This book discusses aspects of the grammar of Akan, a language spoken in Ghana, and the theoretical aspects of the relationship between phonology and syntax. Particularly, some constructions are explored in the perspective of the phonology-syntax interface. The existence of phrasal or post-lexical rules has stimulated research in the phonology-syntax interface. In this regard, linguists are faced with some theoretical questions. One of them is with respect to how the phonology-syntax interface should be conceived; through Direct Reference or Indirect Reference? It is advanced in this book that the phonology may make reference to the syntax, but only remotely through the prosodic structure of the phonological component of the grammar (e.g. Zec and Inkelas 1990). Syntactic analysis of some of the constructions explored are done in the framework of Lexical-Functional Grammar (e.g. Bresnan 2001). It is claimed that the prosodic structure primarily relates to the constituent structure of Lexical-Functional Grammar through a proposed mapping algorithm, the Compositional Mapping Theory. This is in order to adequately explain the phrasal rules occurring in the explored Akan constructions.

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Charles Marfo

Akan: Phonology-Syntax Interface

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Aspects of Akan Grammar and the Phonology-Syntax Interface

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Charles Ofosu Marfo

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ASPECTS OF AKAN GRAMMAR AND THE PHONOLOGY-SYNTAX INTERFACE

submitted by

Charles Ofosu Marfo

for the degree of Doctor of Philosophy
at the University of Hong Kong
in June 2005

This dissertation discusses aspects of the grammar of Akan, a Kwa language of West Africa, and the theoretical aspects of the relationship between phonology and syntax. Particularly, the study explores compound constructions, simple clauses, topic, focus and *wh*-question fronting constructions in Akan and the phrasal rules that obtain in them in the perspective of the phonology-syntax interface.

The theory of lexical phonology (Kiparsky 1982; Mohanan 1986; Pulleyblank 1986; etc.) distinguishes two sets of rules in the grammar; lexical rules and phrasal rules. The existence of phrasal rules in the grammar has stimulated research in the phonology-syntax interface. In the interface analyses of phrasal rules, linguists are faced with some theoretical questions. Some of these questions that this dissertation attempts to address in the course of discussing phrasal rules in the target constructions of Akan are i) what is the relationship between phonology and syntax? ii) how is the syntactic structure mapped to the phonological structure? iii) is the analysis of phrasal rules from the perspective of the interface desirable and iv) is information reference between syntax and phonology bidirectional (or not)?

With regards to the primary question of how the phonology-syntax interface should be conceived in particular, two main schools of thought – the Direct Referen

and the Indirect Reference hypotheses – have been at opposite sides of the argument. This study adopts the Indirect Reference hypothesis and advances the view that the phonology needs to make reference to the syntax, but only remotely through the prosodic structure (p-structure) of the phonology (Nespor and Vogel 1986; Zec and Inkelas 1990; etc.). Thus, a greater portion of the research is built around the argument that the prosodic structure provides the right platform for a comprehensive and consistent account of phrasal rule applications and that, through p-structure, phonological information may be referred to by some syntactic representations.

Syntactic analyses of some of the constructions explored in this study are done in the framework of Lexical-Functional Grammar (e.g., Bresnan 2001). It is claimed that the p-structure primarily relates to the categorial structure, one of the parallel structures postulated in Lexical-Functional Grammar (LFG). But it is also claimed that other grammatical information need to be considered where necessary to contribute to the parsing of the p-structure. In this wise, the study crucially promotes the idea that syntax is not the sole input base of a well-defined p-structure and that phrasal rule applications that seem intractable could be explained where other grammatical information are adequately recognized in the p-structure. Accordingly, Compositional Mapping Theory (CMT), as developed in this thesis, which encompasses various mapping theories proposed in the literature, is proposed for the parsing of the p-structure in Akan and, for that matter, for conclusive explanation of phrasal rules occurring in Akan constructions.

ASPECTS OF AKAN GRAMMAR AND THE PHONOLOGY-SYNTAX INTERFACE

by

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A thesis submitted in partial fulfillment of the requirements for
the degree of Doctor of Philosophy
at the University of Hong Kong

June 2005

DECLARATION

I declare that this dissertation represents my own work, except where due acknowledgement is made, and that it has not been previously included in a report submitted to this university or in a dissertation submitted to any institution for a degree, diploma or other qualification.

Signed _____

Charles Ofosu Marfo

ACKNOWLEDGEMENTS

An African proverb says that, it takes a whole village to raise a child. Like this proverbial child, this work has been completed with a lot of help from various quarters. First of all, I thank the Almighty God for seeing me through the completion of this dissertation. I also sincerely acknowledge my indebtedness to my supervisor, Dr. Adams B. Bodomo, who has given me undeviating guidance from the beginning to the end of this dissertation.

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Despite the various forms of help I have received from several quarters, I am solely responsible for the errors and pitfalls of this work.

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LIST OF ABBREVIATIONS

The following abbreviations have been used in the dissertation for interlinear translation. Other abbreviations that are not listed here have been explained in-situ.

Abbreviation	Full form
1PL.	First person plural
1SG.	First person singular
2PL.	Second person plural
2SG.	Second person singular
3PL.	First person plural
3SG.	Third person singular
DEF	Definite article
GEND	Gender
FUT	Future aspect marker
HAB	Habitual aspect marker
MASC	Masculine
NUM	Number
OBJ	Object
PERF	Perfective aspect marker
PL	Plural
PN	Personal name
PRED	Predicate
Pro	Pronoun
PROG	Progressive aspect marker
PST	Past aspect marker
SG	Singular
SUBJ	Subject

INTRODUCTORY REMARKS

0.1 The issues: *Why phonology-syntax interface?*

The theory of lexical phonology (Kiparsky 1982, 1985; Mohanan 1982, 1986; Pulleyblank 1986; etc.) explains that phonological rules apply at the lexical level of the grammar – i.e., in minimal or phonological words constituting the lexicon. These so-called lexicon-internal phonological rules are referred to as lexical rules. Lexical phonology (LP) also recognizes the fact that, indeed, some of these lexical rules also apply or could be redefined in application at a level that is beyond the level of the phonological word; specifically, the post-lexical or phrasal level of the grammar. The rules that apply at this level are also referred to as post-lexical or 'truly' phrasal rules (Hayes 1990; Marfo 2004a; etc.). Accordingly, among other features, it is on the basis of a particular level of rule application that LP draws a distinction between lexical and phrasal phonological rules.[1]

The existence of phrasal rules in the grammar has stimulated a great deal of research interest in the study of the relationship between the phonological structure of the grammar and that of the syntax among some linguists. The consensus among these linguists has been that, in accounting for phrasal rules in several constructions in many natural languages, some phonological and morphosyntactic properties are brought into focus. In this direction, it has been shown appreciably in the literature that phonology

[1] Among other features, it has been established in the literature that while lexical rules are lexically (and morphologically) sensitive, phrasal rules are only sensitive to *morpho*syntactic structures (Kiparsky 1982; Mohanan 1982, 1986; Pulleyblank 1986; Rice 1990; etc). Interested readers may consu some of the works mentioned for the features that set apart lexical and phrasal (post-lexical) rules.

and syntax interact significantly in the explanation of (most) phrasal rules, hence the advancement of research in the phonology-syntax interface.

Despite the acceptance and advancement of research in the perspective of the phonology-syntax interface, however, some theoretical questions still remain. Some of these questions that this dissertation attempts to address in the course of exploring the nature of the phonology-syntax interface and, more importantly, in the course of discussing phrasal rules in some constructions of Akan in the perspective of the interface are as follows:

i. What is the relationship between the phonological structure and the syntactic structure; is there a direct relationship or an indirect one (particularly, in phrasal rule applications in Akan)?

ii. How is the syntactic structure mapped to the phonological structure; through which mapping theory (particularly, in the case of Akan)?

iii. Is the explanation of phrasal rules from the perspective of the phonology-syntax interface desirable?

iv. Are both phrasal (phonological) rules and syntactic representations explained with pieces of information in each other's structure, or is it the case that only phrasal rules need to rely on (aspects of) syntactic information for explanation?

A large fraction of the literature on the phonology-syntax interface (e.g., Kaisse 1985; Nespor and Vogel 1986; Zwicky and Pullum 1986; Odden 1987; Seidl 2001; Selkirk 1981a & b, 1984, 2000; etc.) has concentrated on the nature of the phonology-syntax interface and grammatical phenomena that need to be looked into from the perspecti

of the interface. I will explore some of the hypotheses on the nature of the interface that have been proposed and advanced in the literature in a bid to establish the connection between phonology and syntax. I will then adopt one of them, the Indirect Reference Hypothesis through the prosodic theory (Nespor and Vogel 1986; Selkirk 1984; etc.), with which I will attempt to provide a rational and a detailed account of various phrasal (phonological) rules that would be identified in various constructions of Akan that would be discussed in separate chapters. Before going into these however, in the rest of this introductory part, I briefly present the language in question, Akan, the constructions I will be scrutinizing, and the organization of the rest of this dissertation.

0.2 The Akan (Asante-Twi) language

Akan is a member of the Kwa branch of the Niger-Congo language family. It is mainly spoken in Ghana, West Africa, and it is one of the most widely spoken languages in the western, central and the southern parts of the country. Varieties of Akan are also spoken in the adjoining countries; e.g., Agni in eastern Côte d'Ivoire (Pilote 1982; Kaye 1985).

Akan comprises several languages, but three of them stand out on the basis of appreciable literary status achievement. These are Asante, Fante, and Akuapim. Asante and Akuapim are also referred to as Twi. Accordingly, they are often distinguished from each other as Asante-Twi and Akuapim-Twi.

I mainly focus on Asante-Twi in this dissertation, although the name Akan will consistently be used as reference. All data in Akan provided in this work, therefore, are from Asante-Twi. The restriction to data from Asante-Twi is in order to preclude phonological differences, particularly tonal ones, in the other languages that are capab

of complicating issues for us to deal with. Besides data from Akan, those from other languages are resorted to in a few instances of cross-linguistic importance. Most of the phrasal occurrences explored in this work are tonal. It is, therefore, important to look at the tone characteristics of Akan (but briefly).

Akan is a two tone-level language; that is, High (H) and Low (L), and the tones are borne by vowels and syllabic consonants. The H tone is represented by the acute, as in the word *pápá* 'goodness'. The L tone is also represented by the grave, as in *pàpà* 'fan'. There is also a downstepped H tone and it only occurs after another H tone. A downstepped H tone is indicated by an exclamation sign before the acute (!´) and could be either phrasal or lexical. Where it is phrasal, as will be evident in appropriate chapters and sections, the downstep is due to the impact of a dislodged underlying L tone between H tones. Specifically, having been dislodged from its bearing unit, the underlying L tone reduces the pitch level of the following H tone to a level that is lower than that of a preceding H tone. With the lexical case, the downstep is assumed to be underlyingly represented in a word. So, as in the words *àdá!ká* 'box' and *ɔpé!té* 'vulture', for example, no underlying L tone had caused the downstep.

0.3 The constructions concerned and data used

The main constructions of Akan that are scrutinized in this dissertation, particularly for phrasal rules and ensuing phonetic realizations, are:

i. *Compounds*: e.g. ɔhéné 'king' + èfíé 'house' → àhĩmfié 'palace'
sĩká 'money' + kɔ̀kɔ́ 'red' → sĩkàkɔ́kɔ́ 'gold

ii. *Simple clauses*: e.g. Kòfí á-bò Yàá
Kofi PRF-beat Yaa
'Kofi has beaten Yaa.'

iii. *Topic*: e.g. Kòfí, ɔ-à-bó Yàá
Kofi 3SG-PRF-beat Yaa
'Kofi, he has beaten Yaa.'

iv. *Focus*: e.g. Kòfí nà ɔ-á-bó Yàá
Kofi FOC 3SG-PRF-beat Yaa
'It is Kofi who has beaten Yaa.'

v. *Wh-question fronting*: e.g. Hwáń nà ɔ-á-bó Yàá
who FOC 3SG-PRF-beat Yaa
'Who has beaten Yaa?'

In the scrutiny of the constructions, how the identified phrasal rules apply and how they come to bear on the phonetic form of the constructions within which they apply will also become evident. Where necessary, the constructions are also syntactically (and discourse contextually) looked into, either extensively or briefly.

