively, the following underlying structure:

/RED=ko/
/RED=da/

(The notations [Red] and [RED] respectively differentiate between morphological reduplication and phonological reduplication.)

A phonological rule operates to replace [RED] with a syllable identical with the following syllable as, proposed by Schachter. Thus:

/RED=ko/---> [koko] 'neck'
/RED=da/ ---> [dada] 'chin'

It must be noted however, that there are cases where nouns cannot be analyzed as instances of syllable reduplication, but rather as cases of root reduplication as exemplified by the items below:

wɛtɛwɛtɛ 'mosquito'
korikori 'toucan'

More likely, these nouns are onomatopoeia imitating songs or noises. These forms are analyzed therefore as unrepresentative examples of Abbey words.

Verb root reduplications are best handled as part of a morphologization process by which a suffix [Red] is added to a head verb root, reduplicating that root to form a complex verb root. Semantically, the derived complex verb root expresses a multiple action or state signified by the simple root to which the rule has applied. In other words, every complex verb root has a simple verb root counterpart (usually but not always monosyllabic).

ki 'kick'	ki+Red--->	kiki 'kick repeatedly'
le 'hit'	le+Red --->	lele 'hit repeatedly'
ri 'to plant'	ri+Red --->	riri 'to plant (many)'
o 'to pick (a fruit)'	o+Red --->	oo 'to harvest (fruits)'
su 'to torture'	su+Red --->	susu 'to pain'
kuru 'to curve'	kuru+Red--->	kurukuru 'to meander'

The general rule for verb root reduplication can be stated as follows:

WFR IV $\quad [\text{V Root}^1]+[\text{Red}] \rightarrow [\text{V Root}^1 + \text{V Root}^1]$

The complex verb root derived form the morpheme root reduplication process can be nominalized by the addition of a nominal prefix (usually the Nominal Prefix [a-].

e.g., su ---> su+Red ---> susu---> a+susu ---> asusu
'to torture' 'to pain' 'a torture'

FOOTNOTES

1- Morphology is understood here as the study of existing words and those formed by word formation rules (WFRs). The Phonological study of the structure of the morpheme is taken in the "Morpheme Structure," i.e., part of the phonological component.

2- Though we are using a morpheme base analysis, a word base analysis would at first seems more economical and simpler. In fact, the rule for Nominal prefix placement is not necessary under a word-base morphology where the different constituents to be agglutinated come equipped with the appropriate prefix, whether these constituents were nouns or adjectives. Instead, the Nominal Prefix Placement rule is replaced by a prefix deletion rule that applies to the non-head constituents. As the examples 1-5 illustrate, it is not always the case that the nominal prefix added to the compound stem is the same as that of the head noun. It is also to be observed that certain base nouns that do not ordinarily carry a nominal prefix with phonetic representation do carry one when they are agglutinated to another morpheme root , e.g., [abadži] ' the back of the hand ' is derived from the agglutination of the nominal root [ba] (from the noun [Øba] 'hand') that has a nominal prefix without phonetic representation (Ø) and the noun root [dži] from the noun [edži] 'the back'. After the agglutination of the two morphemes root has taken place yielding /badzi/, the subsequent nominal prefix affixation replaces the nominal prefix [Ø] with nominal prefix [a] to produce the compound noun [abadzi].

The rule leading to a change in nominal prefix is not well-defined, as is exemplified by the compound-noun [tigbo] ' a piece of wood ' where the base noun [ti] ' wood ' retains its nominal prefix without phonetic representation after it is agglutinated to the nominal root [gbo] ' piece ' attached to it, hence, the compound noun [Øtigbo] ' piece of wood '.It is obvious, then, that the agglutination process in a word-base analysis necessitates in the instances of words that have a change of nominal prefixes to have, in addition to the Prefix Deletion Rule, another rule that would replace the nominal prefix of the base noun with another Nominal Prefix.

The simplicity that emanates from a morpheme base morphologization process, then, can be used as empirical evidence that a morpheme base analysis as the one proposed by Halle (1973) is adequate for Abbey data.

3- "Gerund" appears in quotation marks as it is not always the case that the overall meaning of such forms translate into English [verb-ing] .

[nɛ̃ti] 'singing'
[Mbɔ̀lɛ] 'speaking'
[kɔ̀kɔ̀di] 'stupidity'

4- The role of productivity has been long recognized in derivational morphology (see Mark Aronoff 1981). By general definition, word-formation rules are not absolute, and this is obvious from the idiosyncratic behavior of certain words produced by morphological rules. Thus, productivity is not understood here in terms of the number of words that are produced by a rule, but rather how productive an affix is when attached to words of a particular morphological class. In Abbey, the degree of productivity of [-gọ] attached to a gerund to form an agent noun is different from that of [-gọ] suffixed to a noun.

nɛ̃tigọ 'singer'

jalɛgọ ' poor person' (rather than a person that does something poorly.)

Productivity, then, is not to be understood here as the number of words a rule produces, nor should it be understood as the ratio of possible to actually occurring words. A rule has a productive effect when the output of the rule need not enter the special filter, but is directly listed in the Dictionary. Note that in Aronoff's framework the output of a productive word formation rule is not listed; instead only words with idiosyncratic behavior appear in the lexicon. Productivity, then, will be based on three criteria: speaker intuition of the rule, semantic coherence, and phonology.

a- Productivity is equivalent to speaker intuition, i.e., when the speaker is capable of recognizing the output of the rule (the derived word) as part of his vocabulary.

b- Semantic coherence:

Productivity is to be linked to semantic coherence, when the meaning of the output of the rule can be predicted. The link between productivity and semantic coherence can be shown by the fact that when a word formation rule produces a word with coherent meaning, it is not likely to pass through the special filter to be supplied with any idiosyncratic semantic information. It should be noted that it is difficult to assess whether semantic coherence takes precedence over productivity, or vice versa. Is the output of a rule semantically coherent because the rule is productive, or is a rule productive because the output of the rule is semantically coherent ?

To my knowledge, even though the question has been mentioned in the literature (Aronoff 1981), no definite answer has been proposed.
c-Phonology

Generally the application of word formation rules produces words that are phonologically similar to existing ones. But word formation rules that are lexically governed (that is determined by individual words, rather than by a class or by category of words) derive words that have to entere in the special filter, to be supplied with its idiosyncratic information. Thus it is obvious that whether a word-formation rule is lexically governed or not will affect it productivity.

5- The derivational morpheme (or bound morpheme) [-gọ] is the only morpheme in Abbey that can be rightfully be called a derivational morpheme. Though there are other bound morphemes such as [fa] 'house', and [tʊ] 'room', morphemes that can not occur syntactically in their own right (even though they can be identified semantically) [gọ] is the only bound morpheme that does not have independent meaning. [gọ] is also the only morpheme that has distinct singular and plural forms.

Singular [gọ]
Plural [gʊ]

6- The same can be said for the formation of the compound noun [funɔ̃ro] 'the tip of the toe'. It is formed by agglutinating the morpheme root [ro] to the lexical entry [funɔ̃] ' the toe'; a noun listed in the Dictionary, except that in this particular instance we have a single rule that has applied recursively, whereas the Agent Noun formation is a process that involves different sets of word-formation rules.

CHAPTER III SERIAL VERB CONSTRUCTIONS

3.0 Introduction

The aim of this chapter is to prove that verb serializations in Abbey are processes that characterize a simple sentence with a complex predicate, that is, a simple sentence in which the predicate is assumed by two or more verbs whose combined meanings amount to a single event process.

Transformational analysis of Serial Verb Constructions is made possible by deletion under identity (Equi-NP deletion), coordinate reduction, and movement rules. This study contends that these transformations are very powerful devices, and often not motivated in African languages in general and Abbey in particular.
A non-transformational approach however that is based on rewriting rules makes a better and simpler account of the phenomenon.

Serial Verb Constructions (SVCs) are syntactic constructions in which a string of two or more verbs is used to convey ideas that would be expressed in languages such as English either by a single verb, by prepositional or adverbial phrases, or by a string of coordinated sentences. The verbal constructions are so prominent in Kwa languages that they are recognized as the most important factor that distinguishes that language group from other group within the Niger-Congo language family.[1]

Though accounts of the verbal constructions differ as to their syntactic sources and the nature of their major constituents, SVCs are commonly described as follows:

1- Two or more verbs in a sentence next to each other without being linked by a conjoining element.[2]

2- All the verbs in the construction in series share a single and non-repeated subject, agree in polarity, and have the same tense and aspect.

3.1 Semantic Classification

Verbs in serial construction are said to express case relationships such as dative and benefactive (genitive) or are said to translate a wide range of notions: adverbial (instrumental, manner), prepositional, comparative, comitative, causative, purposive, sequential, and inceptive.

1-Dative

Eddy bə̀ šiga lɔ̀ Aka
Eddy took money gave Aka
' Eddy gave the money to Aka .'
' Eddy gave Aka some money .'

2-Benefactive (Genitive)

a- Apy di džumã̀ lɔ̀ ši
Apy worked gave father
' Apy worked for his father. '
' Apy worked on behalf of his father.'

b- Apy lə̀ aɔ̃ lɔ̀ nɔ̃
Apy made house gave mother
'Apy built a house for his mother.'

3- Instrumental

Yavo bə̀ bese dži tinə̀ ši
Yavo took machete cut tree
' Yavo cut the tree with a machete.'

4- Manner

a - Ovo bə̀ mɩsɩ fɩ̀ teninə̀
Ovo took strength opened door
' Ovo opened the door by force. '

b - Eddy bə̀ tomobi ji Ogboba
Eddy took car went Agboville
'Eddy went to Agboville by car.'

c- Ako bə̀ aɛ̃hɔ baba tomobinə̀ jɛ̀
Ako took cleverness repaired car nice
' Ako repaired the car cleverly .'

5- Comparative

a- Yao dɔ omu šị̇e mə
Yao is big is the same as me
'Yao is bigger than me .'

b-Eddy dʊdʊ šị̇e mə
Eddy is small is the same as me
'Eddy is smaller than me .'

6- Comitative

Gbery bə ja ji Ogboba
Gbery took wife went Agboville
'Gbery went to Agboville with his wife .'

7-Causative

Eddy lə jikpenə Ja eši
Eddy made man fall ground
'Eddy caused the man to fall.'

8- Purpose

a-Eddy a bə Nde
Eddy came took bananas
'Eddy came for the bananas.'

b-Eddy ji ve Nde
Eddy went bought bananas
'Eddy went to buy some bananas.'

9-Motion

a- Eddy kaka a ereñi
Eddy returned came home
'Eddy returned home .'

b-Eddy bə Ndenə a
Eddy took bananas came
'Eddy came with the bananas.'

c-Eddy bə Ndenə ji
Eddy took bananas went
'Eddy went with the bananas.'

10-Sequential
Alate šu mɔrɔ nɔ̃
Alate poured drink drank
'Alate poured the drink (and) drank it.'

11- Inceptive
Essoh ñã di džumã
Essoh is coming worked
'Essoh is about to work.'

The wide range of semantic interpretations of SVCs is matched by a diversity in opinion as to the syntactic source and the characterization of the nature of their constituents. In what follows, we will review some selected writings on the syntactic source of SVCs in African languages that we believe represent each school of SVCs interpretation. The review will center around Bamgbose's (1982) two-way classification of SVCs, Carol Lord's (1973) interpretation of SVCs as historical sources for adverbs, prepositions, and conjunctions, and Anna Mannouan's (1983) characterization of SVCs as genitive and dative constructions.

3.2 Nature and Derivation

The review of the literature on SVCs indicates that, syntactically, SVCs have been given four roughly defined types of source:

1- Coordinated Sentence Source:

SVCs have been derived from from underlying coordinated structures by means of the Equi-NP deletion rulethat would reduce any repeated NP (subject or object) at the same time allowing for a coordinate deletion rule. Sentence (12) for example when subjected to the coordinated sentence source analysis

12- Eddy bɔ̀ egenɔ a
Eddy took chair came
'Eddy brought the chair.'

is said to be derived from an underlying coordinate sentence similar to (13):

13- Eddy bə egenə ɔ (Eddy) a
' Eddy took the chair and (Eddy) came '

2- Embedded Sentence Source;

The Embedded Sentence Source analysis also advocates athe derivation of SVCs from underlying multiple sentences. But unlike the Coordinated Sentence Source, the overall meaning that the different clauses convey does not amount to two or more independent sentences. The Embedded Sentence Source analysis takes an approach whereby a sentence or group of sentences (in which an Equi-NP deletion rule has removed the embedded subject) is embedded in a matrix sentence. The relation between the verb in the matrix sentence and that of the embedded sentence can be that of dependency or complementarity: The verb (or verbs) in the embedded sentence modifies, or functions as a complement to the meaning of the verb in the matrix sentence.
Thus, in the structure (14 a) which is the unserlying representation of (14):

14- Eddy bə bese dži tinə ši
Eddy took machete cut tree
' Eddy cut the tree with a machete '

14 a- Eddy bə bese Eddy dži tinə ši

[bə] ' took ' is said to modify the meaning of the principal verb [džiši] 'cut ', and translates into a prepositional case marker .

3- Single Sentence with Simple Predicate:

The single sentence with simple predicate analysis derives SVCs from a single sentence underlying representation, with only one verb (the principal verb) functioning as the predicate, and the additional major constituent(s) of the verbal construction no longer analyzed asverb(s) but

operating as prepositions, adverbs, conjunctions, "serial morphemes" or verbids (empty verbs).
When sentence (15) is derived from a single sentence underlying source with a simple predicate,

15- Eddy di dzûmɑ̃ lɔ ši
Eddy worked gave father
' Eddy worked for his father .'

only [di (džumɑ̃)] ' worked ' is treated as the predicate of the sentence, while [lɔ] ' gave ' loses its verbal status and functions as a prepositional phrase together with [ši] ' father ': [lɔ ši]--> ' for his father .'

4- Single Sentence Source with Complex Predicate:

The fourth type of analysis (a non-transformational one) derives the verbal constructions by rewriting rules that allow a single sentence with a complex predicate, that is, a simple sentence whose predicate encloses two or more verbs.

3.3 Bamgbose

Bamgbose distinguishes at least two types of Serial Verb Constructions:[3]
a-The Linking type which is derived from two or more underlying sentences.
b-The Modifying type which is derived from a single underlying sentence.

3.3.1 The Linking Type

Bamgbose contends that, in the linking type, each verb of the serial construction has the same meaning as it would have if the verbs were to be used in a simple sentence. That is, the meaning of a linking type SVC amounts to the sum of the meaning of each verb constituent of the serial

construction. Therefore the linking type is, in effect, an addition of a serie of independent sentences. As defined, the linking type can be seen as deriving from a coordinate structure.
If Bamgbose's analysis were to be applied to Abbey data, sentence (16)

16- Eddy ji ve Nde
Eddy went bought bananas
' Eddy went to buy some bananas .'

would qualify as a linking type because it is said to be derived from an underlying sentence that comprises sentences (16a) and (16b):

16 a- Eddy ji
'Eddy went.'

16 b-Eddy ve Nde
'Eddy bought bananas.'

In Abbey, there is a construction that responds to the same characteristic as the intended underlying structure for (16), namely the coordinate sentence (17):

17- Eddy ji ɔ ve Nde
' Eddy went and bought some bananas.'

The question then is whether one can equate sentence (16) and sentence (17). That is, can sentence (16) be read as deriving from sentence (17) ? Even though Bamgbose's derivation of some SVCs from underlying coordinate structures is adopted by a number of linguists[4], it is our contention that reading SVCs as Coordinate structures in Abbey is misleading.

Echoing Awobuluyi (1973) and other writers, the following presents general and inherent semantic and syntactic evidence that invalidates the coordinate source for SVCs.[5]

3.3.2 Why SVCs are not Derived from Coordinate Structures

3.3.2.1 Semantic Evidence

Semantically, SVCs must be differentiated from coordinate structures, as suggested by Stahlke (1970), Bole-Richard (1978), and Anna Manouan (1983). Examine sentence (16) from which sentence (17) is believed to be derived.

16- Eddy ji ve Nde
' Eddy went to buy some bananas .'

17- Eddy ji ɔ ve Nde
' Eddy went and / (but) bought some bananas.'

Sentence (16) and sentence (17) (which is a coordinate) differ semantically. Sentence (16) presupposes that "Eddy went for the purpose of buying some bananas" (there is no indication that Eddy actually bought any), while (17) presupposes that "Eddy went and actually bought some bananas" (though that might not have been his original goal).
In addition, (17) presupposes that the processes occur sequentially: (Eddy went, then he bought some bananas) while (16) contains no such presupposition. Furthermore (17) is ambiguous because of the nature of the connective [ɔ] that can signify either "and" or "but".[6] While there is a semantic complementarity among the verbs in sentence (16), the verbs in sentence (17) are independent; they stand by themselves semantically.
Thus, (16) cannot be derived from a conjoined sentence such as (17); the inclusion of the connective [ɔ] ' and/but ' in the underlying representation for sentence (16) effects a change in meaning.
In short, coordinate constructions are used to conjoin two different processes taking place simultaneously or sequentially. Serial constructions in the other hand involve a single component event.

3.3.2.2 Syntactic Evidence

If SVCs were derived from coordinate structures one would expect both constructions to have the same reaction vis a vis a number of transformations. The application of some of these transformations to SVCs are examined below.

3.3.2.2.1 Focus Transformation

In Abbey, nouns subjected to the focus transformation are moved to the beginning of a sentence and are placed as the left-most constituents of the focus structure. Evidence show that SVCs and Coordinate Structures do not behave similarly when apllied the focus transformation. Observe the SVC (16)

16- Eddy ji ve Nde
' Eddy went to buy some bananas. '

The noun-object [Nde] ' bananas ' in (16) is moved out of its original position to the beginning of the sentence, to derive the focus construction (18) :

18- Nde ɔ Eddy ji ve
' It is some bananas that Eddy bought. '

When the Focus operation is applied to a constituent in a Coordinate Structure as the one in (17) it produces the ungrammatical sentence (17a).

17- Eddy ji ɔ ve Nde
'Eddy went and bought some bananas.'

* 17a-Nde ɔ Eddy ji ɔ ve
'It is the bananas that Eddy went and bought.'

Omitting some details, what the above sentences (16-18) signify is that :
a- SVCs are not subject to coordinate structures constraints comparable to the one proposed by Ross (1967, pp. 89):

> In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

b- The verbs in coordinate structures are independent, while those in SVCs operate as a depending, or complementing unit.

3.3.2.2.2 Interrogative Transformation

When subjected to the Interrogative transformation, SVCs and Coordinate sentences behave differently. Because coordinate structures imply the conjunction of two or more events, it is difficult (not to say impossible) to have in the questioning process a questioned constituent (beside the subject) that would involve all the verbs within the coordinate sentence. That is, a constituent within a coordinate structure can be questioned only within the boundary of the independent sentence which it is part of. For example, in sentence (17), a question over the object noun [Nde] 'machete' has to be confined to the independent sentence [Eddy ve bese] 'Eddy bought some bananas' :

mabu Eddy bə e
' What (thing) did Eddy take ' ?

However when the question is spread to include all the verbs of (17), the output is an ungrammatical sentence as in (17b) indicates.

* 17b- mabu Eddy ji ɔ ve Nde

The situation is different and straightforward with SVCs. To question a constituent within a SVC, the interrogative sentence must include all the verbs of the construction:

19- Eddy bə bese dži tinə ši
Eddy cut the tree with a machete

19a- mabu Eddy bə bese dži e
' What (thing) did Eddy take the machete to cut ' ?

19b- mabu Eddy bə dži tinə ši e
' What (thing) did Eddy take to cut the tree' ?

As the interrogative sentences (19a) and (19b) illustrate, both verbs of the Serial Verb Construction have to be present when a constituent in any of the verb phrases is questioned.

3.3.2.2.3. Negation Insertion

The negative transformation provides additional evidence for not deriving SVCs from coordinate structures.
In a coordinate structure in the event of the negative transformation, only a single verb can be negated at the time (20 a, 20 b). When both verbs are negated, what results is a sentence that makes no sense and is ungrammatical (20 c).

Coordinate Structure : 20- gonə ñi wɔsɔnə ɔ di ə
' The dog caught the chicken and ate it '

Negation: 20a- gonə ñi wɔsɔnə ɔ adi ə
' The dog caught the chicken (and)/but didn't eat it .'

20b- gonə añi wɔsɔnə ɔ di ə
'The dog didn't catch the chicken (and)/but he ate it. '

(Note that sentence 20b has a single correct reading: "For the dog to eat the chicken some one else had to do the catching.)

20c- *gonə añi wɔsɔnə ɔ adi ə

In the other hand SVCs present an opposite setting; every verb in a SVC is negated in the event of the negative insertion transformation, otherwise the transformation yields ungrammatical sentences (21b, 21c).

21- SVC:

gonə ñi wɔsɔnə di
dog Def caught chicken Def ate
' The dog ate the chicken '

Negative SVC:

21a- gonə añi wɔsɔnə adi
dog Def Neg caught chicken Def Neg. ate
' The dog didn't eat the chicken.'

21b- *gonə añi wɔsɔnə di

21c- *gonə ñi wɔsɔnə adi

While the negation of all verbs in coordinate sentences produces ungrammatical sentences, the verbs in serial constructions must agree in polarity. They are all either in the affirmative or in the negative form.

3.3.2.2.4. Anaphoric Pronouns

In addition to the opposite response to some transformations, SVCs and Coordinate Structures make different use of certain syntactic features that are characteristic of Abbey. At issue is the way anaphoric pronoun subjects are suffixed to verbs in both constructions.
As stated in "Structure of Grammatical Morphemes" verbs whose subjects are in the plural form are prefixed with an anaphoric pronoun.

22- ejigɔnə kə̀ti nɛ̃
young girls they sang
The girls sang

In coordinate constructions, the anaphoric pronoun subject is repeated with each verb in the sentence. Within SVCs however, only the first verb is affixed with an anaphoric pronoun subject.
Coordinate constructions:

23- Eddylɛ jalɛ kə̀ji Ogboba ɔ kə̀ve saka
Eddy with wife with they went Agboville and they bought rice
'Eddy and his wife went to Agboville and they bought some rice.'

23a-*Eddylɛ jalɛ ji Ogboba ɔ kə̀ve saka (???)

23b-*Eddylɛ jalɛ kə̀ji Ogboba ɔ ve saka

SVCs:

24- Eddylɛ jalɛ kə̀ji Ogboba ve saka
Eddy with wife with they went Agboville bought rice
Eddy and his wife went to Agboville to buy some rice.

24a- *Eddylɛ jalɛ ji Ogboba kə̀ve saka

24b-*Eddylɛ jalɛ kə̀ji Ogboba kə̀ve saka

As sentences (23) indicates, the anaphoric pronoun is a feature on each verb of the coordinate structure. When the application of the anaphoric pronoun suffixion rule is not repeated with each verb of a coordinate structure, the output is an ungrammatical sentence (23 a, 23 b). Contrarily, the anaphoric pronoun is not repeated with every verb that is enclosed in a serial construction. Only the first verb of the construction is prefixed with an anaphoric pronoun.

The way anaphoric pronouns are used in both constructions furthers the claim that coordinate structures are statements about multiple independent events, and that SVCs are statements about unitary events.

3.3.2.2.5 Coordinate Reduction

As for the coordinate reduction rule that allows the derivation of SVCs from coordinate structures, it can be questioned on two accounts:
1- There appears to be no definable environment within which to restrict the application of the connective deletion rule. In some instances, the deletion produces unacceptable sentences, e.g., if coordinate reduction were to be applied to coordinate sentence (25):

25- Eddy di Mpʊ ɔ nɔ̃ midži
Eddy ate food and drank water
' Eddy ate and drank some water '

the unacceptable sentence (26) would be the outcome, even though it has SVCs properties (a row of non-conjoined verbs all sharing the same subject).

26- * Eddy di Mpʊ nɔ̃ midži

As sentence (26) indicates, not every verb can occur in serial construction.

Thus, if the coordinate reduction rule were to be applied to coordinates structures to derive SVCs, verbs that do not occur in serial construction would have to be marked in the Dictionary as not doing so. In other words, every verb would have to be marked as to whether or not it can be part of a serial construction. Such an undertaking would not only be an impediment, but also an endless task: each verb has to be matched against individual verbs in addition to groups of verbs.

2- The second problem has to do with Equi-NP deletion, which is subsequent to coordinate deletion rule. As reported by Herbert Stahlke(1970), coordinate reduction applies to VPs rather than to NPs in African languages. This observation is verifiable in Abbey.

Observe (27)

27- Eddy gbe nɛ̃ ɔ Aka sɔ gbe nɛ̃
Eddy danced and Aka also danced
'Eddy danced and Aka danced too.'

A coordinate deletion rule applied to (27) deletes the entire VP [gbe nɛ̃] tc derive (28)

28- Eddylɛ Akalɛ kɔgbe nɛ̃
' Eddy and Aka danced. '

Unlike English, VP deletion is possible only if the VPs in question have the same constituents:

29- mɔ di Nde ɔ Aka di saka
' I ate banana and Akan ate rice.'

30-*mɔ di Nde Aka saka
' I ate banana, Aka some rice.'

3.3.3. The Modifying Type

Bamgbose characterizes the Modifying type SVC first of all as a construction that cannot be related to two or more underlying sentences. Instead it is proposed that the Modifying type SVC is derived from an underlying embedded sentence where the verb in the embedded clause functions as a modifier of the verb in the matrix clause. The meaning of at least one of the verbs in the construction is different from what it would have been in a simple sentence. In some other versions, the modifying type verb is said to be unable to carry the full range of verbal characteristic, therefore shouldn't be analyzed as verbs, but rather as prepositional, or adverbial phrase markers, or even as empty verbs: the so called verbids. If Bamgbose's analysis is applied to Abbey data, sentences (31), (32), (33), (34) would qualify as Modifying type SVCs because constituents such as [lɔ] in (31), [bepi] in (32), [ñã] in (33), and [bə̀] in (34) are said to have meanings different from what they would have in a simple sentence, and function as modifiers for other major constituents within the seial construction.