Indeed, compounds, simple clauses, topic, focus, and *wh*-question fronting constructions in Akan have been either extensively or otherwise discussed in the literature, as will become evident in appropriate chapters and sections in my explorations. However, these previous works do not overshadow the contribution of this dissertation in any way. This is because, besides the alternative syntactic analysis (i.e., in LFG) and other grammatical insights of the constructions that will be given in this work, an attempt is also made to give a comprehensive account to phrasal occurrences that border on the phonological and the syntactic structures of the grammar; that is, t emphasis on phonology-syntax interface analysis of phrasal occurrences.

While exploring constructions for the relationship between phonology and syntax, it is important to analyze phrasal phenomena that could be identified at length and in detail; i.e., it is important to explain issue of interface clearly. It therefore becomes necessary to focus on a few constructions. In other words, instead of exploring every construction in Akan, the above mentioned constructions have only been selected in order to minimize the overall length of this thesis.

Among other preparations and steps that were taken towards a better study, I did data collection on all the target constructions (and some others) in Akan in my quest to efficiently and appropriately explain phrasal occurrences in them. I restricted myself to two types of data; that is, archival and my native speaker intuition.

With the archival data, what needed to be done and has been done was to search for works that have been done on Akan syntax and post-lexical phonology and others that have some bearing on the direction of my research topic. Because of the concentration on archival data, no particular effort was made to do large scale audio recordings of other native speakers of the language. In fact, considering the limited period of time I had to spend on data collection in Ghana, the seat of Akan, a large-scale audio recorded data were just impossible to acquire.

I am a native speaker of Akan. So, in addition to the archival data, I made use of my native speaker intuition. I could quickly provide the necessary data and test them with the assistance of other native speakers. Accordingly, I subjected an appreciable size of my self-produced data to test. The tests were in order to ascertain the adequacy of my data. They were also necessary for the purpose of error identification and, for that matter, data adjustments. The Akan data used in this work, therefore, comprise the right forms that every native speaker of language (in particular, Asante-Twi) will say.

0.4 Organization

The rest of this dissertation consists of six chapters. Chapter *one*, *The Prosodic Structure and Phrasal Rules*, discusses issues that relate to the phonology-syntax interface; i.e., the syntactic structure and phrasal rule applications, the prosodic structure (of the phonology) and the appropriateness of the prosodic structure for phrasal rule analyses. The chapter also touches on an aspect of phonological information involvement in syntactic representation. Chapter *two*, *Syntax, Rule Domains and Rule Applications*, is devoted to the lexical-functional grammar (LFG) framework of syntax and how the prosodic structure relates to the syntax in rule analysis. The structure of compounds in Akan and some phrasal rules that attain in them are also dealt with in Chapter *three*, *Phrasal Rules in Akan Compounds*, where data will support the claim that phrasal occurrences in compounds are better explained within the prosodic structure. Chapter *four*, *Structure of Topic, Focus and Wh-question Constructions*, discusses the syntax of topic, focus and *wh*-question constructions. Here, the constructions are extensively analyzed within the framework of LFG. Following in chapter *five*, *Phrasal Rules in Topic, Focus, and Q-word Fronting Constructions*, is a prosodic analysis of various phonological and syntactic operations in topic, focus and *wh*-question constructions (in relation to structures that obtain in simple clauses). The *Conclusion* in chapter *six* revisits some proposals and findings briefly. An appendix involving a list of other forms of compounds, noun classes in Akan, and a brief discussion of other focus-like morphemes follow the conclusion.

CHAPTER ONE

THE PROSODIC STRUCTURE AND PHRASAL RULES

1.1 Introduction

It has been mentioned in the introduction that the interaction between the phonology and the syntax in the explanation of phrasal rules is generally accepted among linguists working in the field of the phonology-syntax interface and that the controversial issue that has brought divisions among them is how the structures relate; i.e., is there a direct or an indirect connection? As one of the research questions mentioned in the introduction; i.e. (i), I explore some theories of the phonology-syntax interface in this chapter. I will then adopt one, the prosodic theory of the Indirect Reference Hypothesis, and explain phrasal rules in the selected Akan constructions with it. This chapter also takes a position with regards to the question as to whether phonological rules and (some) syntactic representations refer to information in the other's structure for explanation, or whether only phonological applications need to rely on (aspects of) syntactic information ((iv) in the introduction). It explains that the information reference is bidirectional (Zec and Inkelas 1990) if issues are discussed in the prosodic structure.

Section *1.2* looks into the nature of the phonology-syntax interface. The prosodic structure and its status in the grammar is explored in section *1.3*. Some disagreements that have plagued the prosodic structure in rule explanation are explored in section *1.4*. In section *1.5*, I discuss the basis of p-structure mappings; i.e., how p-structure

realized. I explain that phonological information may influence representations in the syntax in section *1.6.* Section *1.7* concludes the chapter.

1.2 The nature of the phonology-syntax interface

There have been two main opposing schools of thought on the subject of the nature of the phonology-syntax interface. One is the Direct Accessibility or Direct Reference approach that is argued for and constitutes the core of works such as Clements (1978), Kaisse (1985), Odden (1987, 1990), Cinque (1993), etc. The other is the Indirect Reference Hypothesis, which is argued for in works such as Selkirk (1984), Nespor and Vogel (1986), Hayes (1989), Zec and Inkelas (1990), and Truckenbrodt (1999).

1.2.1 Direct Reference

The direct reference approach basically advances the position that, in the phonology-syntax interface analysis of phrasal rules, domains that are directly realized in the *morpho*syntactic constituent structure predict the application of the rules that come to bear in various constructions. In other words, syntactic categories (e.g., those resulting from c-command relations (Kaisse 1985: 155)) directly constitute domains of application for phrasal rules.

Supporting the direct reference approach, Odden (1990) identifies various phrasal rules in Kimatuumbi that he explains refer to surface syntactic structure in application. One of these rules I use to explain direct reference further is 'lengthening', whereby a vowel before a noun stem containing exactly two moras is lengthened. But, most importantly, the vowel is lengthened when the word within which it is contain

and the following two-mora noun are in the same minimal sentence (S), as shown in (1.1a). In other words, 'lengthening' is not realized where the following two-mora noun is immediately contained in a different S, as shown in the relative clause in (1.1b). In this wise, as schematized in (1.1c), Odden explains that the lengthening rule in Kimatuumbi is conditioned by syntax; i.e., S boundaries.

(1.1) *From Odden (1990: 266-7)*

a. i, naammúlige → [naammúlig*ee* mbaká]$_S$
1SG-killed cat
'I killed a cat.'

ii, Mamboondo → [naampéi Mamboond*oo* chúpa]$_S$
1SG-gave Mamboondo bottle
'I gave Mamboondo a bottle.'

b. niyuwine → [niyuwin*e* [mbaka aawíie]$_S$]$_{VP}$
I-heard cat died
* [niyuwin*ee* [mbaka aawíie]$_S$]$_{VP}$
'I heard that the cat died.'

c. $\mu \rightarrow \mu\mu$ / — X[$\mu\mu$]$_\omega$ (X contains neither]$_S$, nor $_S$[, nor any segments.)
[noun]

In Akan, a phrasal (tone) rule that could be explained as having direct reference to surface syntactic structure occurs in the embedded clause of focus constructions (as compared with the tonal structure of a related canonical clause (IP)). As could be observed in (1.2), with this rule, the verb consistently surfaces as H-toned. So, it cou

be explained as a direct-syntax one. Explicitly, the rule only realizes in a constituent (i.e., aspectual morpheme or verb) aligned to the left-edge of the VP and spread through the verb-stem. Hence, I term it 'inserted-H spread'.[2] It could therefore be said that 'inserted-H spread' is conditioned by syntax; i.e., it applies at the left-edge of VP.

(1.2) *Simple clause* *Focus construction*

a. [$_{IP}$ Kòfì [$_{VP}$ rè-bòá Á!fiá]] ⇒ [$_{FOCP}$ Kòfì$_i$ nà [$_{IP}$ ɔ$_i$- [$_{VP}$ ré-bóá Á!fiá]]]

Kofi PROG-help Afia — Kofi FOC 3SG- PROG-help Afia

'Kofi is helping Afia.' — 'It is Kofi who is helping Afia.'

b. [$_{IP}$ Kòfì [$_{VP}$ bòá-à Àfiá]] ⇒ [$_{FOCP}$ Kòfì$_i$ nà [$_{IP}$ ɔ$_i$- [$_{VP}$ bóá-à Àfiá]]]

Kofi help-PST Afia — Kofi FOC 3SG- help-PST Afia

'Kofi is helped Afia.' — 'It is Kofi who is helped Afia.'

1.2.2 Indirect Reference Hypothesis

The indirect reference hypothesis critically challenges the direction of the direct reference approach to the interface analysis of phrasal rules on the grounds that morphosyntactic domains are inadequate and, as a result, bring about inconsistencies in rule application (Frascarelli 2000; Nespor and Vogel 1986; etc). Contrary to the direct reference approach, therefore, it is proposed to substantially lessen the overall influence of the syntax in phonological operations. In their conception of the grammar, proponents of indirect reference assume a potentially exclusive intermediate structure of grammar within the general phonological structure, within which phrasal rules need to be

[2] Inserted-H spread is explained in detail and in terms of the indirect reference hypothesis in chapter *five*; section *5.2.1*.

exhaustively explained in their application. Generally, however, they acknowledge that this intermediate structure primarily results from the reorganization of the syntactic constituent structure (Selkirk 1996; Jackendoff 1997; etc.). This part of the discussion is presented in sections *1.3* and *1.5*.

Proponents of indirect reference suggest that, among other grammatical information, some of which are already in the phonology, the syntax only contributes towards an input base on which the intermediate structure is parsed (Hayes 1989; Frascarelli 2000; etc.). Phrasal occurrences are, then, accounted for in the projected (or mapped) intermediate structure. With the indirect reference approach, therefore, the reference of phrasal phonological rules to syntactic structures is done through a medium. For that matter, the influence of syntax is only remote, as will become evident in the accounting of phrasal phonological rules in Akan.

In the literature, one of the phonological theories that has been advanced and which emphasizes the indirect accessibility of the phonology to the syntax is the prosodic constituent structure of phonology (Selkirk 1972, 1981a, 1986; Nespor and Vogel 1982, 1986; Truckenbrodt 1999; etc.). In the following section, the prosodic constituent structure is explored.

1.3 The prosodic constituent structure

The prosodic constituent structure (henceforth, p-structure) constitutes the basis of the phonological theory of prosodic phonology (Selkirk 1972, 1981a, 1986; Nespor and Vogel 1982, 1986; Inkelas 1988; Hayes 1989; Zec and Inkelas 1990; etc.). The p-structure has been proposed to enforce the claim that the syntax influences t

phonology only to the degree that it contributes to the determination of prosodic domains, with which phrasal rule applications are triggered (Selkirk 1986; Nespor and Vogel 1986; Zec and Inkelas 1990; etc.).

We note however that, although p-structure independently constitutes the platform of phrasal rule applications and their explanation, it is not an independent structure by all standards of the grammar. That is, p-structure is only a subsystem of the phonological structure of the grammar (Nespor and Vogel 1986: 1 & 6; Zec and Inkelas 1990: 365; etc.). In partnership with other subsystems, e.g. lexical and autosegmental phonologies, they constitute the general and the elaborate phonological structure. I delve much into the subsystem status of p-structure in section *1.4* of this chapter, where I look into how the syntactic constituent structure and other grammatical information are built into the domains that constitute the p-structure.

P-structure is constituted by a number of distinct phonological units. Specifically referred to as prosodic domains, these units are described as hierarchically structured. That is, each one of the various prosodic domains contains and only contains fragments of the immediately smaller or lower domain. Accordingly, the p-structure has often been referred to as the 'prosodic hierarchy' in the literature (e.g., Nespor and Vogel 1986).

The hierarchical ordering that characterizes the p-structure has particularly been explained through the Strict Layer Hypothesis (SLH) (Selkirk 1981b, 1984, etc.), which simply says that prosodic domains are 'strictly layered'. Throwing more light on their version of the p-structure, Nespor and Vogel (1986), among other works, elaborate on the SLH with a proposition of four self-explanatory central principles that should define a well-constituted p-structure. As presented in (1.3) below, the implication is that a deviation from these principles would render p-structure ill-formed.

(1.3) *Basic principles of p-structure*

> *Principle 1*: A given non-terminal unit of the prosodic hierarchy, X^P is composed of one or more units of the immediately lower category X^{P-1}.
>
> *Principle 2*: A unit of a given level of the hierarchy is exhaustively contained in the superordinate unit of which it is part.
>
> *Principle 3*: The hierarchical structures of prosodic phonology are n-ary branching.
>
> *Principle 4*: The relative prominence relation defined for sister nodes is such that one node is assigned the value strong (*s*) and all the other nodes are assigned the value weak (*w*).
>
> Nespor and Vogel (1986: 7)

These central principles in (1.3), especially the first one, reiterate what SLH seeks to establish. For example, a phonological word cannot be higher than a phonological phrase in the ordering. In optimality-theoretic terms, Selkirk (1996) recasts these principles as constraints. Thus, where these constraints are highly ranked, failure to conform to any particular n-ary building of the various prosodic domains will result in a violation. The constraints formulated there are *LAYEREDNESS*, *HEADEDNESS*, *NONRECURSITIVITY* and *EXHAUSTIVITY*.

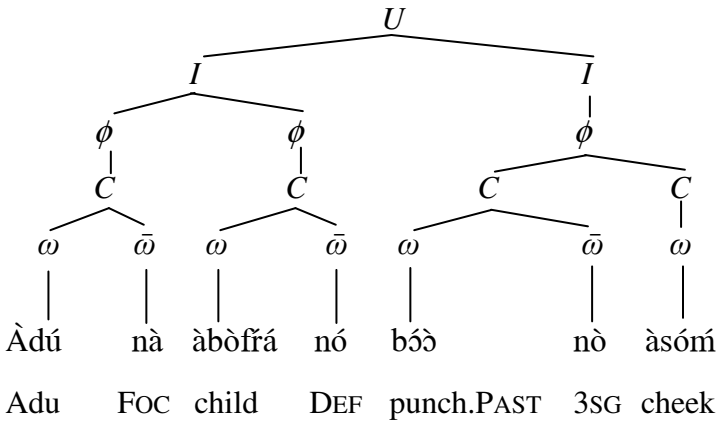
Following Selkirk (1981b, 1984), Nespor and Vogel (1986) etc., I assume that the p-structure is made up of seven distinct domains. These seven domains are classified into two sets according to the level of the grammar each of them is available for rule application. These are the lexical and the post-lexical/phrasal sets, as shown in (1.4) from the highest to the lowest/smallest domain (i.e., in the top-down parsing fashion).

(1.4) *The prosodic hierarchy*[3]

Phonological utterance	*U*	
Intonational phrase	*I*	
Phonological phrase	*ϕ*	Post-lexical
Clitic group	*C*	
Phonological word	***ω***	
Foot	*Σ*	Lexical
Syllable	*σ*	

The classification in (1.4) reflects the way LP distinguishes phrasal rules from lexical rules. I suggest, however, that since the phonological word (*ω*) is the point of separation it may fall in either of the sets. In consonance with SLH and Nespor and Vogel's four principles, given in (1.3), the hierarchical quasi-syntactic tree build-up of the domains in a sentence (which means, '*It is Adu who the child slapped.*') is shown in (1.5).

(1.5)



[3] Due to different conceptions on the status of the *C* in particular, differences exist with regards to the number of domains that constitute the p-structure. The *C* has been discussed differently as i), a separate and distinct domain of the prosodic hierarchy (Nespor and Vogel 1986; Hayes 1989 & 1990; etc.). ii), part of a *ω* in some languages and *ϕ* or *I* in other languages (Zec and Inkelas 1990, etc.). iii), non-existent because the clitic in the *C* is only dependent on a *ω* or *ϕ* to constitute a variety of a *ω* or *ϕ* (e.g., Selkirk 1986). None of these positions will be particularly defended or criticized in this work.

With the symbol $\bar{\omega}$ in the tree structure, I draw attention to the insufficient status of Akan personal pronouns and other functional words with respect to the prosodic word (ω). In other words, not every syntactic word or terminal node is also a prosodic word. However, I do not intend to postulate another level in the prosodic hierarchy (see (1.4)). As Jackendoff (1997: 29) for example puts it, such functional units must adjoin to adjacent ωs (usually, to constitute another ω or some higher prosodic unit). When a functional word is considered weak, Selkirk (1996) refers to it as a *prosodic clitic*, as compared to ω. In Chamorro, an Autronesian language, Chung (2003: 550) explains weak and strong/independent pronoun distinction with respect to position of occurrence. She contends that weak pronouns are used in subject and direct object positions in the language while independent pronouns are used in other positions; e.g., oblique, object of preposition and topic or focus. Issues relating to the prosodic status of functional words, specifically pronouns in Akan, are further discussed in chapter *five*; sections *5.4*.

It is obvious that, in the phonology-syntax interface analysis, we are particularly interested in the domains in the post-lexical set. This is because the internal structures of the domains in the lexical set are only accessible at the lexical level and, as a result, they cannot constitute a place of an interface between syntax and phrasal phonology.

The assumption of the prosodic hierarchy and, for that matter, the p-structure is strengthened on the claim that there cannot always be a correspondence between one syntactically given domain and one prosodic domain; hence, there is lack of perfect isomorphy between syntactic and prosodic constituents. As noted in section *1.2*, this is because other grammatical information is also involved in the parsing of the prosodic domains, beside the syntactic constituent structure.

The lack of perfect isomorphy between one higher prosodic domain (e.g., the ϕ) and any syntactic phrase (e.g., X or XP) is crucial. Otherwise, there would not have been any need for (the 'creation' of) the p-structure. As (1.6) shows and as will be discussed in detail in chapter *two*, ϕ could be identical to the syntactic XP, as in (1.6a), but could also differ from the same XP, as in (1.6b).

(1.6) a. $[_{IP}$ Kòfi $[_{VP}$ á-!wáré $[_{NP}$ Á!bénáá] *S-structure*

$[$Kòfi$]_{\phi}$ [á-!wáré$]_{\phi}$ [Á!bénáá$]_{\phi}$ *P-structure*

PN PRF-marry PN

'Kofi has married Abenaa'

b. * $[_{IP}$ Kòfi $[_{VP}$ rè-bó $[_{NP}$ Á!bénáá] *S-structure*

$[$Kòfi$]_{\phi}$ [rè-bó Àbénáá$]_{\phi}$ *P-structure*

PN PROG-beat PN

'Kofi is beating Abenaa'

The need for the p-structure is substantiated by phrasal rules that can hardly or completely be explained directly in the syntactic constituent structure. For instance, observe that the syntactic phrasing in (1.6b) incorrectly triggers a tone sandhi between the verb and the object, while the same phonological operation is correctly blocked by the prosodic phrasing. Hence, I reiterate the claim that the phonology refers only remotely to the syntactic constituent structure (and other components of the grammar) in the explanation of phrasal rules. I will return to the operation of tone sandhi the diverse mapping between the syntactic constituent structure and the p-structure (we observe in (1.6)) in chapter *two*.

1.4 The prosodic hierarchy: Some controversies and insights

As will be observed in chapters *three* and *five*, the prosodic approach to the interface analysis is appealing, with respect to exhaustive explanation to phrasal rules. However, it has not escaped disagreements in its own ranks. Aside from the outright opposite account of the interface by the direct reference hypothesis, its brainchild, the p-structure, has been an object of insightful and challenging criticisms. To some extent, a considerable body of research in the stream of indirect reference opposes and criticizes the strict constitution of p-structure in terms of its rigid hierarchical organization. However, such criticisms have led to equally insightful proposals, some of which have gone to strengthen the position of prosodic analysis and indirect reference in general. For instance, Truckenbrodt (1999) proposes recursive ϕ-domain structure by using two mapping theories; i.e., Wrap-XP (Truckenbrodt 1995) and Align$_R$XP option of End-based (Selkirk 1986), in order to resolve rule domain paradoxes (see chapter *two*; section *2.4.4* for details).

Indeed, the prosodic theory has often been beset with a few unique phrasal rules. These rules are unique in the sense that, unlike some others, their applications appear to be immediately based on some specific syntactic information. Consequently, they are syntactically prompted. What is more, these rules seem to be prosodically intractable. Because of their syntax-specific disposition, these phrasal rules have been referred to as direct-syntax or syntax-dependent (Hayes 1990; Seidl 2001; etc.).

Alternative works in the indirect reference stream have in one way or the other suggested that the strict constitution of p-structure has resulted in the inability of the theory to completely explain the alleged syntax-dependent phrasal rules (Hayes 199

Truckenbrodt 1999; Seidl 2001; etc.). These works, therefore, propose different theories that create avenues for the explanation of the alleged syntax-dependent rules. In the following, I briefly recount two of such works; namely, the Precompilation theory (Hayes 1990) and the Minimal Indirect Reference theory (Seidl 2001). Since these two theories (i.e., Precompilation and Minimal Indirect Reference) are only briefly recounted in this dissertation, I urge interested readers to consult the appropriate literature for the total arguments and data that led to their proposals.

Precompilation theory and Minimal Indirect Reference are equally motivated out of the inadequacies of the p-structure; i.e., in order to explain the syntax-dependent (or prosodically intractable) phrasal rules and other rule paradoxes appropriately. With this purpose of rectifying the inadequacies of the p-structure, it is important to note that these proposals do not claim outright alternative account with respect to how all phrasal rules should be analyzed in the grammar.

1.4.1 Precompilation theory (Hayes 1990)

The precompilation theory aspires to defend the central claim of indirect reference, which is that no phrasal phonological rule should take its domain of application directly from the syntax. Indeed, in coming up with the theory, Hayes recognizes the inadequacy of the prosodic hierarchy and, for that matter, its inability to completely explain the so-called syntax-dependent rules.

As noted earlier, syntax-dependent rules are variously explained as rules that select their triggering domains from the syntactic constituent structure, rather than from the scope of p-structure. I suppose that these syntax-dependent rules are the same those Seidl (2001) refers to as 'early rules' (see section *1.4.2*). According to Sei

(2001), 'early rules' are those that apply in the syntax before the syntactic constituent structure is submitted for the parsing (or projection) of the p-structure, within which 'late rules' are analyzed. Hayes (1990) notes 'rising tone insertion' in Ewe (Clements 1978), 'liaison' in French (Selkirk 1972) and 'vowel shortening' in Hausa (Kraft and Kirk-Green 1973) as examples of syntax-dependent rules. However, in the spirit of absolute indirect reference account of phrasal rules, he rejects the claim that these supposed syntax-dependent phonological rules cannot be accounted for in the phonology. In fact, Hayes rejects the existence of syntax-dependent phonological rules through the precompilation theory. According to him, therefore, all phonological rules could be analyzed in the phonology and should be analyzed as such; i.e., in the p-structure backed by precompilation in the lexicon. I explore some tenets of the precompilation theory as follows.

The precompilation theory basically proposes inflectional systems of paradigmatic slots (in the lexicon) that are filled by predetermined inflected words in a finite set of inflectional categories. Each of the inflected words results from an interaction between lexical morphology and phonology. Thus, the supposed syntax-dependent rules are explained as due to 'phrasal allomorphy' in terms of precompilation; i.e., "the selection of the appropriate precompiled allomorph for phonological instantiation" (Hayes 1990: 92). In other words, a particular word form that is argued to have resulted from a syntax-dependent rule is actually due to precompilation in the lexicon, hence its internal rule's intractability in the p-structure.

Hayes acknowledges and, indeed, groups phonological rules into two classes in consonance with the distinction LP makes. These are truly phrasal rules and lexic

rules. In his description, however, the truly phrasal rules apply post-syntactically and are predicted by properties of the prosodic domains, while the lexical rules and the supposed direct-syntax rules apply pre-syntactically; specifically, within the lexicon (apparently, before the lexicon is submitted to syntax). The syntax-dependent rules are therefore discussed along with the 'true' lexical rules, but are analyzed differently as precompiled. Consider the Hausa 'vowel shortening' rule in the data in (1.7), taken from Hayes (1990: 93), for example. The syntax-dependent position of the direct reference analysis will explain the 'vowel shortening' in the verb in (1.7b) as due to the following NP, since the final vowel in a verb always shortens when it is directly before a full noun (i.e., a case of specific syntactic information influence).