31-Eddy lə̀ aɔ̃ lɔ̀ ši
Eddy built house gave father
'Eddy built a house for his father.'

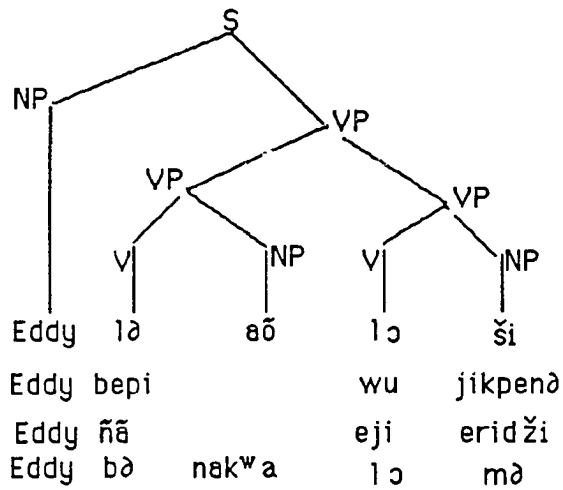
32-Eddy bepi wu jikpenə̀
Eddy was first saw man Def.
'Eddy has seen the man before.'

33-Eddy ña eji eridži
Eddy coming going farm
'Eddy is about to go to his farm.'

34-Eddy bə̀ nak^{w}a lɔ̀ mə̀
Eddy took book gave me
'Eddy gave me the book.'

Modifying type SVCs are derived from undrlying representation similar to (35):

35



Bamgbose does not himself state that Modifying type SVCs derive from an underlying embedded sentence per se. But working his analysis of Modifying SVCs through to its logical conclusion tends to indicate that at one point the underlying representation he is proposing for modifying type SVCs must have derived from an embedded sentence source.
If one of the verb in the Modifying type SVC functions as the modifier of another verb, it can be deduced that the relationship among the verbs is not that of independence but rather that of dependency. Syntactically, sentential embedding is the proper way to handle such dependency.

Before entering upon the examination of the embedding sentence source for SVCs, it would be proper to note that we do not endorse (at least for Abbey) Bamgbose's classification of Modifying type SVCs. We believe that such classification is influenced by the English gloss used in his study, which gives to the so called modifying verbs a secondary and diminished verbal functions.

3.3.4 SVCs from Embedded Structures

Embedded sentence sources have been proposed for the underlying representation of SVCs. Even though such derivation is able to avoid the misleading concatenation of independent sentences, it still resorts, in the deep structure, to an analysis that gives a composite assessment to SVCs representation.

According to George Isaac (1975), a serial verbal construction similar to (36):

36- Eddy bə bese dži ti ši
Eddy took machete cut tree
' Eddy cut a tree with a machete.'

has an underlying representation comparable to the structure in (37).

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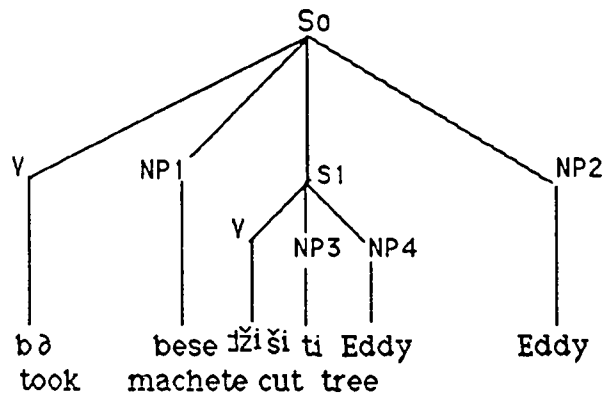
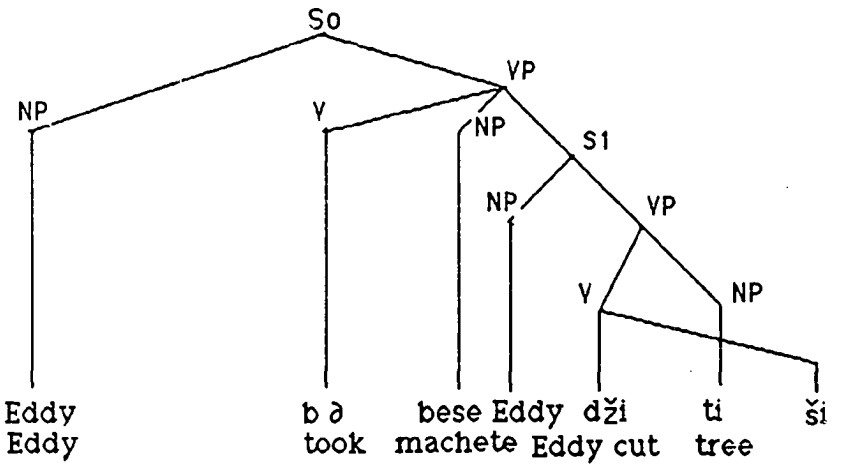


Taking into account the fact that the verb [bə] means "to take hold of something" when it is used as the sole verb in a simple sentence, but acquires an instrumental meaning when it occurs in a complex structure with another verb e.g., [džisi] ' to cut ', George Isaac characterizes the relationship between the verb [bə] and any other verb in a structure

similar to (36) as that of dependency. Thus in terms of syntactic representation, constructions such as (36) " must have higher sentences in which lower ones are embedded". (The same derivation is made for SVCs that translate into manner, causative and concomitative.)

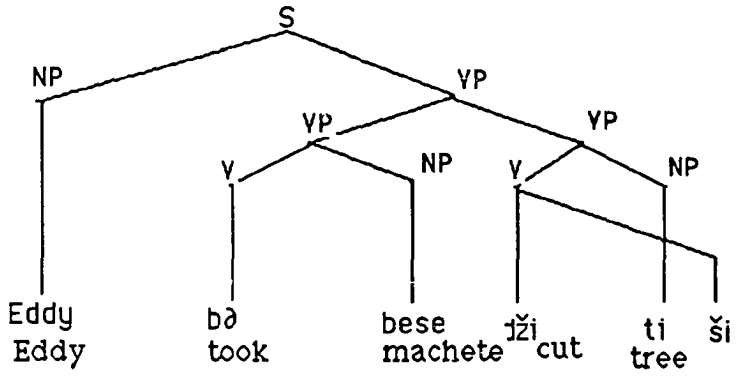
The embedded sentence underlying representation becomes hard to support with regard to the type of rules that are needed to produce surface structures. As a matter of fact, it was proposed that to produce the surface representation for the structure in (37), some movement rules (namely an "objectivalization" rule) would place NP^1 [bese] ' machete ' as the object of the verb [bə] in S0, and NP3 [ti] ' tree ' as the object of the verb [džiši] ' to cut'. (Remark that the "objectivalization" rule does not apply to (37) where [bese] and [ti] are already positioned respectively as the object of [bə] and [dzisi]). A"subjectivalization rule would then place NP2 [Eddy] as the subject of the verb [bə] in S0, and NP4 [Eddy] as the subject of the verb [dz isi] in S1. Thus deriving the structure (38) :

38



Equi-NP deletion would finally apply to (38) and delete the subject ([Eddy]) of the embedded sentence S1, to produce the surface representation (36):

36



The objection to the derivation that we have outlined above centers around the type of rules used in the derivation. The "subjectivazation" and "objectivalization" rules that George Isaac proposes are, in fact, movement rules. Because Movement rules are very powerful devices, they should have at least some independent motivation for their applications in the language under study. As far as Abbey is concerned, movement rules are not common, and when they are attested they are used to put constituents on Focus.

3.4. Carol Lord

In her 1973 diachronic analysis of SVCs, Carol Lord puts forth the proposal whereby SVCs provide historical sources for prepositions, adverbs, as well as for conjunctions, and the inchoative aspect marker.[7] She cites in support of her analysis homonymies between locative verbs and locative prepositions, comitative verbs and adverbial (instrumental and manner) markers, and prepositions in Ewe, Twi, Gã, and other Kwa languages. Lord argues that these homophonies are not fortuitous but rather an evolutionary process that has stripped locative and comitative verbs of their verbal properties in such a way that they are reduced to prepositional case markers, adverbs, or even conjunctions.
The study can be summarized as follows:

3.4.1. Evidence from Locative Verbs

EWE

39- agbala le kplɔa dzi
book-the be-at table-the top
'The book is on the table.'

40- me fle agbale le keta
I buy book be-at Keta
'I bought a book in Keta.'

41- me kpɔ lɔri le mɔ dzi
'I see lorry be-at street top.'

In Ewe, the word [le] ' be-at ' occurs both in simple sentences ([NP __ NP]) as in (39), and in serial verb like constructions ([NP VP__NP]) as in (40) and (41). While [le] in (39) is characterized as a locative verb, the ones in (40) and (41) are characterized as prepositions homophonous with the verb [le]. The obvious reasons for such distinction is that even though [le] in (40-41) have an object noun, they do not display a verbal morphology, e.g., they are not inflected for tense and aspect,

cannot be suffixed with negation markers, nor do they undergo transformations usually associated with verbs. The same observation is made with locative verbs and locative prepositions in related languages such as Twi, Gã, Yoruba, and Igbo. However, in Yoruba for example, the locative preposition [ni] does not have an homophone locative verb counterpart. Instead [ni] occurs as a possession verb as in (42)

Yoruba 42- o ni owo
he have money
' He has money.'

Paralleling these obervations to those made regarding Ewe and other non-African languages (Chinese, and Thaî), Carol Lord concludes that Yoruba represents instances of later stage of an evolutionary process whereby locative verbs in SVCs have made their transitions to prepositions and are no longer in existence. Thus, in Yoruba, [ni] as a locative preposition and [ni] as a verb of possession may have derived from a previously existing locative verb [ni] ' be-at ' which has completed its transition and is no longer used.

3.4.2 Evidence from Comitative Verbs

3.4.2.1 From Comitative to Preposition

Ewe

(43) Kofi yi asime kple akuwa
Kofi go-to market with Akuwa
' Kofi went to market with Akuwa.'

(44) Akuwa gbɔ̃ frese la kple kpe
Akuwa break window the with stone
'Akuwa broke the window with a stone.'

(45) mawɔe kple dzidzɔ gɔ̃
I-Fut-do-it with delight great
' I shall do it with the greatest delight.'

There is evidence that comitative verb phrases have become prepositional phrases, just as locative phrases have become prepositional phrases. In Ewe, though the preposition [kple] 'with' can be used in serial verb constructions such as (43-45), it does not occurs as the main verb of a simple sentence, nor does it inflect. Instead [kple] takes a NP object with which it forms an adverbial or a prepositional group depending on whether the following noun is an abstract or a concrete noun. Since [kple] behaves as any other verbids which have an homophonous regular verb counterpart, Lord inferres that [kple] at one time was a regular verb " be together with " that has lost its verbal properties.[8]

3.4.2.2 From Comitative to Conjunction

The possibility of translating the comitative by the preposition " with" and by the conjunct [and] when it occurs in a pre-VP position, proves that the [kple] has extended its role as preposition to serve as a conjunction, as it is exemplified in (46):

Ewe (46) Kofi kple akuwa yi asime
Kofi went to market with Akuwa
' Kofi and Akuwa went to market.'

Conclusion : Locative and comitative prepositions, Instrumental, manner adverbials, and conjuncts in Ewe and related languages may have evolved from verbs in serial constructions.
The Yoruba verb [fi] 'take', for example, which exhibits considerable syntactic irregularities is in the early stage of that transition. In non-African languages with SVCs (such as Chinese and Thaï) with a long writing tradition (which makes the tracing back of the evolution of words more accurate), it has been observed that synchronic prepositions were at one time

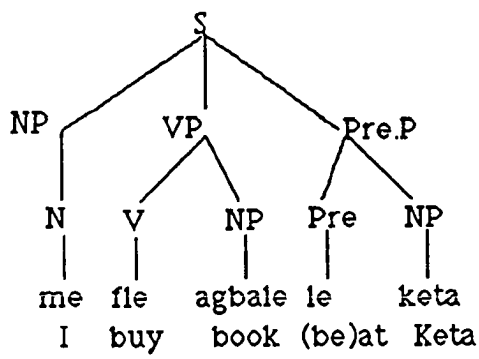
full verbs. The tendency of verbs in series to develop into prepositions can be regarded then as a wide spread-process.

One of the major accomplishments of Carol Lord's study is the understanding that SVCs do not derive from multiple sentence underlying representations. Thus a SVC such as (47):

47- me fle agbale le keta
'I buy book (be) at Keta.'

is derived from an underlying representation similar to the structure in (48):

48



instead of

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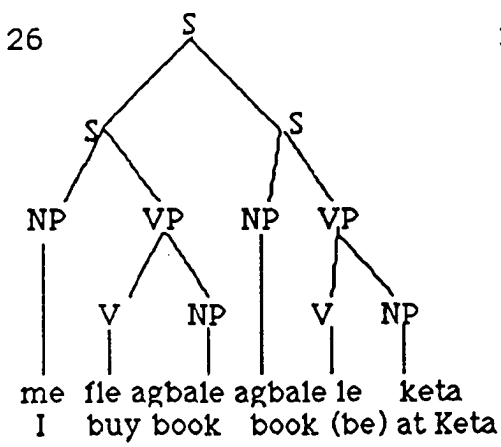

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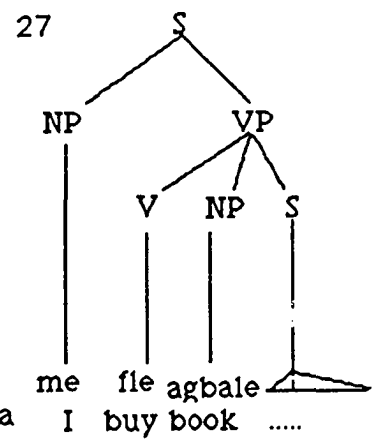


The realization that SVCs are not to be derived from coordinate structures or from embedded structures is reached at the expenses of her characterization of the intrinsic nature of some of the constituents of SVCs namely [kple], [le].

Lord's characterization of [kple] as preposition, conjunction, or adverbial can be questioned on at least two accounts:

1- Are [kpele] as locative verb and [kpele] as a locative preposition really homophonous words, or are they the same word whose behavior and semantics might have been altered by its environment ?

2- If the transition from verbs to prepositions or adverbials is universal as the cited examples from non-African languages such as Chinese and Thaï indicate, one would expect to observe similar transitions from verb to preposition in Abbey.

In Abbey, where syntactic structures parallel those found in Yoruba, one would expect [bə] ' to take ' (similar in nature and function to the Yoruba verb [fi] ' take' to be a verb in sentence (51) , a preposition in (52), and an adverbial in (53), and a conjunct in (54). This seems not to be the case.

51- Eddy bə̲ besenə
Eddy took machete Det
' Eddy took the machete .'

52- Instrumental
Eddy bə̲ tšʲeki dži tinə ši
Eddy took knif cut tree
' Eddy cut the tree with a knife.'

53- Manner
a- Eddy bə̲ aɛ̃hɔ lə aɔ̃nə
Eddy built the house cleverly
' Eddy built the house with intelligence .'

b-Eddy bə̲ tomobi ji Ogboba
' Eddy went to Agboville by car. '

c-Eddy bə mɩsɩ rɩ etšinə
Eddy pulled the rope forcefully
' Eddy pulled the rope with force. '

54- Comitative
Eddy bə ja ji Ogboba
Eddy went to Agboville with his wife
' Eddy and his wife went to Agboville.'

Herbert Stahlke (1970) arguing against the treatment of serial verbs as case markers, points out some shortfalls that emanate from such analysis:
1- There is no single way to determine the case marking. The case markers are ambiguous as to which case they represent. The choice dependes on the semantic content of the following noun. That is,

> the specification of which case a "case marker" marks is a function of the meaning of the noun to which the "case marker" assigns case. This is obviously circular.
> (Stahlke 1970, pp. 86).

This argument is valid in Abbey as well. Observing the sentences in (51-54), one realizes that the sentences are ambiguous in the sense that there is not a unique determination as to whether the " verbids " [bə] translates into adverbials or prepositions. Such determination is rather based on the semantic content of the following object noun. When the noun is a concrete noun, the " verbid " translates into a preposition, but when the following noun is an abstract noun, the " verbid " often translates into an adverbial or (as is the case in sentence (54)) has both prepositional and conjunct meanings. The question then, is what the grammatical category of a word such [bə] would be when the transition is completed ? And more importantly, one is hard put to determine whether the specification of each verbid as adverbial or prepositional is a function of the meaning of the noun that follows it, or whether the meaning of the noun that follows the " verbid " is a function of the meaning of that " verbid " ?

55- mə bə bese dži tinə ši
I cut the tree with a machete

56- mə bə mɩsɩ dži tinə ši
I cut the tree energetically (forcefully)

As for the stages of the transition from verbs to prepositionals, adverbials, and conjuncts, one may ask at what stage of the transition is Abbey ? Location in Abbey is indicated by obligatory locative prepositions or locative markers. Does this mean that Abbey has completed its transition from serialization to locative markers ?

57-Esse edi džumɛ̃ aɔ̃nəgə
Esse did work house Det inside
' Esse worked inside the house.'

58-Assa nũ Ogboba
Assa is in Agboville
'Assa is in Agboville.'

To analyze Serial Verb Constructions as a source of comitative, instrumental, and manner prepositions as well as conjunctions and adverbs might be due to the English translation. To this regard we shall espouse Gilbert Ansre's (1966) view that

> ...we should not appeal to history to link the two-verbid and verb. Nor can we prove any case based on such claim. Too often over-emphasis on phonological similarity has led to a blurring of grammatical detail .

We do not believe that [bə] as a verb and [bə] as a preposition are instances of homophonous words, but rather in both cases they are the same verb. This brings to question the status of common serial construction verbs such as [lɔ], [bə]. Before we reach that end, in what follows we will examine another proposal for the syntactic source of SVCs.

3.5 Anna Manouan

In her attempt to characterize SVCs in ANYI SANVI, Anna Manouan distinguishes two types of serial verb constructions: The [fa] type that designates dative relationships, and the [man] type that defines genitive (benefactive) relationships.[9] She further proposes that both types of verbal constructions are evidences of Movement and Copying rules. Even though Manouan's interpretation of SVCs offer new perspectives in the syntactic source for the phenomenon (e.g., a multiple sentence source is rejected in favor of a mono-sentence underlying representation), it encompasses some short falls. At issue are the underlying representations that she has proposed for SVCs in Anyi and the type of rules that render such derivation possible on the one hand, and on the other hand, her characterization of the nature of some common constituents of SVCs namely [fa] and [man] (respectively [bə] and [lɔ] in Abbey) as serial construction morphemes (SCMs).

The selection of Manouan's article is based on the fact that it typifies a growing trend among analysts to derive SVCs from an underlying simple sentence with a single predicate and the additional constituents of the construction functioning as adverb phrases, prepositions, "verbids," or as serial construction morphemes. Another motivation for selecting Manouan's work, comes from the structural similarities between the language (Anyi) that is the object of her study, and Abbey. In fact, besides lexical differences, each Anyi sentence that she uses in her analysis parallels an identical construction in Abbey. On that basis one might expect Manouan's proposal to work out in Abbey. But as it turns out, application of her analysis to Abbey data does not produce the same result. Her study has overlooked, among other things, the ability of the so called serial construction morphemes [fa] and [man] to take object nouns and possibly to be marked for tense.

The following is an application of Manouan's atudy to Abbey data.

3.5.1 Dative and Genitive Constructions in Simple Sentences

Dative Constructions

59 a -Eddy lɔ Aka šiganə
Eddy gave Aka money Det
' Eddy gave the money to Aka. '

b- Eddy ja Apy nak^{w}anə
Eddy show Apy book Def.
' Eddy showed the book to Apy. '

c- Eddy vivi Aka aanə
Eddy asked Aka story Def.
' Eddy asked Aka the story. '

d- Eddy se Aka mɔrɔ
Eddy brought Aka drink
' Eddy brought the drink to Aka. '

*60 a -Eddy lɔ šiganə Aka
*b-Eddy ja nak^{w}anə Apy.
*c -Eddy vivi aanə Aka.
*d -Eddy se mɔrɔnə Aka.

Genitive Constructions

61 a- Eddy epipi Aka minə
Eddy Hab dig Aka grave Def.
' Eddy digs Aka's grave '.

b - Eddy ka Sopy nak^{w}anə
Eddy read Sopy book Def.
' Eddy read Sopy's book.'

c - Eddy dži Aka Ndenə
Eddy cut Aka banana tree Def
' Eddy cut Aka's banana tree. '

d -Eddy edada Aka tarjɛnə
Eddy Hab. sew Aka clothes Def.
' Eddy sews Aka's clothes .'

*62 a -Eddy epipi minə Aka
* b -Eddy ka nak^{w}anə Sopy
* c -Eddy dži Ndenə Aka.
* d -Eddy edada tarɟɛnə Aka

Dative and Genitive constructions are structurally represented as follows:

Dative:

NP	V	NP	NP
[Sub]		[Ind. O]	[Dir.O]

Genitive:

NP	V	NP	NP
[Sub.]		[Ind. O]	[Dir.O]

Failure to observe these structural orders results in ungrammatical sentences as exemplified by the ungrammatical dative constructions (60 a- 60 d) and by the ungrammatical genitive constructions (62 a- 62 d). Manouan contends that these ungrammatical sentences can be made grammatical if serial construction morphemes (SCMs) (respectively [fa] and [man] in Anyi , and [bə] and [lɔ] in Abbey) were transformationally inserted. In the case of dative constructions, the SCM insertion rule requires a prior shift in position of the predicate: the verb is positioned between the received object and the receiver. The SCM [bə] is then inserted between the subject (the giver) and the received object. As for genitive constructions where a shift in position of the predicate is not necessary, the SCM is directly inserted between the beneficed object and the beneficiary.
The operation of the SCM insertion rule is schematized as follows:

Dative	59 a- Eddy lɔ Aka šigandə
1- Dir. Object Movement	Eddy lɔ šigandə Aka
2- Verb Movement	*Eddy šigandə lɔ Aka
3- SCM Insertion. :	63 - Eddy bə̀ šigandə lɔ Aka
Genitive:	61 a - Eddy pipi Aka mində
1- Dir.O Movement. :	*Eddy pipi mində Aka
2- SCM Insertion :	64 - Eddy pipi mində lɔ Aka

In both cases (dative and genitive), the SVC counterpart of (59 a) and (61 a) obtained after a series of movement rules and the insertion of the appropriate SCM: [lɔ] for genitive constructions and [bə̀] for dative constructions.

The objection to the above analysis is three fold:

First, the movement transformations necessary to derive the correct surface SVC from an underlying dative or genetive construction seem to be very powerful devices when we know that movement rules can move practically anything. Unless the language under study shows strong motivation for their applications (e.g., shadow pronouns left behind after the movement rule has applied), these rules need to be constrained.

As for the the SCM insertion rule, allowing an ungrammatical sentence to be grammatical is not sufficient reason for its application. If the motive for its application was to bring an ungrammatical construction to a grammatical sentence, how would Anna's analysis deal with sentences such as (65) which encloses two of the so called Serial Construction Morphemes ?

65- Eddy bə̀ šigandə bə̀ lɔ mə
Eddy ?_ money _?__ gave me
' Eddy actually gave me the money.'

Second, one has some reservations as for the semantic similarity between the underlying dative or genitive sentence and their respective surface serial verbal constructions. The apparent semantic similarity between the underling dative construction (59 a) [Eddy lɔ Aka šiganə] and the derived SVC (63)- [Eddy bə šiganə lɔ Aka] mainly comes from the English translation. The semantic difference between the two sentences is underlined by the specific nature of the SVC and the openness to additional interpretations of the dative construction. While the SVC in (63) implies a direct transaction, the dative construction (59 a) implies the possibility that the transaction has been made by other means. As for the semantic similarity between the underling genitive sentence (61a) and the surface SVC (64), it is nonexistent. For illustration consider the genitive construction (61 a) below.

61 a - Eddy pipi Aka minə
' Eddy dug Aka's gave.'

and the SVC (64) that supposedly derives from it:

64 - Eddy pipi minə lɔ Aka
Eddy dug grave SCM Aka
' Eddy dug the grave on behalf of Aka.'

In sentence (61 a) Eddy dug a grave that " belongs" to Aka: a grave that will be used for Aka's burial. The presuppositions being that :

a- Aka is dead
b- Aka is the beneficiary of the digging.

In sentence (64) Eddy dug a grave "for" Aka, that is on behalf of Aka. instead of Aka digging the grave himself. There is no indication that :

a- Aka is dead.
b- Aka is the direct "beneficiary" of the grave.

To semantically equate these two sentences would be a violation of our theoretical framework that requires that a transformation be meaning-preserving.

The third objection to Anna's analysis comes from her characterization of [fa] and [man] (respectively [lɔ] and [bə] in Abbey) as Serial Construction Morphemes. To what grammatical category do the SCMs belong ? More importantly, what would their function be in the construction? To render an ungrammatical sentence as a grammatical one as suggested by Manouan, or to modify the meaning of a "principal verb" as proposed by Bamgbose, or as suggested elsewhere in SVCs literature as verbids (empty verbs), prepositions, adverbials, or serial construction morphemes ?

3.6. Nature of the Major Constituents of SVCs: [bə] and [lɔ]

What follows is an attempt to show that constituents of a SVC such as [bə] and [lɔ], which in previous studies were interpreted as prepositions, adverbials, verbids, or as serial verbal morphemes, are genuine verbs in Abbey.

Among the common constituents in SVCs, [lɔ] and [bə] are the most extensively used and are the most controversial as far as their nature, function, and semantics are concerned. There has been some doubt expressed as to whether the words [bə] and [lɔ] are genuine verbs when they occur respectively in structures similar to [NP__ NP VP], and [NP VP __NP]. Bamgbose (1982) for example classifies them as modifying type verbs, and further states that :

> Those verbs [...] having a modifying function will be considered to be deviant because they express meaning usually associated with adverbials or prepositions. And on this basis alone, they will fail to qualify as verbs.