(1.7) *Vowel shortening in Hausa* (Hayes 1990: 93)

a. *Frame 1*: [$_{VP}$ __ NP…], NP is non-pronominal

E.g., káámàà$_{[Frame\ 1]}$ ⇒ káámà

b. náá káámà kíífíí 'I have caught a fish.'

I catch.PRF fish

Case: full NP directly following object

c. náá káámàà __ 'I caught …'

I catch.PRF __

Cases: no object, pronominal object, and no directly following object

With precompilation, however, the direct reference account is rejected. The surface verb realization in (1.7b) is instead explained as an appropriate verb form selected from a set of verb allomorphs on the basis of a particular 'phonological instantiation frame'. In th

case, the required phonological instantiation frame for selecting the verb form with a shortened final vowel in Hausa is *Frame 1*, given in (1.7a). So, each of the verb forms will require a different frame based on which it will be selected. In contrast to (1.7b), the verb form without a 'vowel shortening' will require the phonological frame, '*Frame 2*: [$_{VP}$ __ Pro…]' for instantiation, as shown in (1.7c).

A case in Akan that could be explained in terms of precompilation is a phrasal rule I refer to as 'diphthong-to-lengthening'. In Akan, the past tense/aspect marker, /–i/, is maintained in the verb when the verb is clause-final. As the examples in (1.8a) show, this past marker then constitutes a diphthong with the stem-final vowel. However, where the verb is not clause-final, as also shown in (1.8b), this past tense marker is realized as a copy of the stem-final vowel. In other words, a long vowel (i.e., vowel lengthening) realizes, instead of a diphthong (hence, the diphthong-to-lengthening rule).

(1.8) *Diphthong-to-lengthening in Akan*

a. i, Mè-nòá-ɨ̀ ii, Mè-kyèré-ɨ̀
I-cook-PST I-show-PST
'I cooked.' 'I showed.'

Case: VP is clause-final.

b. i, Mè-nòá-à náḿ ii, Mè-kyèré-è nò
I-cook-PST meat I-show-PST him/her
'I cooked meat.' 'I showed him/her.'

Cases: an object (NP or pronominal) or an adverb follows VP.

In terms of direct reference, 'diphthong-to-lengthening' would be explained as susceptible to specific syntactic information involving VP branching. In precompilatio

however, the occurrence is nothing more than a verb form selected from a set of verb allomorphs on the basis of the present phonological instantiation frame in (1.9b) below. Where the diphthong-final verb is the desired one (the case of (1.8a)), it is also selected on the bases of the alternative phonological instantiation frame in (1.9a).

(1.9) a. *Frame 1*: [$_{VP}$ __], VP is non-branching.

E.g., nòá-ǐ$_{[Frame\ 1]}$ ⇒ nòâ̌ı

b. *Frame 2*: [$_{VP}$ __ XP], VP is branching.

E.g., nòá-ǐ$_{[Frame\ 2]}$ ⇒ nòáà

With the precompilation theory, therefore, morphophonology in the lexicon precedes 'true' syntax and the morphosyntactic structure is only relevant for the definition of paradigm gaps for phonological instantiation in the lexicon and the parsing of the p-structure for truly phrasal rules analysis. In agreement with other strict indirect reference sympathizers (e.g., Nespor and Vogel 1986; Zec and Inkelas 1990; Truckenbrodt 1999; Selkirk 2000; etc.), therefore, the precompilation theory re-establishes the claim that all phrasal rules do not have access to the syntax and are only phonologically prompted.

1.4.2 Minimal Indirect Reference (Seidl 2001)

In a careful blend of some ideas from both schools of thought to the interface analysis; i.e., the direct reference and the indirect reference approaches, Seidl (2001) explains some phrasal rules in Kpa Mende, Kimatuumbi, Korean, etc. With her Minimal Indirect Reference (MIR) theory, she argues against the uniqueness of the p-structure as an inadequate medium for the explanation of all phrasal phonological rules. However, sh

does not reject p-structure entirely. She claims that while prosodic domains predict some phrasal rules, there are some others that apply directly with pieces of syntactic information. From the view point of MIR, then, all phrasal rules cannot be accounted for in a theory rooted in a strict direct or indirect reference analysis alone.

Seidl (2001) continues to explain that the inadequacy of the p-structure is especially evident where two (or more) rules tend to occur concurrently. In this case, the prosodic domain of each of the rules can be identical to, smaller than, or larger than that of the other(s). Domain paradoxes may then undermine distinctive environments of phrasal rule applications. In other words, domains of concurrent rules may overlap, rather than one nested in the other. As she goes on to explain, examples of such concurrent rules are 'tone sandhi' and 'consonant mutation' in Kpa Mende (Cowper and Rice 1987; Seidl 1998), and 'vowel shortening' and 'phrasal tone insertion' in Kimatuumbi (Odden 1996).

Among other issues, Seidl (2001) subsequently proposes two sets of phrasal rules in a bid to rectify the problem of rule domain paradoxes in the grammar; namely, 'early rules' and 'late rules', as noted earlier. In agreement with the direct reference approach to the interface, she explains that the 'early rules' are those phrasal rules that apply in the morphosyntax with pieces of syntactic information. Also, in harmony with the indirect reference approach, she explains that prosodic domains provide the triggering properties (for instance, the left or right edges of ϕs) for 'late rule' applications. Thus, 'early rules' directly selects their triggering domains in the morphosyntactic structure before this morphosyntactic structure is submitted (to an input base) for the parsing of prosodic domains of 'late rules'.

I take the concurrent case of tone sandhi (TS) and consonant mutation (CM) in Kpa Mende, shown in (1.10), as an example for a brief exploration of rule domain paradox and MIR rectification here. Observe in (1.10a) that with TS, an initial H tone in a succeeding word (here, *fáj̃ĩ*) becomes a L tone when preceded by a final H tone on a preceding word within a particular phonological domain. Also, with CM, lenition takes place in certain consonants (in the present case, [f]) when they come right after a terminal element in a phonological domain (supposedly larger than that of TS).

(1.10) *Tone sandhi and consonant mutation in Kpa Mende* (Seidl 2001: 22-28)

a. nyé **f**áj̃ĩ wé-ĭtà → nyé **v**àj̃ĩ wé-ĭtà *TS and CM*
six fish bucket.PL 'six fish buckets'

b. Word → +*mutated* / $[X^{O}$ *case*+__ $]_{YP}$ *Y* and *X* need to be distinct

c. [[nyé]$_{\omega}$ [**vá**j̃ĩ]$_{\omega}$]$_{\phi}$ wé-ĭtà → [nyé **và**j̃ĩ]$_{\phi}$ wé-ĭtà

Seidl explains that the prosodic domain of TS cannot be the ω and that of CM cannot be the ϕ. As could be observed in (1.10c), this is because, among other facts, TS does not just apply within the ωs, but between two of them (with the effect reflecting in the succeeding ω). Through a rigorous explanation, she finally claims that, unlike TS, CM applies with specific syntactic information that revolves around case marking. Specifically, as given in (1.10b), a morphological non-segmental case marker triggers CM in a succeeding word if both units are contained in a smallest *YP*. Thus, as an early rule, CM has nothing to do with phonology. On the other hand, as a late rule, TS

triggered with pieces of phonological information. That is, it applies between two ωs that are contained in one ϕ, as could also be seen in (1.10c).

Phrasal rules in Akan that seem to show domain paradox are 'boundary assimilation' (B-A) and 'diphthong simplification' (Diph-Simple) in compounds. With B-A, an onsetless or a single-segment (i.e., a nasal) initial syllable of a succeeding word adopts the final tone of a preceding word. The application of B-A is, therefore, immediately constrained by the syllable structure of the absorbing syllable. Since the absorbing syllable should be a vowel or nasal in isolation, I refer to this constraint as 'syllable singleness', which is further discussed in chapters *three* and *five*. An onsetless initial syllable could be a prefix (e.g., /a/ in *à-dáń* 'houses' (pl.); *è-dáń* 'house' (sg.)) or part of a monomorphemic word (e.g., /*a*/ in *ado* and /n/ in *nkroma* 'PN'); hence, my reluctance to use the common term, prefix, but onsetless or single-segment initial syllable. Interface analyses of all phrasal rules in Akan Noun-Noun and Noun-Adjective compound constructions are discussed in detail in chapter *three*.

As shown in (1.11a), the impact of B-A is the downstep realized in the stem-initial H tone of the succeeding compound member. As (1.11a) also shows, with Diph-Simple, the onsetless initial syllable of the succeeding compound member must be deleted to avoid word boundary diphthong realization.

(1.11) *B-A and Diph-Simple in Akan*

a. àsɔ́ré, **ɛ̀**dáń → àsɔ́r**éé**!dáń *B-A*

'worship, house' ↓

àsɔ́ré!dáń *Diph-Simple*

b. [[àsɔ́ré]ω [ɛ̀dáń]ω]ϕ → àsɔ́ré!dáń

'worship, house' 'church'

In MIR analysis, the domain of each of the rules could be smaller, bigger or the same as the other. However, none of the rules really applies in the ω; otherwise, the words need not be in a compound for the rules to apply. In order to rectify this paradox, MIR would consider one of them as an early rule (applying with syntax-specific information). Roughly, based on syntactic information of headedness, B-A could be explained as an early rule. Specifically, the two compound members are immediately contained in right-headed XP (i.e., [$_{XP}$ [$_{YP}$ Y] X]) and this enables assimilation of the onsetless initial syllable of the head by the final H of the complement. Diph-Simple, as a late rule, is then predicted by prosodic information; i.e., it applies where the compound members (ωs) are contained in a single ϕ, as (1.9b) shows.

1.4.3 Maintenance of the p-structure

On the one hand, I agree with Hayes (1990) that phrasal phonological rules should be explained in the phonology. Indeed, this suggestion has been recurrent among advocates of indirect reference (Selkirk 1984; Hale and Selkirk 1987; Nespor and Vogel 1986; etc.) and I will particularly demonstrate it in Akan. On the other hand, I do not submit to the sweeping statement that there are no syntax-dependent rules, since such a statement seems to presume that no phrasal rules can be explained in the syntax.

Indeed, as done in other works (e.g., Kaisse 1985; Odden 1996; Seidl 2001; etc.), some phrasal rules could be explained directly in the syntax. However, it will be observed in Akan that some of these rules do not always apply on the attainment of t

same syntactic environment in which they are supposed to be predicted (as we saw with the example in (1.6)). In the syntax, therefore, one could hardly account for such discrepancies, except to label them as exceptions. The best way, therefore, to state the remoteness of syntactic influence in the phonology is that, indirect reference enables a holistic analysis of phrasal rules; i.e., why a particular rule applies or does not apply is clearly addressed, as will become evident.

In this work, I adhere to p-structure interpretation of indirect reference and explain phrasal rules with it appropriately. I will introduce some ideas concerning the parsing of p-structure. In the discussion of the selected constructions of Akan and some others, I will show that all occurring rules could be accounted for within a well-defined p-structure. By a well-defined p-structure, I mean one that is parsed on the basis of some basic principles (e.g., see those in (1.3)) and with which all necessary and present grammatical information has been taken into account in its parsing.

The position taken here does not mean that I reject precompilation per se, as a potential (supplementary) theory of the interface. However, I believe that the p-structure could be made to predict all phrasal rules and even explain some syntactic operations as well with new constraining principles in place, coupled with insightful proposals for the mapping of the various prosodic domains.

1.5 The Mapping: Syntax and phonology

It has been noted that the syntactic structure constitutes the primary input base for the parsing of the p-structure, and that the parsed p-structure must also comply with a number of principles (e.g., those in (1.3)). This means that the p-structure is basically

reorganization of the syntactic structure. So, there would be no p-structure (with particular reference to the domains in the post-lexical set (see (1.4)) without syntax.