The evidence in Abbey seems to indicate that the so called verbids, serial morphemes, modifying verbs, prepositionals, and adverbials are genuine verbs.

In Manouan's (1983) description of SVCs in Anyi Sanvi, she simply states on page 123 that:

> the morpheme [man] occurring in (53) (simple declarative sentence is a full verb and should not be confused with the serial construction morpheme [man] .

The question to be asked with regard to Manouan's statement is: what makes [man] a serial construction morpheme instead of a regular verb ? One is left confounded as to why in [man] is interpreted as a predicate, and two lines below the same word is analyzed as a serial construction morpheme. Mamouan does not give the reason why such a distinction should be made. Are [man] as a SCM and [man] as a regular verb instances of homophony ? If this is so, what Manouan has called a SCM can well be characterized as an adverb or a preposition as described by Carol Lord (1973) (whom she has criticized earlier in her article). Probably for the same reasons (homonymy), she defines [fa] and [man] serial verb morphemes. Her study failed to address the nature of the constituents of the verbal constructions. This makes the analysis of the nature of the major constituents of SVCs absolutely necessary if an understanding of the phenomenon has to be established. Do [bə] and [lɔ] meet the criteria for verbness?

To determine whether all major constituents of SVCs are genuine verbs, this study focuses on the common serial verbs [bə] 'to take, to get hold of ' and [lɔ] ' to give, to benefit .' The status of these two verbs is controversial because they are believed to be semantically dependent on the type of serial construction they occur in, in addition to the fact that none of the meanings they acquire within SVCs is similar to the ones they have in simple sentences. These semantic variations have prompted some linguists to analyze words such as [bə] and [lɔ] as verbids (Ansre 1966), prepositions

(Carol Lord 1973), or serial construction morphemes (Manouan 1983). To establish the status of such words, three major elements have to be taken into account: their function, their semantics, and their morphology .[10]

3.6.1 Function

Due to syntagmatic restrictions, the function of a word can be determined by the relative position it occupies within a sentence. Abbey being a SVO (Subject-Verb-Object) language, the ability of a formative to occur in the syntactic [NP__(NP)] would establish its verbal status.
S S

Judged by this criterion , the constituents [bɔ] and [lɔ] are genuine verbs. They occur both in simple sentences (65-66) and serial verb constructions (67).

65-Eddy bɔ Nde
Eddy took banana
' Eddy took a banana.'

66- Eddy lɔ Aka šiga
Eddy gave Aka money
' Eddy gave Aka some money. '

67-Eddy ji bɔ saka
Eddy went took rice
' Eddy went to get some rice. '

The verbal function of [bɔ] and [lɔ] in SVCs is upheld by the fact tha they both undergo gerund nominalization.

68- Eddy ji sakabɔ
Eddy went " rice taking"
' Eddy went to get some rice. '

69-Sopy kolo šigalɔ
Sopy likes " money giving "
' Sopy likes to give money.'

3.6.2 Semantics

Lexical entries that are of the verbal category display semantic characteristics that are classified as action, existence, or occurrence. If [bə] and [lɔ] are actual verbs as we have suggested above, they should be able semantically to fulfil two conditions:

1- They should be able to express verbal semantic characteristics, e.g., action, state, process, existence, or the combination of these notions in any structure they are used in.

2- Their semantic interpretations should be the same whether they are singly used in a simple sentence or in combination with other verbs. That is, the contrast between the (original) meaning they have in a simple sentence and the meaning they aquire in a SVC should be either minimal or nonexistent.

When [bə] and [lɔ] occur in a simple sentence (that is as the only verb of a sentence), they convey respectively meaning that can be translated by " to take, to get hold of "and "to give"; when they are combined with other verbs, they are said to translate into prepositions or adverbials.

Serial Verb Construction	Simple sentence
70-Eddy bə bese dži tinə ši Eddy cut the tree with a machete	72- Eddy bə Ndenə Eddy took banana Def.
71-Eddy di džumẽ lɔ ši Eddy worked for his father.	73- Eddy lɔ mə šiga Eddy gave me money

At first glance, it appears that [bə] and [lɔ] in SVCs (70, 71) have a meaning that differs from the one they have in simple sentences (72, 73). In sentence (70), [bə] translates as an instrumental preposition, while [lɔ] in sentence (71) translates as a preposition introducing a benefactor. It is my contention (and that of other linguists

(George Isaac (1975) in particular) that these words do not lose entirely their meaning in favor of that of a preposition or of a morpheme of any other sort. The semantic situation here is twofold:

a - Though a reduction in meaning has to be acknowledged, there is no evidence to suggest that [bə] and [lɔ] in SVC settings undergo a total change in meaning.

b-The meaning associated with [bə] and [lɔ] in a SVCs is not in any sense due to a change of verbal status, but rather due to contextual influences. In fact, a close examination of sentence (70) reveals the idea of "getting hold of something" (the machete) is still present and transparent in "Eddy cut the tree with a machete": the subject (Eddy) has to " get hold of " or "to take the machete " in order to perform the action of cutting. This observation is also true for [lɔ]. In "Eddy worked for his father" (or " Eddy worked on behalf of his father " (71)), the idea is that Eddy worked, but it is his father that will be the prime beneficiary of the result of what he is doing. Indeed the idea of an actual action of " giving " or " handing over the result of his work " is not overtly stated. The sentence nevertheless implicitly states an underlying benefactor, which presupposes a prior "action of giving." Even though the action of giving is not explicit, it is nevertheless transparent from an Abbey speaker's point of view.

It has been suggested that [bə] was a preposition in sentences such as :

74- Eddy bə aɛ̃hɔ lə aɔ̃
Eddy took cleverness built house
' Eddy built the house cleverly .'

It must be recognized that, in the above sentence, [bə] no longer means "to take" in its literal sense, but this does not make it less of a verb. In English, for example, the idea of "getting hold of something" in "to take a lesson" is almost nonexistent compared with "to take a piece of paper." This clearly demonstrates that the meaning of a word can be greatly altered by its immediate environment without necessarily having a change of its

grammatical category. This is well illustrated in Abbey where the meanings of a number of verbs are determined by the context in which they are used. The verb [ru] in (75) examplifies such semantic changes without a categorial change.

75

a- Eddy ru ba
Eddy basket
'Eddy made a basket.'

b- Eddy ru mru
Eddy tears
'Eddy cried'.

c- Eddy ru midži
Eddy water
'Eddy fetched water.'

d- Eddy ru lak^{w}a
Eddy ugly
'Eddy is ugly.'

e -Eddy ru Mbu
Eddy yams
'Eddy harvested yams.'

Though the verbs which enter into combination to form serial structures are somehow modified in their overall semantic interpretation, they manage to retain a great deal of their individual meaning. Semantically, [bə] and [lɔ] have verbal characteristics; to a certain degree, the individual meaning of these words is transparent in serial constructions. The semantic fluctuation that [bə] and [lɔ] present is due to their sensitivity to the context in which they occur. Even an analysis that does not treat them as verbs acknowledges that fact, e.g., in (76) and (77) [bə] has, respectively, a preposition reading or an adverbial reading, depending on whether it is followed by an abstract or a concrete noun.

76-Sopy bə bese dži tinə ši
Sopy "Pre" machete cut tree
'Sopy cut the tree with a machete.'

77-Yapy bə aɛ̃hɔ dži tinə ši
Yapy "Adv" intelligence cut tree
'Yapy cut the tree cleverly.'

3.6.3 Morphology

Excellent parameters in establishing verbal status are the ability of lexical entry to display verbal morphology, that is, to be primarily inflected for tense and aspect, or to be affixed with verbal grammatical morphemes, e.g., the negative morpheme or anaphoric pronouns.[11] Ansre (1966) used the morphological criterion to determine that SVCs constituents similar to [bə] and [lɔ] were not verbs but rather verbids (or empty verbs).

In Abbey, the evidence seems to indicate that [bə] and [lɔ] type lexical entries are inflected for tense:

76a -Eddy Øbə bese Ødži tinə ši
Eddy Acc.take machete Acc.cut tree Det
'Eddy cut the tree with a machete.'

76 b- Eddy ebə bese edži tinə ši
Eddy Hab.take machete Hab.cut the tree
'Eddy cuts the tree with a tree.'

78 a-Eddy Ødi džumɛ̃ Ølɔ ši
Eddy Acc- work Acc.give father
'Eddy worked for his father.'

78 b-Eddy edi džumɛ̃ elɔ ši
Eddy Hab.work Hab.give father
'Eddy works for his father.'

[lɔ]

1-Accomplished	Eddy di džumã̄ lɔ̲ ši
2-Progressive	Eddy nedi džumã̄ elɔ̲ ši
3- Habituative	Eddy edi džuma elɔ̲ ši
4- Future	Eddy badi džumã̄ elɔ̲ ši

[bə]

5- Accomplished	Eddy bə̲ Nde se mə
6- Progressive	Eddy nebə̲ Nde ese mə
7- Habituative	Eddy ebə̲ Nde ese mə
4- Future	Eddy babə̲ Nde ese mə

Morphologically, only the first verb of a serial verb construction accepts the full range of tense markers. Other verbs in the construction are constrained as to the number of tense markers they can accept; only the accomplished and the habituative tense markers are permissible with the none-initial verbs of the construction. When the first verb of the serial construction is in the progressive or the future tense, any other verb in the construction is exclusively in the habituative tense. However, all verbs of the the serial construction agree in tense when the first verb carries either the accomplished tense marker, or the habituative tense marker. Like any other major constituents of SVCs, the capability of [bə]/[lɔ] type lexical entries to accept the full range of tense markers depends on the position they occupy within the construction.

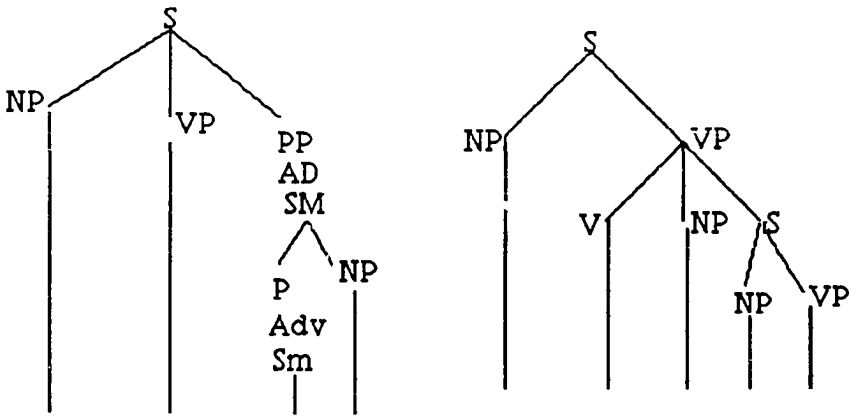
Assimilating [bə] and [lɔ] to prepositions, adverbs, or conjunctions because they do not take the full range of verbal characteristics is misleading; such an analysis does not take into account the internal structure of the language under study, i.e., the capability for a constituent to accept all tense markers within SVCs does not depend upon the nature of the constituent, but rather depends upon the relative position that the

constituent occupy in the construction. Also the English translation (English gloss), and contextual influences that some constituents (minor as well as major) may have on each other play a major role in the misleading characterization of [bɔ̀] and [lɔ] as prepositions or adverbs.

If [bɔ̀] and [lɔ] are not recognized as full verbs in SVCs, other problems emerge. Since the these words are supposed to change grammatical category according to the environment in which they are used, new markers would have to be devised in the Dictionary to account for and predict their various uses.

3.7 Serial Verb Constructions and the Lexicon

So far, arguments have been made against deriving SVCs from multi-sentence underlying representations. The evidence provided for ruling out coordinate and embedded underlying representations for SVCs in Abbey rests on the idea that transformational rules necessary to produce the surface sentences are either not meaning preserving, produces sentences that were semantically misleading, or are very powerful devices without real syntactic motivation. On the other hand, by proposing that all major constituents of SVCs are genuine verbs we have further reduced the number of prospective solution for the underlying source of SVCs in Abbey. If a solution to the syntactic source of verb serialization is desired in which all the objections we previously made do not arise, the only solution left is one that advocates a single underlying sentence for SVCs. If such an approach is aopted a representation in which some major constituents of SVCs would be analyzed as prepositions, adverbials, or serial morphemes must be rejected. In addition, a solution that would advocate the embedding of a verb phrase within another verb phrase must also be rejected. Thus, the following tree configurations would be rejected for the underlying representation of Abbey's SVCs.



Also, in the single underlying sentence representation are rejected solutions in which an adverb node dominates a verb phrase (cf. Stahlke (1974), and Van Leynseele (1975)), because it is bewildering to have an expansion of an ADV node into [V-NP] that could be best handled by a simple [VP] node.

Among the remaining options, the likely approach to take would be to have more than one verb phrase in the single underlying sentence representation. Since traditionally there is a single VP for simple declarative sentences, and SVCs are well formed simple declarative sentences, the question is whether the various verb phrases within SVCs are dominated by a higher VP, or are directly dominated by the [S] node. That is, should serial verbs be listed in the Dictionary as individual verbs or as complex structure of concatenated verbs similar to idioms ? [12]
The way SVCs are listed in the Dictionary should shed light on the kind of underlying representation suitable to SVCs in Abbey. If SVCs are listed in the Dictionary as fixed collocations of verb phrases, it seems logical that the complex unit that the coolocation stands for should be dominated by a higher verb phrase. We reject such a proposal first of all because serializing verbs are used independently in other contexts, in addition to the fact that the proposal would give to SVCs and idioms the same structural representation. If all verbs in a serial verb construction were to be listed in the dictionary as a unit one would expect the verbal collocation to able to be nominalized, or to be moved unitarily in the same manner as idioms.
Examine:

Idiom: 79- Aka pu eši muru di
Aka bit ground breath ate
' Aka failed.'

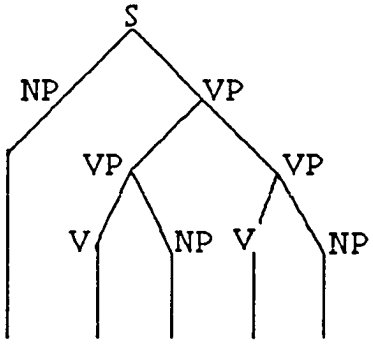
Focus: 80: Aka eši muru pu dinə ɔ jo Yavo mija
' Aka's falling made Yavo laugh.'

SVC: 81- Eddy ji ve saka
Eddy went to buy some rice.

Focus: 82 - *Eddy saka ji venə ɔ džidži Yavo opu

Unlike idioms, SVCs cannot wholistically be put on focus (focus is only possible for individual constituents of SVCs). What the ungrammaticallity of (82) suggests is that SVCs in Abbey shouldn't be given underlying representations similar to that of idioms where all verbs are dominated by a single and higher [VP]. Therefore, a configuration such as the one in (83)

83



should be rejected as well as possible syntactic source of verb serialization.

3.8 Toward the Analysis of Serial Constructions in Abbey

The solution we are advocating for the derivation of Abbey serial verb construction is one that does not make use of transformations. It proposes a rewriting rule that allows more than one verbal phrase not

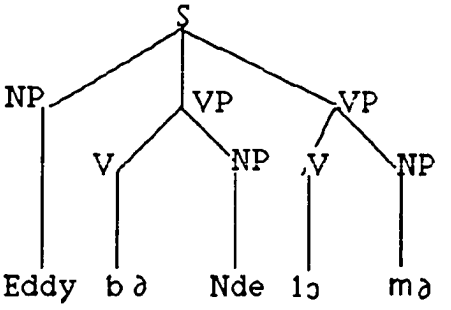
dominated by a higher [VP] node in a simple sentence. The phrase structure rule we are proposing has the following form:[13]

$$S \text{ ---> } NP\text{-}VP\text{-}(VP)^{n}$$

By making the second verb phrase optional, the phrase structure rule can account for simple declarative sentences that do not comprise serial verb constructions. The exponent (^{n}) signifies that the second VP is recursive and can be repeated theoretically indefinitely. When the optional clause of the rule does not apply, the phrase structure rule can account for:

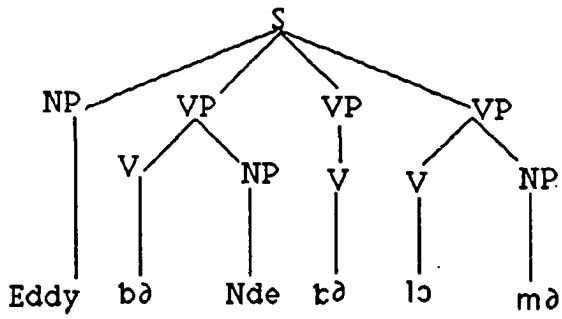
1- Serial Verb Constructions

84 a -Eddy bə Nde lɔ mə
Eddy gave me some bananas



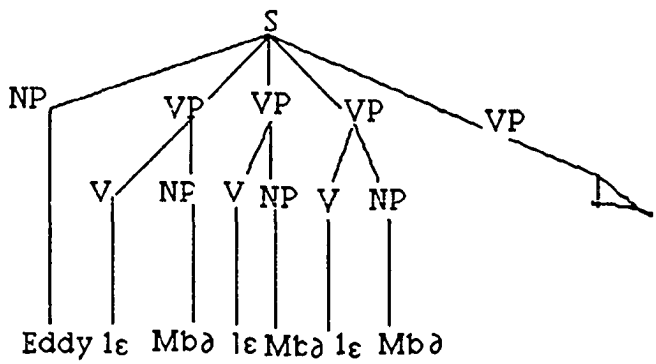
2- Expanded Serial Verb Constructions

84 b- Eddy bə Nde bə lɔ mə
'Eddy actually gave me some bananas'.



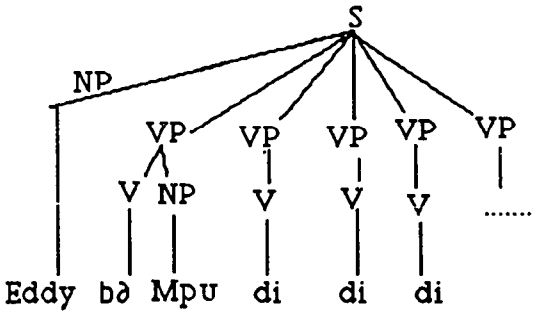
3- Syntactic reduplication[14]

85- Eddy lɛ Mbə lɛ Mbə lɛ Mbə lɛ Mbə ...
Eddy talked, and talked, and talked and talked...



4-Serial Verb Constructions extended by reduplication

86 -Eddy bə Mpʊ di di di di di [mɛ̃ amɛ̃ eə]
Eddy ate, ate, ate, ate, ate [til he became full].



It can be seen that the phrase structure rule eliminates the need for a number of other transformational rules.

3.9. Conclusion

-Transformational approaches to SVCs have failed to bring out the true nature of SVCs.
-A non-transformational approach is simpler and handles SVCs better in that, contrary to popular belief, SVCs express a single component event.
-Though for contextual sensibility some verbs in SVCs do not express full verbal characteristics, in Abbey these words disply a great deal of verbal semantic and verbal morphology. [bɔ] and [lɔ] are genuine verbs.
The controversy about SVCs is due to the fact that English glosses do not match exactly, and because of the fact that so far Base rewriting rules allow only one verb per simple sentence, since SVCs have two verbs and are well formed, coordinate, embedded have been proposed as the underlying representation, or there was proposed an underlying representation where some of the major constituents are analyzed as adverbials, prepositions, or conjunctions.

FOOTNOTES

1- Though SVCs are predominantly characteristic of Kwa languages, instances of verb serializations have been attested in Gur langages .

2- In Abbey, the number of verbs that a Serial Verb Construction encloses is generally free. That is, theoretically no limitation is put on the number of verbs that a SVC may allow. This feature is well illustrated by the possibility to expend an original two-verb construction into a larger one as long as the new sentence is not limited by comprehention. The expension of sentence (a) below into sentences (b), (c), (d), and (e) illustrates that characteristic.

a- mɔ tu Ovo ji
'I sent Ovo '. *(she left)*

b- mɔ tu Ovo ji ve saka
'I sent Ovo to buy some rice '.

c- mɔ t u Ovo ji ve saka se mɔ
'I sent Ovo to buy me some rice '.

d- mɔ tu Ovo ji ve saka bɔ se mɔ
'I sent Ovo to buy me some rice '.
(She is the one who bought the rice and brought it to me)

e- mɔ tu Ovo ji ve saka bɔ bɔ se mɔ
'I sent Ovo to buy me some rice '.
(She bought the rice and actually carried it back to me herselj)

3- This review covers a collection of articles, and counter critics (namely in reponse to critisisms made by Awobuluyi (1973)) either explaining, bringing modifications, or defending earlier works. Though some modifications have been brought to his previous works, e.g., addition of new types of serial constructions (Bamgbose (1982)) essentially defines two types of syntactic sources for SVCs: linking type source, and the modifing type source that apperently is an embeddeding type source. For the purpose of this study we are focussing only on the linking, and modifying sources for SVCs.

4- Though it is by most accounts vehemently rejected, attempts have been made to derive Serial Verb Constructions from underlying coordinate sentences, or from multiple independent senteces by a number of lingusts:

Stewart	(1963)	pp. 145-147
Williamson	(1965)	pp. 47- 60
Bamgbose	(1966)	pp. 157-158
Bendor S.	(1968)	pp. 120-121, 127

5- Those who argue against deriving SVCs from underlying coordinate sentences can be classified into two groups:
a- Those who reject entirely the possibility of deriving any SVCs from coordinate sources (Anna Manouna (1983).)
b- Those who generally derive SVCs from a single underlying sentence, but who acknowledge that at least a restricted number of SVCs have to be drived from underlying multiple sentences. While they accept that a SVC such as

Eddy ji a
'Eddy went "and" came back.'

is derived from an underlying source similar to:

Eddy ji ; Eddy a
or, Eddy ji ɔ a

they reject the derivation of a SVC such as

Ako nɛ̂ obu ji
Ako ran went
'Ako ran away.'

from an underlying sentence that includes coordinate sentences:

Ako nɛ̂ obu , Ako ji
or, Ako nɛ̂ obu ɔ ji

6- Taking into account the stand against the abusive use of homophony that this study takes, functional but not categorial is made between [ɔ] used as a focus maker, and [ɔ] as a conjunct marker. The claim made here is that [ɔ] in both constructions is essentially the same morpheme with different functions.
Coordinate sentence : Aka ji ɔ a 'Aka went and came back.'
Focus construction : Aka ɔ a " It is Aka who came.'

7- Westermann (1930) has made a similar proposal in what he calls " The change of verbs into prepositions, adverbs, and conjunctions". He claims that there is a process of historical change. He remarks that the same word can be considered as a verb when it is conjugated and as a preposition when it is invariable.

8- The term " verbid " was first used by Ansre (1966) to qualify a group of verb that though they accept verb morphology (e.g., inflected for tense and aspect) , remain in the infite form when used in SVCs. In other studies the same group of verbs are qualified either as serial morphemes (Anna Manouan) or as prepositions (Carol Lord) .)

9- Anyi (Agny) Sanvi is an Akan language (sub-group of the Kwa phylum) spoken in the South East of the Ivory Coast (cf. maps and footnote 2 of the introductory chapter.)

10- Some of the criteria (verbal function, verbal semantic, and verbal morphology) that are used here to establish that [bə] and [lɔ] are true verbs are similar to those proposed by Bamgbose (1973,1974, 1982), and by Awobuluyi (1973).

11- Tense agreement among the verbs in SVCs has been advanced as a condition for verbness. Understanding that tense agreement in Abbey depends upon the position that verbs occupy within SVCs, it will not be a reliable parameter to establish verbal status. In addition, the discrepancies in tense agreement in Abbey might well be explained by contextual considerations, similar to the influence that the negative morpheme exerts on tense: (surface tense markers are affected in the environment of the negative morpheme.) Using the same analogy, one can postulate that at the underlying level, serial verbs agree in tense, and that the surface difference is due to contextual influences, i.e., the tense of one verb influencing that of another verb.

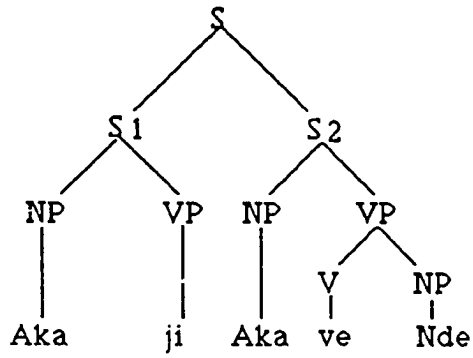
12- By idioms is meant fixed concatenations where the overall meaning of the expression does not amount to the meanings of its constituents.

13- To constrain the rules that make a transformational analysis of SVCs possible, Schachter (1974) has proposed a rewriting rule similar to the one we are advocating here. The main argumentation for his non-transformationalist approach comes from the fact that deletion under

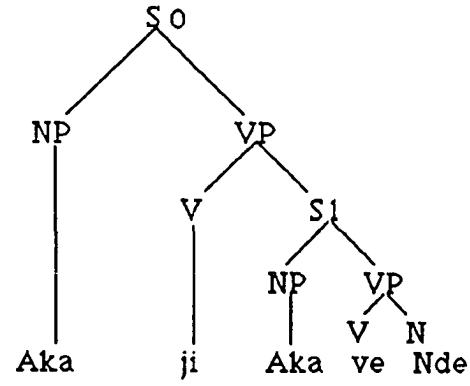
identity (Equi-NP deletion) allows a single serial construction to be derived from either from a coordinate structure or from embedded sentences: Thus, if a deletion under identity analysis is adopted a sentence such as:

Aka ji ve saka
Aka went bought rice
' Aka went to buy some rice'

can be derived from both configurations below:
Coordinate structure



Embedded sentences



Such a possibility evidently makes the sentence [Aka ji ve saka] ambiguous: in both cases the deletion of "Aka" (the repeated NP) produces the same surface sentence. For simplicity, and to show that verbs in series do not have independent choice of tense or aspect, and that serializing verbs have a single NP subject that always precedes the

first verb of the construction, Schachter proposes that the following base rule be used as the syntactic source of SVCs : S---> NP Aux VP VP*

The fact that the VPs are not dominated by a higher VP was criticized by Stahlke (1974) who argues that the base rule as it is presented is difficult for SVCs when the serializing verbs have independent of negation. This objection does not applied to SVCs in Abbey where agreement in polarity is required for all verbs as we have precedently argued.