Contrary to 'the syntactic boundaries erasure' position of Chomsky (1965 & 1981), Chomsky and Halle (1968), Jackendoff (1997: 26) notes that constituent boundaries given in the syntax are not completely removed in the parsing of phonological structure (noted in this work as p-structure). Selkirk (1996: 188) also puts the relationship this way, "… morphosyntactic representation (s-structure) is characteristically prosodized … in phonological representation (p-structure)". Following Selkirk (1996), I suggest that the ordered syntactic domains/boundaries are only reconstituted in an alternative hierarchical order (hence, prosodized) in the phonology and properties of the domains in this alternative (prosodic) hierarchy sensitize phrasal rule applications.

Jackendoff (1997: 27), on intonational phrasing, further claims that the p-structure is not *derived from*, but *constrained by* the syntactic structure and autonomous phonological principles that gives no regards to syntax. Obviously, his position here is an attempt to emphasize the autonomy of the phonological structure of the grammar from that of syntax. I agree with his position on the basis that the term *derive* (i.e., to get one from another), really undermines the whole idea of autonomy of the various grammatical structures. However, I also draw attention to the fact that the constraining syntactic information (as he puts it, *constrained by* syntactic structure) on intonational phrasing could be nothing more than the brackets given by syntactic relations. In addition to other grammatical information, the brackets in the syntax provide primary clues for the parsing of an optimal p-structure (or, in his terms, intonational structure

Therefore, it is important to note that there is an element of 'parsing' (i.e. to put it mildly, as against 'derivation') involved.

Indeed, it is indisputably true that the phonological and the syntactic structures of the grammar are analytically independent from each other, but to assume a 'generation' of p-structure with the input base of the syntactic structure (and some phonological facts, as Jackendoff notes) does not undermine or contradict 'structural independency'. As noted earlier, this is because the p-structure is only a subsystem of the 'broad' phonological structure (Nespor and Vogel 1986: 1 & 6; Zec and Inkelas 1990: 365; etc.) that interfaces phonology with syntax; i.e., the platform with which syntactic information (and other grammatical information) become accessible to phonological operations.

1.6. Influence of prosody in syntax

From the discussions so far, it is evident that reference of phonological rules to aspects of the syntactic structure for application is generally accepted in one way or the other. On the other hand, the idea that (some) syntactic representations make reference to phonological information is controversial. It has been suggested in the literature by advocates of 'phonology-free syntax' (see, e.g., Zwicky and Pullum 1986) that no syntactic representation makes reference to (some) phonological information. Contrary to the 'phonology-free syntax' position, it has also been shown in the literature that phonological information may affect syntax (see, e.g., Zec and Inkelas (1990) and Vogel and Kenesei (1990)). As Feng (2003: 37) puts it, 'phonology-free syntax' is 'incorrect when phonology is understood in terms of prosody, because prosody … not on

determines but also motivates relevant syntactic outputs'. Butt and King (1998) also note that prosodic information may contribute to the well-formedness of a sentence.

Following Feng (2003), Zec and Inkelas (1990), etc., I contend that phonological information may influence (some) syntactic representations. For instance, in Akan, the use of intonation is one of the ways of distinguishing a *yes-no* question from a declarative counterpart and, as Butt and King (1998) note, this is also the case in spoken English.[4] This *yes-no*/declarative distinction in Akan is shown in (1.12) and (1.13) below. As indicated with a 'falling' arrow, in *yes-no* questions (1.12b & 1.13b), the pitch level of the final tone of the sentence-final word rises and falls steadily. So, what seems to be a terminal pitch contour of downward glide (Boadi 1990: 72) obtains in the sentence-final tone. As Boadi (1990) also notes, lengthening of the final segment, a peculiar kind of phonation, and extra voicing may be involved in *yes-no* questions. While these factors may need further investigation, it is important to note that intonation is clearly significant.

		Declarative		*Yes-no question*
(1.12)	a.	Ɔ̀-kɔ̀-ɔ́ hɔ́	b.	Ɔ̀-kɔ̀-ɔ́ hɔ́
		3SG-go-PST there		3SG-go-PST there
		'He/she went there.'		'He/she went there?' (Did he/she go there?)
(1.13)	a.	Yàẁ à-dá	b.	Yàẁ à-dá
		Yaw PRF-sleep		Yaw PRF-sleep
		'Yaw has slept.'		'Yaw has slept?' (Has Yaw slept?)

[4] Indeed, this distinction could be discussed in terms of semantics and/or pragmatics; i.e., the assumption that intonation is a contributing factor to interpretation.

Conversely, what is realized in the same final tone of the sentence-final word in the declarative sentence is an almost leveled pitch representation, as indicated with a straight arrow in (1.12a & 1.13a). From (1.12-13), therefore, it is important to note that, but for the differences in intonation, the representation of both the *yes-no* and declarative constructions would have been the same, hence the influence of prosody.

Let us note that *yes-no* questions in Akan are also encoded by the use of two (question) markers/particles (QM). These are '*ànáa*' and '*àsò*'. '*Ànáa*' is used at the end of declarative sentences, as shown in (1.14a), and *àsò* is use at the initial position of declarative sentences, as shown in (1.14b).

(1.14)	a.	*Yàẁ à-dá*	***ànáa***	b.	***Àsò*** *Yàẁ à-dá*
		Yaw PRF-sleep	QM		QM Yaw PRF-sleep
		'Has Yaw slept?			'Has Yaw slept?

Indeed, I believe that syntactic representations that make reference to aspects of the phonological structure may be few in (most, if not all) natural languages. However, that does not take away the fact that syntax may refer to phonology. In chapter *five*, where I discuss phonological rules in topic, focus and Q-word fronting constructions, I also identify one syntactic representation that make reference to phonological information.

1.7 Summary

In this chapter, the nature of the phonology-syntax interface has been considered and the indirect reference hypothesis to the interface has been preferred to the direct referen[illegible] hypothesis. In other words, in answering the (research) question as to what t[illegible]

relationship between the phonological structure and the syntactic structure is (i.e., how the relationship is encoded), indirect reference has been adopted. In the stream of indirect reference, some alternative proposals have been considered, after which the p-structure of the prosodic theory has been maintained in this work as the appropriate platform for the explanation of phrasal rules in Akan that are identified in this work. It has been emphasized that it is through the p-structure that the phonology refers to the syntax. The constitution of the p-structure has also been explored.

Also discussed briefly in this chapter is the parsing of the various domains that constitute the p-structure (i.e., the mapping between syntax and phonology). With recognition to some proposed principles in the literature, it has been suggested that the p-structure is parsed primarily on the syntax; i.e., through the reorganization of the syntactic structures. However, it has also been noted that other grammatical information may be involved in the p-structure parsing (or projection) and, so, the p-structure is not always isomorphic with the syntactic structure. This renders the syntactic constituent structure remotely significant in the explanation of phrasal rules (in Akan) because, as will become evident in chapters *three* and *five*, they are adequately explained with properties of the various and distinct domains that constitute the p-structure.

In view of the question as to whether the information reference between phonology and syntax is bidirectional (or not), it has also been explained in this chapter that, just as phonological rules (remotely) refer to syntactic information, through p-structure, some syntactic representations may also refer to phonological information.

In the following chapter, I introduce a framework of syntax and ascertain the particular area or areas of the syntax with which the syntax maps to the p-structure.

the appropriate sections in the chapter, the involvement of other grammatical information in the mapping (from syntax to phonology) will also be brought up for discussion. This is in an attempt to come up with better mapping theory that will make a well-defined p-structure possible and, for that matter, enable a comprehensive analysis of occurring phrasal rules.

CHAPTER TWO

SYNTAX, RULE DOMAINS AND RULE APPLICATIONS

2.1 Introduction

The syntactic analysis of the various constructions in Akan, which will be particularly looked into in terms of interface analysis of identified phrasal rules, will be carried out within the framework of Lexical-Functional Grammar (LFG: Kaplan and Bresnan 1982; Bresnan 2001; Dalrymple 2001; Falk 2001; etc.). In this direction and following Butt and King (1998), I propose to show in appropriate sections of this chapter that the p-structure is primarily mapped off a particular syntactic subsystem. Also, on the question of how the syntactic structure is mapped to the phonological structure (mentioned in the introduction, (ii)), I will explore mapping theories in the literature and finally propose an alternative one that enables appropriate explanation of occurring phrasal rules. Before I go into these, however, it is essential at this point to introduce LFG and explain some core ideas, principles, etc. that characterize the framework.

Since, LFG involves far more than what is presented in this work, one is urged to consult the appropriate literature for detailed account. In the analysis of some of the constructions in Akan to be discussed, we will further observe some other details of LFG. Some account of what is involved in LFG is necessary here, not only because syntactic analyses in this work are done in the theory, but also because, as I found out during my fieldtrip to Ghana, LFG is relatively new to linguistics students (and ev some teachers of linguistics) in Ghana to whom, I believe, this work will serve most.

The rest of this chapter is organized as follows: In the following section, *2.2*, I briefly explore some basics of LFG. Section *2.3* looks into how the syntax corresponds to the p-structure. Various mapping theories between the syntax and the phonology that have been proposed in the literature are explored in *2.4* as to whether any of them is adequate in the explanation of phrasal rules in Akan. In section *2.5*, I propose a mapping theory that particularly considers all available grammatical information in defining rule domains. The chapter is concluded in section *2.6*.

2.2 Lexical-Functional Grammar

LFG has been described as 'a theory of grammar which has a powerful, flexible, and mathematically well-defined grammar formalism …' (Bresnan 2001: vii). Among other attributes, many pioneering and current works, such as Kaplan and Bresnan (1982), Dalrymple (2002), Falk (2001), etc., have also noted these. Based on some of its internal structures and principles, LFG is also recognized as a relation-based and a constraint-based grammar with which the role of the lexicon is crucially vital.

Unlike syntactic theories that are founded on derivations (e.g., Move-α in government and binding (GB) syntax), LFG is also non-derivational. The non-derivational stance of LFG is emphasized by the property of monotonicity. With monotonicity, information addition and deletion (or alteration) is allowed and disallowed respectively. Indeed, LFG shares common goals with the derivational approaches and appeals to their underlying theories such as X-bar theory, control, binding, etc. However, it crucially parts ways with the derivational approaches with regards to underlying theoretical assumptions to the realization of these goals (e.g

Move-α). What is grammatical in LFG, therefore, is entirely determined by the satisfaction of a particular set of constraints/conditions, rather than reliance on derivations.

2.2.1 Structural representations

LFG is basically established on three separate and parallel, but interconnected (sub)structures. These are the argument structure (a-structure), the functional structure (f-structure), and the categorial or constituent structure (c-structure).[5] Each of the structures is described as separate and parallel to the others because none of them is derived from the other. In fact, each of them has a distinct set of local constraints and models a diverse aspect of the syntax. However, as noted, they also interconnect through the satisfaction of mapping constraints and principles that explain the grammaticality or otherwise of a construction. These diverse aspects of a construction are noted as role, function, and category. Bresnan (2001) puts it as follows:

> Roles correspond to the grammatically expressible participants of eventualities (modelled by a-structure), syntactic functions belong to the abstract system of relators of roles to expressions (modelled by f-structure), and phrase structure categories belong to the overt structure of forms of expression (modelled by c-structure).
>
> Bresnan (2001: 20)

[5] Other works in LFG propose other structures as distinct from c-, f-, and a-structures. One of such proposals making great strides is the information structure (i-structure: Lambrecht 1994; Choi 1999; etc.). In this work, I also advance the p-structure as prominent in the phonology, but not as a parallel (sub)structure in the syntax, as explain in section *2.3*.

2.2.1.1 A-structure

The a-structure defines a complete set of arguments of a predicator/verb. Through a strict hierarchical ordering of syntactic units, the a-structure also expresses the linear ordering of arguments in relation to each other. The ordering reflects arguments' relative prominence, and their individual relation to the predicate. The hierarchical ordering of arguments (i.e., the thematic hierarchy), then, internally constrains the a-structure.

Through feature decomposition, a-structure features – i.e., [±*r*] and [±*o*] – constrain the identification of argument/thematic roles as argument functions in the role-to-function mapping.[6] Therefore, this feature decomposition property of a-structure is also relevant for clarification of relative prominence of argument functions and, more importantly, their individual accessibility to grammatical processes; specifically, syntactic rules and operations (Keenan and Comrie 1977; Falk 2001; Bresnan 2001, etc.). In (2.1), I show an a-structure with the predicate *yéń* 'to rear/raise', its selected argument roles, and the individual feature description.

(2.1)

yéń	< agent,	patient >
	↓	↓
	[–*r*; –*o*]	[–*r*; +*o*]

2.2.1.2 F-structure

The f-structure, unlike the other parallel structures, is unique to LFG. With it, inherent features and other defining properties of constituents and a construction, as a whole, are

[6] [±*r*] and [±*o*] are respectively expressed as 'restrictedness' and 'objectiveness' (e.g., Bresnan 2001; Falk 2001). Feature decomposition of the basic argument functions is generally shown in an 'either…or…' fashion (e.g., Bresnan 2001), hence the [±] indication with each of the features.

spelled out. In other words, since features cannot always be associated with the c-structure (explored in section *2.2.1.3*) constituents that they describe (Falk 2000: 16), a major role of the f-structure is to make constituent feature specification complete. As the abstract representation of typologically different c-structures, it is also within f-structures that the configurational-nonconfigurational distinction of languages is considerably cancelled out. With the f-structure, therefore, some universality is achieved in the syntax across languages. F-structure formation is basically guided by three well-formedness conditions/constraints; i.e., Completeness, Coherence and Uniqueness.

In order to ensure that all the designated argument functions of a predicate (PRED) are available in its local f-structure, as could be observed in the f-structure of the topic construction, *Àbénáá, Kòfí áfrɛ́ nó*. 'Abenaa, Kofi has called her.' in (2.2), *completeness* simply demands the local f-structure to contain all PRED selected argument functions; in this case, a subject (SUBJ) and an object (OBJ).

(2.2)

DF	[ ]
SUBJ	['Kofi']
PRED	'*frɛ* <SUBJ, OBJ>'
OBJ	['Abenaa']

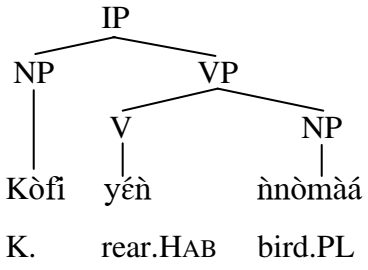
As could also be observed in (2.2), *coherence* requires that all argument functions in a local f-structure must be those that have been selected by a particular PRED function, such that nothing is left that cannot be attributed to the PRED function in question. That is, 'every argument function in an f-structure should be designated by a PRED' (Bresnan 2001: 63). In furtherance of coherence, *extended coherence* also requires all functions

discourse importance such as a fronted Q-word, focus and topic, as will be discussed in detail in chapter *four*, to identify with a particular argument function, if coherence is to be respected in its entirety and if grammaticality is to be achieved (Zaenen 1985; Bresnan and Mchombo 1987; etc.). In (2.2), this constraint explains the linking of the discourse function (DF) to the OBJ function. Last, but not the least, *uniqueness* (or *consistency*) enforces a strict one-to-one correspondence in the attribute-value relation; i.e., every attribute must have a distinctive value. This is evident in (2.2); each attribute (i.e., feature/function, preceding its value (in the f-structure)) has a distinctive value.

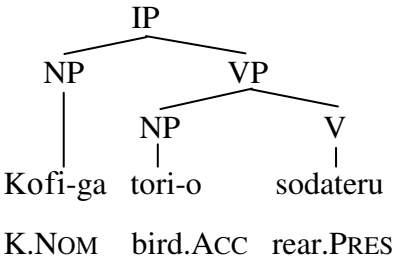
2.2.1.3 C-structure

While the f-structure expresses structural universality across all languages, the c-structure expresses variability, embodied in the formalism of LFG as a principle. For example, compare the c-structure of the Akan sentence in (2.3a) to that of Japanese in (2.3b), both of which mean *Kofi rears birds* in English.

(2.3) a.



b.



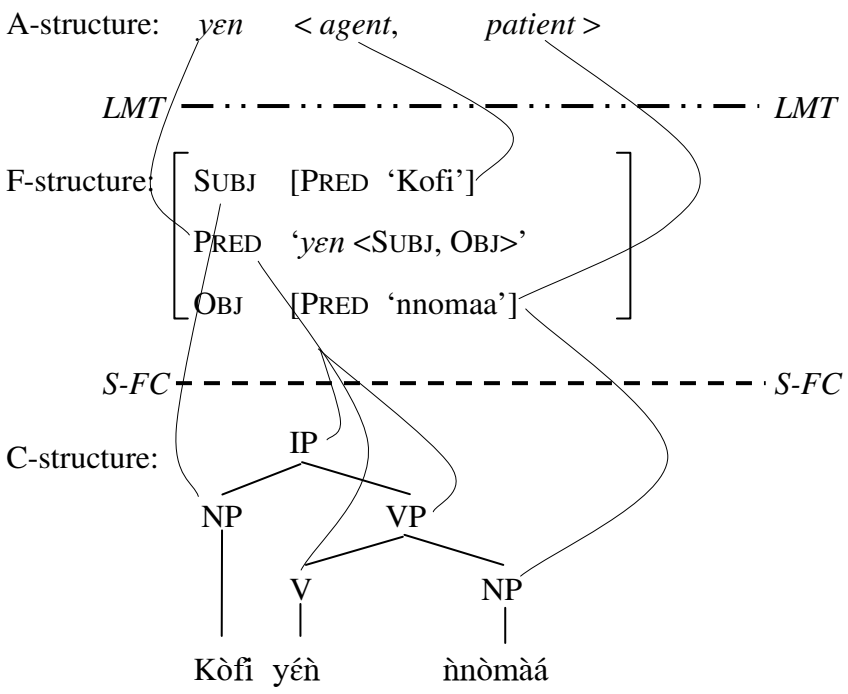
As the overt representation of the syntax, observe in (2.3) that the c-structure expresses the empirical truth that the external structures of languages vary from one group of languages to another. Also note that the c-structure is characterized by linear and hierarchical ordering of constituents.

The c-structure is also individually constrained for well-formedness. The leading constraining principle here is *economy of expression*, which is not unique to LFG. Economy of expression requires the use of any one syntactic node only when it is needed. Hence, for instance, empty categories are not entertained in the grammar in the LFG framework. Another constraint here, the *lexical integrity principle* (LIP), also demands that only morphologically complete words appear as terminal nodes of the c-structure tree. Thus, c-structure has nothing to do with the internal structures of words.

2.2.2 Structural correspondences

It has been noted that the various structures LFG posits are interconnected. This interconnection is done through systematic correspondence functions. The a-structure is connected to the f-structure through the Lexical Mapping Theory (LMT: Bresnan 2001; Falk 2001; etc.), indicated by a dash-dotted line in (2.4) below.

(2.4)



LMT basically instigates the projection of universal skeletal f-structures from a-structure through general principles (Bresnan 2001; Falk 2001; etc.). Considering the assumption that a potential parallel structure of *θ*-structure, modeling the relative prominence of semantic/theta (*θ*) roles, corresponds to the a-structure, the mapping is realized through LMT as well (Falk 2001: 105). LMT, therefore, ensures a total functional interpretation of the feature decomposition-based hierarchy of argument functions. Constraint-wise, LMT is guided in principle by two unique conditions, namely *Function-Argument Bi-uniqueness* and *The Subject Condition*. Function-Argument Bi-uniqueness requires each a-structure role to correspond with a unique f-structure function and conversely, as we can observe in (2.4). The Subject Condition also demands a subject for every predicate.

Again, observe in (2.4) that the c-structure nodes corresponds to the attribute-value matrices (AVM) of the f-structure through the Structure-Function Correspondence (S-FC), indicated by a dashed line. S-FC is shown by annotations on the c-structure in configurational languages, like Akan (see an example in chapter *four*; section *4.1.1*; (4.3)). In non-configurational languages, however, it is shown by annotations on morphologically inflected forms, with which f-structures are constructed. Indeed, f-structure values of various attributes are licensed by projected phrases, in a particular c-structure. In other words, structural independence is not to deny a theoretical fact that f-structures could be built on existing c-structures. However, the licensing is only done through S-FC. It is also important to note that, through functional equations, several c-structure nodes are allowed to correspond to one f-structure, provided such a many-to-one correspondence could be explained by functional precedence (*f*-precedenc`
(Zaenen and Kaplan 1995; Bresnan 2001; etc).

2.3 Syntactic structure and p-structure correspondence

Following the phonological and the syntactic notions put forward so far, at this point, what is important to identify is the syntactic information with which the platform for rule application, the p-structure, is parsed. The question to be answered is, does the p-structure project from one of the parallel structure of syntax or project from all of them?

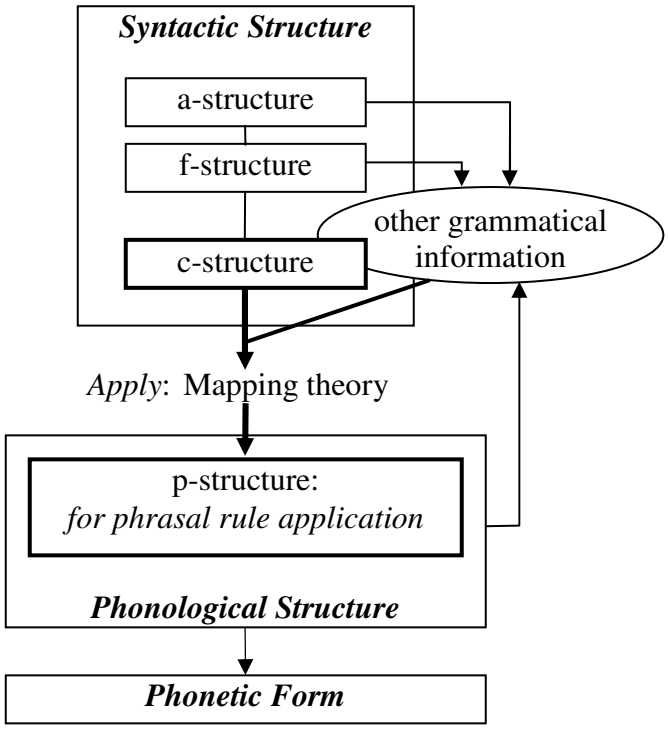
I suggest that the p-structure is related to all the parallel structures at some point in the information structuring. However, as has been noted earlier, following Butt and King (1998), the p-structure is primarily projected off the c-structure where structural hierarchy (encoding constituent dominance and precedence) in a language or a group of languages is empirically evident in the syntax. In other words, it is in c-structure that p-structure-related clues, such as constituent boundaries, relations and ranges, are given and detected for the parsing of p-structure.

The necessity of the c-structure (in the parsing of p-structure) is augmented by its well-formedness condition of *economy of expression*. Explicitly, it has been suggested in the literature that phrasal rules systematically ignore empty syntactic elements (Nespor and Vogel 1986; Chen 1987; Truckenbrodt 1999; etc.). So, in domain mapping, empty categories are left out. In particular, Truckenbrodt (1999) extends his *Lexical Category Condition* (see section *2.4*; (2.6)) to the exclusion of an empty category and its projection in GB syntax. LFG, then, is immediately in harmony with the 'empty categories exclusion' position in the mapping between the c-structure and the p-structure. This is because, by the local constraint of *economy of expression*, an empty category is not represented, let alone, sighted in the mapping. Based on this insight, the c-structure of LFG becomes the most suitable input base for p-structure parsin Working with the LFG formalism, therefore, is also made appropriate at this point.

It has been noted in chapter *one* that, although the p-structure is unique and autonomous for phrasal rule analysis, it is only a *sub*system within the 'broad' phonological structure. It follows therefore that, by nature, the p-structure is not structurally parallel to any of the three basic parallel structures LFG posits. Indeed, to assume such a parallel relation is practically the same as the assumption that phrasal rules make reference to syntactic domains; the very position the prosodic theory (of phonology) and other indirect reference hypotheses argue against. Like the p-structure, however, as already been noted, the parallel structures in the syntax are also *sub*systems.

Having identified the status of p-structure with respect to its relation to the syntax, I now present the present version of the structure of the grammar for the phonology-syntax interface in (2.5) below.