14- Recall that in this study we are distinguishing for Abbey three types of reduplications:
a- Phonological reduplications: when a syllable is reduplicated within a simple morpheme root:
+/le=Red/+ ---> [lele] ' rainbow '
b- Morphological reduplication: when the root of a morpheme is reduplicated:
/le+Red/ ---> [lele] ' to call '
c- Syntactic reduplication: when a verb phrase is reduplicated:
Eddy nɛ̂ obu nɛ̂ obu nɛ̂ obu nɛ̂ obu ....
Eddy ran, ran, ran, ran.....

CHAPTER IV: SUMMARY AND CONCLUDING REMARKS

The general aim of this dissertation was to present an overview of three aspects of Abbey grammar: Phonology, Morphology, and Syntax.

An opening introductory chapter defines the aims of the study, a presentation of Abbey and its salient characteristics, definition and justification of the theoretical framework that governs the study.

In chapter one, the phonological description of Abbey is undertaken. The chapter defines the binary phonological features necessary to distinguish all sound segments, as well as the redundancies that result from the combination of phonological features within individual segments. It also characterizes the constraints that are imposed on the combination of segments within lexical and grammatical morphemes . Because of structural differences it was thought necessary to distinguish between lexical and grammatical morphemes.

Within lexical morpheme roots vowels harmonize in tenseness. Grammatical morphemes in the other hand interrelate with each other, e.g.,the Negative morpheme affects neighboring tense markers.

The second section of the description of Abbey's segmental phonology was an attempt to state generalizations about phonological rules in Abbey. Special attention was given to three phonological processes: labialization, palatalization, and nasalization. It was observed that not positing labialized and palatalized segments as non-phonemic was economical in terms of distinctive features and phonological rules. As for nasalization, it is argued that due to external as well as internal factors to the language, nasalized vowels would not be posited as phonemic.

The last section of Segmental phonology dealt with Tonology. Three level tones are posited. In light of the evidence and argumentation presented., contour tones were analysed as sequences of level tones.

Chapter II qualifies Halle (1973) proposal that a morphology model should include a "special filter" component. Furthermore, the chapter discusses four word-formation processes, namely, compound-noun formation, "gerunds", agent-nouns, and reduplication. It is argued that a transformationalist account of gerund nominals cannot be sustained in Abbey outside Serial Verb Constructions. A lexicalist approach which supplies the morpheme list with paradigmatic and syntagmatic information for each entry accounts better for gerunds in Abbey.

An examination of agent-noun formation, and morpheme root reduplications respectively qualifies the proposal that word-formation rules should have access to the Dictionary, and that reduplication rules were integral parts of Abbey word formation rules, rather than phonological rules.

Chapter IV dealt with Serial Verb Constructions. Serial Verb Constructions are constructions consisting of a row of two or more verbs standing next to each other without connective elements in sentences that qualify as simple sentences. The chapter seeks to prove that verb serializations in Abbey are processes that characterize simple sentences with complex predicates.

The wide range of semantic interpretation of SVCs is matched by a diversity in as to the syntactic source and the characterization of the nature of their constituents. The literature on SVCs in African languages roughly defines, four types of syntactic sources for the constructions.

1- SVCs have been derived from coordinated sentences by means of the Equi-Np deletion rule that reduces any repeated NP at the same time allowing for a coordinate reduction.

2- Embedded sentence source, a sentence or group of sentenses in which the Equi-NP deletion rule has removed the embedded subject in the embedded matrix sentence.

3- In Single sentence with simple predicate , SVCs are derived from a single sentence underlying representation, with only one verb functioning as the predicate, and the additional major constituents operating as prepositions, adverbials, conjunctions, or serial morphemes.

4- Underlying simple sentence with a complex predicate.
It was argued on semantic and syntactic grounds that deriving SVCs from underlying coordinate sentence was misleading.
Semantically, because SVCs express a single component event and because of the ambiguous nature of the connective [ɔ] ' and/but ' , the derivation of SVCs from underlying coordinated sentences is not sustainable.
Syntactic evidence also shows that SVCs should be differentiated from coordinated sentences.

It was shown that when the focus transformation is applied, the interrogative transformation, and the anaphoric pronoun prefixation, SVCs and coordinated structures behave differently. Furthermore, it was argued that the coordinate reduction rule in some instances was not motivated because there were some SVCs without coordinate counterpart, e.g., not every verb enters in combination with others to form SVCs.

As for the embedded underlying representation, it qualifies the relationship among the major constituent as that of dependency. As defined one of the verb has more importance than the other.

The embedded sentence underlying representation source is hard to support with regard to the rule needed to produce surface structure. The movement rules that make the derivation of SVCs from underlying embedded sentences was not motivated.

As for the deviation of SVCs from an underlying simple sentence one of the constituents as verb and the other constituents as preposition, adverbials, verbids, and "serial" construction morphemes was rejected on the ground that every major constituent of SVCs was a genuine verb.
It was argued that the major constituents of SVCs that were denied verbal status, in Abbey had verbal function, that is, they express individual meaning that are verbal functions ;action, existance, andstate. The meaning expressed by these constituents were to a certain degree retained in SVC.

Morphologically "minor" constituent of SVCs have verbal morphology ; they are marked for tense in Abbey.

If all major constituent of SVCs are genuine verbs, and SVCs are well formed simple sentences, it was argued that it was misleading to list serializing verbs in the dictionary as collocations identical to idioms.

The analysis adapted for SCVs in Abbey is a non-transformational one that derives SVCs from an underlying sentence with complete predicate directly dominated by the [S] mode.

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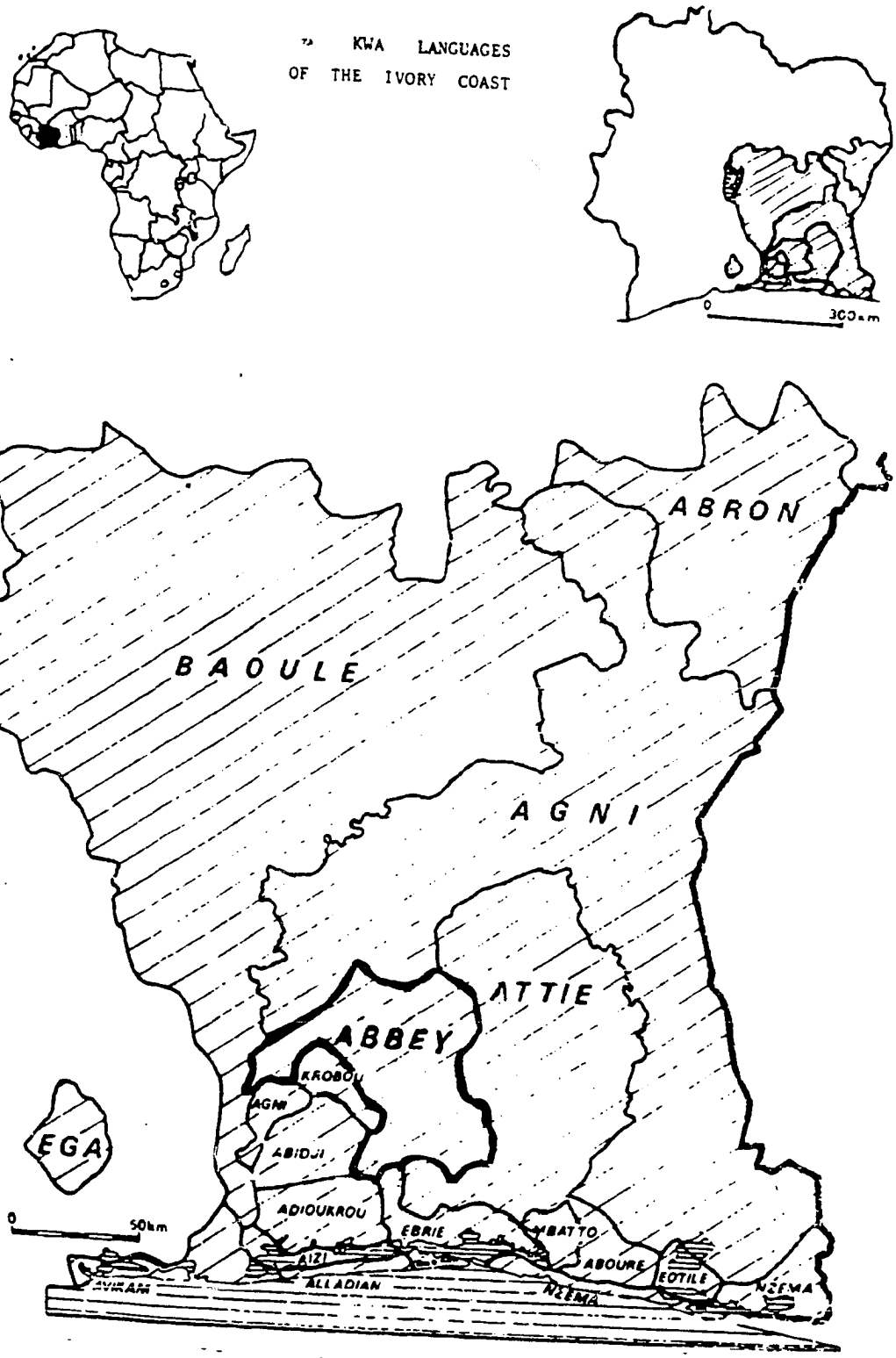

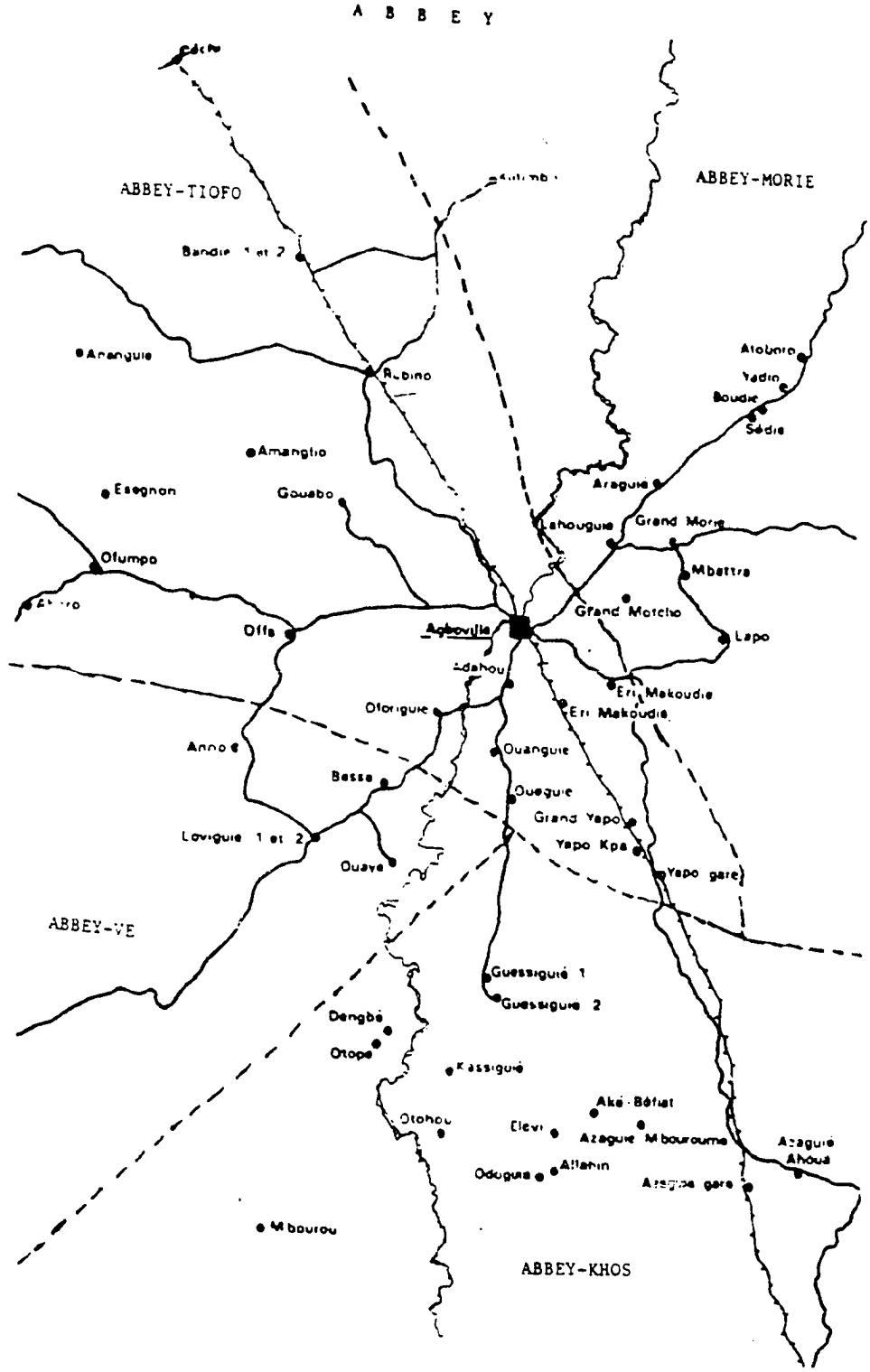

APPENDICES

SEGMENT STRUCTURE CONDITIONS

SEGMENT STRUCTURE CONDITIONS FOR VOWELS

Sgsc 1-

If : [+ syll]