(2.5) *Proposed structure of the grammar for the phonology-syntax interface*



The diagram in (2.5) explains that the p-structure is primarily mapped off the c-structure and it is through the p-structure that the phonology interfaces with the syntax. This connection is indicated by emboldened arrows from the c-structure (in the syntactic structure) to the p-structure (in the phonological structure). In this wise, the role of syntax in phonological applications cannot be undermined. But, as noted earlier, it is important to note that syntactic constituents are not readily accessible to phrasal rule applications. The emboldened arrows also distinguish the unparallel relationship between the p-structure and the c-structure from the parallel one existing between the a-, f-, and c-structures of syntax, which is noted by ordinary linking lines.

It has also been noted earlier that other grammatical information play a significant role at some point in the reorganization of the syntactic structure into p-structure.[7] The involvement of the other grammatical information is captured in the diagram in (2.5) and they consist of those grammatical facts that do not overtly obtain at c-structure. From the diagram, as indicated by the arrows towards 'other grammatical information' this includes information that are spelled out in the a- and f-structures of the syntax and in the general phonological structure. The parsing/mapping of all the available information (i.e., the c-structure and the other grammatical information) into p-structure is done through a mapping theory, as indicated in the diagram. I propose this mapping theory in the following section, *2.4*. Finally, the diagram also explains that the phonetic forms (or surface structures) of various constructions result from appropriate application of relevant phrasal rule(s) in the p-structure.

[7] Considering the other grammatical information, it will be evident in chapter *five* that focus and topic also provide information for a well-defined p-structure. As will also be observed in chapter *three*, other grammatical information also includes tone prominence and morphophonemic property of number (i.e., information from the tone structure and the syllable structure respectively in the phonology).

2.4 Mapping Theories: C-structure to p-structure

Having identified how syntactic and other grammatical information are made available for the parsing/projection of the p-structure, what is important to the discussion at this juncture is to explain how the diverse information, particularly the c-structure, is reorganized into p-structure; i.e., the projection of the p-structure. The question that needs to be answered in this connection is through which mapping theory is the p-structure projected for an exhaustive phrasal rule analysis (particularly, in Akan)?

Various illuminating mapping theories (based on common and different principles) have always mapped a range or category of the syntactic structure (or, in the present case, c-structure) to one particular domain of the prosodic hierarchy, the ϕ, as the primary domain.[8] Apparently, the ϕ constitutes the triggering domain of the rules that motivated the proposition of these theories. I have also observed that it is from the level of the ϕ that the non-isomorphic relation between the c-structure and the p-structure becomes undeniably clear in many languages. In addition, it is at the level of the ϕ (and the other lower domains) that similarities in the p-structure greatly manifest cross-linguistically (Inkelas and Zec 1995: 539). As also noted by Dresher (1996: 44), the relative fluidity of the higher prosodic domains (i.e., *C*, *I* and *U*), as compared to the ϕ, makes the conception of a common mapping scheme for their parsing difficult.

I propose a mapping theory, Compositional Mapping Theory (CMT), in this study. In coming up with my proposal, I follow the practice of using the ϕ, as the primary domain. As noted already and structured in (2.5), by immediately taking vital

[8] Considering the prosodic hierarchy, it is obvious that the ϕ is not the primary domain (it is neither the first nor the last). Being a primary domain at this point only means that, it is the one that is fi conceived from the syntax and the one on which the other higher/lower domains are built.

grammatical facts into consideration, I will show that this proposed mapping theory best explains phrasal rules in Akan. Still in the spirit of CMT, in chapter *five*, a prosodic restructuring phenomenon I refer to as *prosodic raising* will be observed in the analyses of some phrasal rules (see section *5.2.1*). With prosodic raising, I will explain how one primary ϕ restructures rightwards to contain an immediate constituent and raises with the constituent to an intonational phrase (*I*). Before going into the present proposal, however, I explore some mapping theories that have been proposed in the literature and why they cannot be adopted in this work.

The much-employed mapping theories in the literature, are Relation-based (Nespor and Vogel 1982, 1986; Hayes 1989; etc.), End-based (Hale and Selkirk 1987; Chen 1987; Selkirk 1986, 1995, 2000; etc.), Arboreal (e.g., Inkelas and Zec 1995) and WRAP-XP (Truckenbrodt 1995, 1999; Selkirk 2000; etc.). All the above-mentioned theories take into account the *Lexical Category Condition* (hence, *LCC*) (Selkirk and Shen 1990; Selkirk 1995; Truckenbrodt 1999; etc.) in the mapping, except the arboreal mapping theory. As recast in (2.6) below, *LCC* presupposes that within a sentence (IP), for instance, constituents in the specifier (Spec-IP) are mapped into a separate ϕ, rather than that of the sentential head.

(2.6) *Lexical Category Condition* (LCC):

Only lexical (not functional) elements in overt representation and their projections are considered in the mapping between syntax and p-structure.

Based on the individual mapping criteria of the various theories, languages could be distinguished according to how the ϕ is structured in a particular syntactic structure, e.

within the IP. While one class of languages would prefer, for instance, relation-based to end-based, another class would prefer otherwise. In the strictest sense, therefore, it could be implied that no one language permits more than one mapping theory for the sake of consistency in the establishment of domains of rule application. In addition, a preferred mapping theory in one language should be able to explain most, if not all, phrasal rules in that language. As done in works such as Truckenbrodt (1999), Selkirk (2000), etc., however, mapping theories (or constraints) could be put together to explain (non)occurrences that would seem intractable with only one of the mapping theories. But this results in mapping complexities. I briefly explore the above-mentioned mapping theories and test whether any of them could consistently predict a common tone sandhi in Akan I have referred to as boundary assimilation (B-A).

It has been noted in chapter *one* that, with B-A, a final tone of a preceding constituent assimilates an onsetless or single-segment initial syllable of a following word (see chapter *three*; section *3.4.4* and chapter *five*; section *5.1.1* for schematizations of B-A in terms of p-structure). In an IP, B-A applies between i) the specifier and the (sentential) head, ii) between complements and iii) it may apply between the head and its complement. With these diverse syntactic environments, it is obvious that B-A applies with no direct reference to any particular syntactic information. As will be showed in chapter *three*, I suggest that B-A is induced at the juncture of ϕs; specifically, a lexical L tone in an initial single-segment syllable at the left-edge of every succeeding ϕ is assimilated by the final tone of a preceding unit (e.g., see (2.7)). In fact, I take B-A as a test for detecting left-edges of succeeding ϕ-domains in Akan. Consequently, non-application of B-A in a succeeding constituent explains that it is primarily parsed in

one ϕ with a preceding constituent(s).[9] Once left-edges of ϕs are detected, adjacent edges of preceding lexical categories automatically constitute right-edges of their ϕs.

2.4.1 Relation-based mapping

The relation-based mapping theory (Nespor and Vogel 1982, 1986; Hayes 1989b; etc.) relies on the head-complement relation of syntax and allows two options of mapping. With Option 1, a sentential head and its complement map into one ϕ, $[_{VP}\ V\ NP]_{\phi}$. Conversely, with Option 2, a head and its complement maps into separate ϕs, $[_{VP}\ [V]_{\phi}\ [NP]_{\phi}\ ]$. The choice of an option depends on the domain reference of the rule in question and, as noted, both options cannot be adopted for the explanation of the same rule in a language for the sake of consistency. In addition, a chosen option should always and properly result in the application of the rule it is supposed to sensitize.

B-A in Akan, however, cannot be accounted for solely and consistently by any of the options. This inability of relation-based mapping to explain B-A has to do with a phonological fact that it does not take into account; that is, the syllable structure of the stem of the sentential head (the verb). A two-way distinction of prosodic relevance must be made on verb-stems in Akan. Where the verb-stem is disyllabic, it is mapped alone into one ϕ from its complement. On the contrary, a monosyllabic verb-stem maps into a common ϕ with its complement. In the data in (2.7) below where prosodization is by Option 1, $[_{VP}\ V\ NP]_{\phi}$, observe in (2.7b) that B-A is appropriately desensitized from being realized in the complement, since a monosyllabic verb-stem is involved. In (2.7a),

[9] Cases will be observed where syntactic constituents are mapped into one prosodic domain, but not primarily. In this wise, what actually results is a recursive structure. One of such cases is ϕ-recursion involving a pronominal subject (in isolation) and a primary ϕ.

B-A is also desensitized from realizing in the complement where a disyllabic verb-stem is involved but, this time, incorrectly.[10]

(2.7) $[_{IP}$ NP $[_{VP}$ $V_{mono-/disyllabic}$ $[_{NP}$ N]]] *C-structure*

a. *? [Kòfi̲]$_{\phi}$ [á̲-!wáré Àbénáá]$_{\phi}$ *P-structure*
Kofi PRF-marry Abenaa
'Kofi has married Abenaa.'

b. [Yàẁ]$_{\phi}$ [à̲-kyé Àbénáá]$_{\phi}$ *P-structure*
Yaw PRF-catch Abenaa
'Yaw has caught Abenaa.'

With Option 2 (i.e., $[_{VP}\ [V]_{\phi}\ [NP]_{\phi}]$) of relation-based mapping, on the other hand, the opposite case is realized. While B-A is appropriately predicted between a disyllabic verb-stem and its complement, as shown in (2.8a), it is also incorrectly predicted where a monosyllabic verb-stem is involved. Thus, neither of the options of relation-based mapping can solely and consistently predict the application of B-A in Akan.

(2.8) a. [Kòfi̲]$_{\phi}$ [á̲-!wáré̲]$_{\phi}$ [Á̲!bénáá]$_{\phi}$ *P-structure*
'Kofi has married Abenaa.'

b. * [Yàẁ]$_{\phi}$ [à̲-kyé]$_{\phi}$ [Á̲!bénáá]$_{\phi}$ *P-structure*
'Yaw has caught Abenaa.'

[10] It seems to me that, between a disyllabic verb-stem and its complement, B-A is an optional rule. The question mark on (2.7a) (also in (2.9b) and (2.11b) below) explains that in a slow or a more conscious speech settings this phonetic form is attested. A great portion of data collected, however, supports the view that B-A applies between a disyllabic verb-stem and its complement.

2.4.2 End-based mapping

The end-based mapping theory (Selkirk 1986, 1995, 2000; Chen 1987; etc.) relies on syntactic constituent edges, so it is also referred to as the edge-based theory (Selkirk 1996). End-based mapping selects only one periphery (i.e., either left or right) of a designated syntactic range and aligns it with a ϕ boundary. Selkirk and Shen's (1990) model particularly select and prioritize an edge of maximal projection of lexical categories (XPs). In terms of generalized alignment (McCarthy and Prince 1993) constraint format, end-based mapping is formalized as Align *XP*, *R*/*L*; ϕ, *R*/*L*; i.e., 'for each XP there is a ϕ such that the right (or left) edge of XP coincides with the right (or left) of ϕ' (Truckenbrodt 1999: 223).

Considering the right or the left edge alignment, there are two mapping options with end-based mapping; i.e., Align$_R$XP (*XP*, *R*; ϕ, *R*) and Align$_L$XP (*XP*, *L*; ϕ, *L*). In a head-initial language like Akan, Align$_R$XP will map a head and its complement in one ϕ, while Align$_L$XP will mandate separate mapping of a complement from its head. It is important to note that a chosen option must be able to consistently predict a particular rule in a language.

Considering the application of B-A in Akan (and the role of the syllable structure of the verb-stem in the application), like relation-based mapping, none of the options of end-based mapping is solely sufficient, because the theory does not consider any phonological information. Where Align$_R$XP is preferred to Align$_L$XP, a complement is mapped into a common ϕ with its head. This option correctly blocks the realization of B-A in the complement of a monosyllabic verb-stem, as in (2.9a). But it also incorrectly predicts the same result where the verb-stem is disyllabic, as shown in (2.9b).

(2.9) $[_{IP}$ NP $[_{VP}$ $V_{mono-/disyllabic}$ $[_{NP}$ N]]] *S-structure*

a. [Yàẅ]$_{\phi}$ [à-kyé Àbénáá]$_{\phi}$ *XP*, *R*; ϕ, *R*

'Yaw has caught Abenaa.'

b. ? [Kòfi]$_{\phi}$ [á-!wáré Àbénáá]$_{\phi}$ *XP*, *R*; ϕ, *R*

'Kofi has married Abenaa.'