⇓

Then: [- cons]
[- nas]
[+voiced]
[+son]
[-ant]
[+ cont]
[+ tone]

Sgsc- 2

If: [+ Syll]
[+ Low]

⇓

Then: [- Cor]
[- Back]
[-High]

Sgsc- 3

If: [+ Syll]
[- Low]
[α Cor]

⇓

Then : [−α Back]

Sgsc 4-

$$\text{If: } \begin{bmatrix} +\text{Syll} \\ +\text{High} \end{bmatrix} \Downarrow \text{Then: } [\ -\text{Low}\ ]$$

Sgsc 5-

$$\text{If: } \begin{bmatrix} +\text{Syll} \\ \alpha\text{Back} \end{bmatrix} \Downarrow \text{Then: } [\alpha\text{Round}]$$

Sgsc 6-

$$\text{If: } \begin{bmatrix} +\text{Syll} \\ +\text{Low} \end{bmatrix} \Downarrow \text{Then: } \begin{bmatrix} -\text{High} \\ -\text{Back} \\ -\text{Round} \end{bmatrix}$$

SEGMENT STRUCTURE CONDITIONS FOR GLIDES

Sgsc 7-

$$\text{If: } \begin{bmatrix} -\text{Sons} \\ -\text{Syll} \end{bmatrix} \Downarrow \text{Then: } \begin{bmatrix} +\text{Cont} \\ \text{Nas} \\ +\text{Son} \\ -\text{Ant} \\ -\text{Cor} \end{bmatrix}$$

Sgsc 8-

$$\text{If: } \begin{bmatrix} -\text{Cons} \\ -\text{Syll} \\ \alpha\text{High} \end{bmatrix}$$

$$\Downarrow$$

$$\text{Then: } \begin{bmatrix} -\alpha\,\text{low} \\ \alpha\,\text{Voiced} \\ -\alpha\,\text{Tense} \end{bmatrix}$$

SEGMENT STRUCTURE CONDITION FOR CONSONANTS

Sgsc 9-

$$\text{If: } [\ +\text{Cons}\ ]$$

$$\Downarrow$$

$$\text{Then: } \begin{bmatrix} -\text{Syll} \\ -\text{Low} \\ -\text{Tense} \end{bmatrix}$$

Sgsc 10-

$$\text{If: } \begin{bmatrix} +\text{Cons} \\ +\text{Back} \\ -\text{Ant} \\ \alpha\text{Cont} \end{bmatrix}$$

$$\Downarrow$$

$$\text{Then: } [\ \alpha\,\text{Voiced}\ ]$$

Sgsc 11-

$$\text{If: } \begin{bmatrix} +\text{Cons} \\ +\text{Cor} \\ +\text{Cont} \\ \alpha\text{Son} \end{bmatrix}$$

$$\Downarrow$$

$$\text{Then: } [\ \alpha\text{Voiced}\ ]$$

Sgsc 12-

If: [+Cons]
[+nasal]
⇓
Then: [-Back]
[-Cont]
[+ Voiced]

Sgsc 13-

If: [+Cons]
[α Cor]
[α Ant]
⇓
Then: [−α High]

Sgsc 14-

If: [+Cons]
[+Son]
⇓
Then: [+voiced]

Sqsc 15-

If: [+Cons]
[+Son]
[+Cor]
⇓
Then: [+Ant]

Sgsc 16-

If: [+Syll]
[+Back]
[- Low]
⇓
Then: [+Round]

Sgsc 17-

$$\text{If: } \begin{bmatrix} +\text{Syll} \\ +\text{Back} \\ +\text{Low} \end{bmatrix} \Downarrow \text{Then: } [\ -\text{Round}\ ]$$

Sgsc 18-

$$\text{If: } \begin{bmatrix} +\text{Syl} \\ +\text{Back} \\ \alpha\text{-Low} \end{bmatrix} \Downarrow \text{Then: } [\ -\alpha\text{Round}]$$

SEQUENCE STRUCTURE CONDITIONS

Sqsc 1-

$$\text{PC}: \quad =[\ \underset{\begin{bmatrix} -\text{Syll} \\ \\ \\ \end{bmatrix}}{\text{C}} \quad \underset{\begin{bmatrix} -\text{Cons} \\ +\text{Syll} \\ +\text{High} \end{bmatrix}}{(\text{V})} \quad \underset{\begin{bmatrix} -\text{Cons} \\ +\text{Syll} \\ \\ \end{bmatrix}}{\text{V}} \quad \underset{\begin{bmatrix} +\text{Con} \\ -\text{Syll} \\ +\text{Cor} \\ +\text{Nasal} \end{bmatrix}}{(\text{C})} \quad]=$$

Sqsc 1a

$$\text{If: } \begin{bmatrix} -\text{segment} & [+\text{segment}] & [+\text{segment}] \\ +\text{SB} & & \end{bmatrix} \Downarrow \text{Then: } \begin{bmatrix} -\text{segment} & -\text{syllabic} & +\text{syllabic} \\ +\text{SB} & & -\text{consonant} \end{bmatrix}$$

Sqsc 2

$$\text{If: } \begin{bmatrix} +\text{cons} & -\text{segment} \\ -\text{syll} & +\text{SB} \end{bmatrix}$$

$$\Downarrow$$

$$\text{Then: } \begin{bmatrix} +\text{cor} & = \\ +\text{nasal} & \end{bmatrix}$$

Sqsc 3

$$\text{If : } [\, = \;\; X \;\; +\text{Syll} \;\; +\text{Syll} \;\; (Y) \;\; = \,]$$

$$\Downarrow$$

$$\text{Then: } \begin{bmatrix} \text{Hhigh} & \text{-High} \\ \alpha\,\text{Tense} & \alpha\,\text{Tense} \end{bmatrix}$$

Sqsc 5

$$\text{PC: } \begin{bmatrix} =C & V= \\ -\text{Syll} & +\text{Syll} \end{bmatrix}$$

Sqsc 6

$$\text{If: } \begin{bmatrix} +\text{Cons} & +\text{Syll} \\ +\text{Son} & +\text{High} \\ -\text{Nasal} & \end{bmatrix}$$

$$\Downarrow$$

$$\text{Then: } [\, +\text{Cont} \,]$$

Sqsc 7 PC: =C V V=

Sqsc 8

$$\text{If: } \begin{matrix} =C & V & V= \\ [-\text{syll} & +\text{syll} & +\text{Syll}\,] \end{matrix}$$

$$\Downarrow$$

$$\text{Then: } \begin{matrix} =+\text{Cons} & +\text{Syll} & +\text{Syll} = \\ & +\text{High} & -\text{High} \end{matrix}$$

Sqsc 9 PC: = C V C =

$$\begin{bmatrix} \text{-Syll} & \text{+Syll} & \text{-Cons} \\ \text{-Nas} & & \text{+Cor} \\ & & \text{+Nasal} \end{bmatrix}$$

Sqsc 10 If: $\begin{bmatrix} \text{-Syll} & \text{+Syll} & \text{-Syll} \\ & & \text{+Nasal} \end{bmatrix}$

$\Downarrow$

Then: [-Nasal]

Sqsc 11 PC: =C V V C =

$$\begin{bmatrix} \text{-Syll} & \text{+Syll} & \text{+Syll} & \text{+Con} \\ & \text{+High} & \text{-High} & \text{+Cor} \\ & \alpha\text{tense} & \alpha\text{tense} & \text{+Nas} \end{bmatrix}$$

Sqsc 12 PC: +[C (V) V (C)= [(C (V) V (C))]^2
(αTense) αTense (αTense) αTense

Sqsc13- PC: [[C (V) V (C) =[C (V) V (C)] $_1{}^2$]]
[αTense αTense αTense αTense]

Sqsc- 14 PC: +[[C (V) V (C) = [C (V) V (C)]]]

-Syll	(+Syll)	+Syll	(+cons)	-Syll	(+Syll)	+Syll	(+Cons)
	αTens	αTen			αTen	αTen	
	β High	β High			β High	β High	
	ω Back	ω Back			ω Back	ω Back	
	δ Low	δ Low			δ Low	δ Low	

Sqsc 15:

PC: [C (V) V (C)]]]3
| +Syll +Syll |
| αTen αTen |
| [βHigh βHigh] |
| | ωBack ωBack | |
| [δLow δLow]]

Sqsc 16

If: [+Cons +Syll]
[+Son +High]
⇓
Then: [+Cont]

Sqsc 17-

If: [+Cons +Syll]
| +cont -Cor |
| +Ant |
| -Cor -[-High] |
| | -Low | |
| [+Tense]]
⇓
Then: [-Voiced]

Sqsc 18-

If: [+Cons +Syll]
| +Nasal -Low |
| +tense |
| |
| -[+high] |
[[-Back]]
⇓
Then: [+Ant]
[- Cor]

Sqsc 19

If: [-Syll +Syl]
[+Low]
[+Tense]
⇓
Then: [+Cons]

Sqsc 20

If: [-Cons +Syll]
[-Syll +High]
[-Back]
⇓
Then: [+High]
[-Back]

Sqsc 21

PC: +((C) V) +
[+Cons +Syll]
[-High]

Sqsc22

PC: +[(+segment)]+
Nom-P Nom-P

Sqsc 22 a

If : [V]
Nom-P Nom-P
⇓
Then: [+syll]
[-high]
[[+tone]]
[[+low]]

Sqsc 22 b If : [C]
Nom-P Nom-P
⇓
Then: [+cons]
|+nasal |
[+cor]

Sqsc 22 c If: +[Ø]+
Nom-P Nom-P
⇓
Then: [-segment]

Sqsc 23 PC: +[((C) V)] +
+Con +Syll
-High
-Back

Sqsc 24 PC: +[(C) V]+
+Cons +Syll
-High
-Back
+Tense

Sqsc 25 PC = + [C V] +
[+Cons +Syll]
| +Son -High |
| -Nas |
[- Cont]

PHONOLOGICAL RULES

P-rule 1 [-Syll]---> [+Round] /___ [+Round]

P-rule 2 [-Syll] ---> [+Round] /___ + Syll, +High, +Round

P-rule 3 +Syll ---> Ø /____ [+ Syll], + High

P-rule 4 [- Syllabic] ---> [+Palatalized] / ___ [+Syll +Syll; +High -High; -Back]

P-rule 5- [+Cons] --->[+Nasal]/____ +Syll, +Nasal

P-rule 6 +Syll, +Nasal, +Tense ---> [-Nasal] / +Cons, +Nasal _____

P-rule 7- [+syll] [+Conson]
[-Tense] | ---> +nasal / [+Nasal] ____#

P-rule 8 [+Syll] [+Cons]
[-Tense] ---> +Nasal / ____ [+Nasal]

P-rule 9 [+Consonant]
[+Nasal] ---> Ø | ___#

[+Cons]
[+Cons] [α Ant] | α Ant |
P-rule 10 | +Nasal | ---> |β Cor |/ ___ = | β Cor |
[+Cor] [γ Back] [γ Back]

P-rule 11 [+Cons]
|+syll |
| + Nasal |
/+n +/---> [+Cor] / ___+[Noun Root]
+G.M +GM

P-rule 12 [+Cons] [+Cons]
| +Syll | --->[α Ant] /___ | + α Ant |
| +Nasal | |β Cor | | β Cor |
[+Cor] [γ Back] [γ Back]

P-rule 13 [+Syll] ---> Ø / __= [+Cons]
[+Son]

P-rule 14 [+Cons] [+Voi]
[+Back] ---> [-Cont] / [+Cons] = ___
[+Cont] [-Ant] [+Nasal+]

P-rule 15 [+Cons] [+cons]
[+Cont] ---> [+high] / -- [-syll]
[+Cor] [+high]
[-Son]

P-rule 16 [+Cons] [+Syll]
[-Cor] ---> [+cor] / [+high]
[+Pal]
[- nasal]

P-rule 17- [ə] ---> Ø /___#[+syllabic]

WORD FORMATION RULES

WFR 1: [Noun root + -fa] ---> [Noun] [+semantic 1]

[+semantic 1]= place where something is kept or done.

WFR 2

[+Compound Noun]---> Nom Pre + [Noun root] + { Noun root$^{(n)}$ / Adjective root / Verb root }

WFR III : Agent Noun---> [[Gerund] +[-go]]

WFR IV: [V Root^{1}]+[Red] ---> [V Root^{1} +V Root^{1}] (V Root, V Root)