Conversely, observe in (2.10) that where $Align_L$XP is preferred to $Align_R$XP a complement constitutes a separate ϕ from its head. As could be seen in (2.10b), this correctly predicts the realization of B-A in a complement of a disyllabic verb-stem, but not in a complement of a monosyllabic verb-stem, as also evidenced in (2.10a)). Since neither of its options can solely account for B-A, like relation-based, end-based is not an adequate theory for the prediction of B-A in Akan.

(2.10) a. * [Yàẅ]$_{\phi}$ [à-kyé]$_{\phi}$ [Á!bénáá]$_{\phi}$ *XP*, *L*; ϕ, *L*

'Yaw has caught Abenaa.'

b. [Kòfi]$_{\phi}$ [á-!wáé]$_{\phi}$ [Á!bénáá]$_{\phi}$ *XP*, *L*; ϕ, *L*

'Kofi has married Abenaa.'

2.4.3 Arboreal mapping

Arboreal mapping (e.g., Inkelas and Zec 1995) relies on branching of any maximal projection and, with it, only immediate sisters of a common maximal projection are mapped into one ϕ. In the explanation of B-A in Akan simple clauses, arboreal mapping does not do any better than relation-based mapping and end-based mapping. Wi

arboreal, B-A is appropriately blocked only in the case of monosyllabic verb-stems, as shown in (2.11a). In the case of disyllabic verb-stems, however, as could also be verified from (2.11b), B-A is incorrectly blocked from applying in the complement.

(2.11) $[_{IP}$ NP $[_{VP}$ $V_{mono-/disyllabic}$ $[_{NP}$ N]]] *S-structure*

a. [Yàw̱]$_{\phi}$ [à-kyé Àbénáá]$_{\phi}$ *Arboreal mapping*
'Yaw has caught Abenaa.'

b. *? [Kòfi̱]$_{\phi}$ [á-!wáré Àbénáá]$_{\phi}$ *Arboreal mapping*
'Kofi has married Abenaa.'

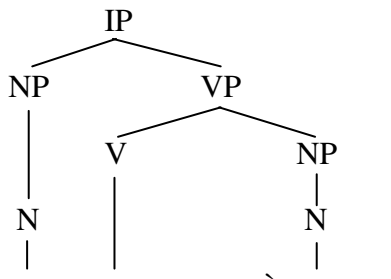
Recall that arboreal disregards *LCC*. In addition, it disallows nesting of ϕs (Inkelas and Zec 1995: 542). It follows therefore that it would immediately map a head and a specifier (in an IP) into one ϕ where the head is intransitive or without a complement. This mapping will incorrectly desensitize the application B-A and its realization in the head, thereby rendering the tonal structure ill-formed, as shown in (2.12). Arboreal mapping then cannot wholly explain the application of B-A in Akan. Since the specifier (Spec-IP), *Kòfi*, is H-final, the (onsetless) perfective aspectual marker, *à-*, should surface as H toned with the application of B-A. Additionally, by the impact of the dislodged lexical L tone of the aspectual marker, the H tone on the stem-initial syllable of the head should be downstepped (i.e., *á-!dwáré*).

(2.12) $[_{IP}$ Kòfi $[_{VP}$ à-dwáré]] → * [Kòfi à-dwáré]$_{\phi}$
Kofi PRF-bath
'Kofi has taken a bath.'

2.4.4 WRAP-XP

The WRAP-XP mapping theory (Truckenbrodt 1995, 1999; Selkirk 2000; etc.), which could be considered as a reformulation of end-based mapping, proposes that each lexically headed phrase (XP) should be contained in a single ϕ. By emphasizing on the headedness of lexical constituents, which is actually grounded in *LCC*, WRAP-XP relies on lexical government. So, only lexical XPs that are themselves not lexically governed can phrase separately. As shown with our working simple clauses in (2.13), observe that a lexical constituent at Spec-IP maps into a separate ϕ from a sentential head because, with IP, they are functionally related. In addition, observe in (2.13) that a sentential head also constitutes one ϕ with its complement(s) because they are lexically related.

(2.13)



a. [Yàw̱]$_\phi$ [à-kyé Àbénáá]$_\phi$ 'Yaw has caught Abenaa.'

b. *?[Kòfī]$_\phi$ [á-!wáré Àbénáá]$_\phi$ 'Kofi has married Abenaa.'

In (2.13a), non-realization of B-A in the complement of the monosyllabic verb-stem is correctly predicted by WRAP-XP. However, in (2.13b), it also incorrectly predicts non-realization of the rule in the complement of a disyllabic verb-stem. This incorrect prediction is due to the fact that WRAP-XP disallows a 'head-complement' internal ϕ-boundary that would have prompted B-A. Like the other mapping theories, therefore,

WRAP-XP does not accommodate the non-syntactic information of syllable structure, which proves to be crucial in the present case of Akan.

Considering constituent branching, Truckenbrodt (1999) notes that in a right-branching language, like Akan, WRAP-XP will only differ from Align$_R$XP of end-based mapping where there are multiple complements of a head. Nevertheless, he also notes that in such a case both theories could be employed to project a recursive ϕ-structure (based on their individual criteria) where there is the need to account for different phonological rules of a similar domain (Truckenbrodt 1999: 236). Thus, to satisfy WRAP-XP and Align$_R$-XP simultaneously, a head with multiple complements; e.g., *[$_{VP}$ V YP ZP]*, should be mapped into a complex or recursive ϕ-structure as *[[V YP]ϕ ZP]ϕ*. Only the outer ϕ-boundary is required by WRAP-XP (i.e., the containment of categories embedded in the maximal projection of the head) while both right ϕ-boundaries are required by Align$_R$XP. Truckenbrodt (1999) shows that this recursive structure correctly defines the domains of 'Vowel Shortening' and 'Phrasal Tone Insertion' in Kimatuumbi, which are discussed as direct-syntax rules in Odden (1987, 1990, etc.) (see Truckenbrodt (1999) for illustrations).

In the explanation of the application of the working phrasal rule in Akan, B-A, the recursive ϕ-structure could be extended in a clause with a single complement as well. However, the explanatory problem of the rule would not be resolved. As shown in (2.14), besides WRAP-XP, Align$_L$XP also requires the lexical complements in (2.14a & b) to primarily assume a ϕ-boundary at their left-edges. With the resulting recursive structure, B-A is correctly predicted and realizes in the complement of (2.14a), but its realization in the complement of (2.14b) is incorrectly predicted.

(2.14) $[V_{mono\text{-}/di\text{-}syllabic}\ [NP]_{Align_L}]_{WRAP\text{-}XP}$ *WRAP-XP & Align$_L$XP*

a. [Kòfi]$_\phi$ [á-!wáré [Á!bénáá]$_\phi$]$_\phi$
'Kofi has married Abenaa.'

b. * [Yàẁ]$_\phi$ [à-kyé [Á!bénáá]$_\phi$]$_\phi$
'Yaw has caught Abenaa.'

It has earlier been noted that where there are options of ϕ-domain mapping with a particular theory, only one is chosen to predict the same rule in a language for the sake of consistency. Considering the fact that neither WRAP-XP in isolation nor in conjunction with end-based could solely and conclusively predict B-A in Akan, its inadequacy is clear, just as (we have seen with) the rest of the mapping theories discussed so far.

2.5 The present proposal: *Compositional Mapping Theory*

Some widely-used mapping theories in the literature have been explored in section *2.4*, and their individual inadequacies in accounting for B-A in simple clauses of Akan have been observed. In this section, I propose an alternative mapping theory for Akan that brings some basic ideas of these mapping theories into perspective and predicts B-A appropriately. Besides the inadequacies of the previous theories, the need for the present one is based on the admission in this study that other grammatical information may play crucial role in the explanation of phrasal rules.

Indeed, it has been widely suggested and accepted that domains of p-structure should be defined on the basis of mapping rules that recognize information from all t

various structures of the grammar (Nespor and Vogel 1986; Hayes 1989; Zec and Inkelas 1990; Frascarelli 2000; etc.). Yet, such suggestions have not been followed up by concrete steps to actually integrate the other information in a theory. Theories always tend to solely prioritize syntactic information.

On the involvement of other grammatical information in prosodization, Selkirk (2000), for instance, notes that *focus effects*, as an aspect of the information structure (i-structure) of the grammar, exert some influence in prosodization in Chichewa and English. In these languages, therefore, focus effects motivate a mapping constraint, Align (*Focus*; ϕ), which ranks higher against the 'solely c-structure motivated' constraints, Align (*XP*; ϕ) and WRAP-XP. Other works, such as Pierrehumbert and Beckman (1988), Karneva (1990), Vogel and Kenesei (1990), Hayes and Lahiri (1991), Butt and King (1998) also note the influence of *focus effects* or *focus marking* in domain mapping. In Italian, Frascarelli (2000) also explains how the alternative information profiles of narrow and broad focus motivate a special kind prosodization, which she refers to as Focus Restructuring.

As has already been noted, I refer to the present mapping proposal for Akan as CMT (Compositional Mapping Theory) and it is also constrained by *LCC* (noted in (2.6)). The reference term of the theory, 'compositional', is based on its characteristic of considering all available grammatical information, as observed in the proposed version of the grammar for the phonology-syntax interface given in (2.5), and combining the desirable ones (on a single platform) for an exhaustive explanation of phrasal rules. In this wise, I draw attention to the fact that CMT has nothing to do with the semantic notion of *compositionality* (Montague 1974; Gamut 1991; etc.), which requires th

meaning of a composite expression/structure to be built up from the meanings of the basic expressions it consists of. CMT is only concerned with the grouping of various forms of information in the grammar (into an input base) that could enable a well-defined p-structure, which will ensure a correct and comprehensive explanation of phrasal occurrences.

As sketched in (2.15) below, CMT is basically proposed on a simple clause (IP). The basic tenets of it are then used in the prosodization of particular complex or extra-sentential constructions, taking into account other grammatical information that may become vital in such complex constructions. That is to say, CMT is a dynamic mapping theory and, for that matter, it consistently evaluates current grammatical information. Indeed, CMT particularly emphasizes the importance of explaining phrasal rules from the perspective of indirect reference, in that it emphasizes the importance of not only syntactic information, but also other grammatical information in the parsing of domains of phrasal rule applications.

(2.15) *Compositional Mapping Theory*

i. *Default phrasing*: Spec-IP lexical constituent(s) constitutes one ϕ, while the sentential head maps into a separate ϕ with its immediate complement.

$\Rightarrow [_{IP}\ NP\ [_{VP}\ V\ [_{NP}\ N]]]$ is mapped as $[NP]_{\phi}\ [V\ NP]_{\phi}$

ii. Within the basic maximal projections:

a. A disyllabic verb-stem phrases separately from its lexical complement.
b. A tonally prominent lexical complement of a branching NP primarily maps into one ϕ (prominence is indicated by lexical H tone maintenance).
c. A succeeding number-marked NP-internal constituent also constitutes a separate ϕ.

Looking into CMT, it could be observed that the theory captures some core features of the mapping theories explored and tested in section *2.4*. From the 'default phrasing' in (2.15*i*), relation-based mapping is brought into perspective in CMT with the option that a head and its complement could constitute a single ϕ. End-based mapping in terms of Align$_R$-XP is also met in (2.15*i*) by the insertion of a ϕ-boundary at the right-edge of XPs. Based on its requirement of containing constituents under a common maximal projection of a lexical category into one ϕ, WRAP-XP is also satisfied in (2.15*i*). At this point, although through different criteria, all the mapping theories bring about a common ϕ-domain mapping. Indeed, differences would only occur among them where we have, for example, a situation of multiple complements.

While it encompasses some aspects of the previous mapping theories, (2.15*i*) of CMT is not enough in the prediction of B-A (as was realized through (2.7-2.14)). This is where (some of) the other information presented in (2.15*ii*) becomes desirable not as an option to (2.15*i*), but as an integral part of the theory, CMT. In fact, the importance of the other grammatical information expressed in (b) & (c) of (2.15*ii*), do not come into play at this point of the discussion. We will observe them in the analysis of H-Deletion and other rules in compound constructions in chapter *three*.

Coming back to the application of B-A in the working simple clauses, (a) of (2.15*ii*) is particularly desirable, as has already been noted. Indeed, it enables the capture of the other aspects of the previous theories in CMT; for instance, the Align$_L$-XP option of end-based. With (a) of (2.15*ii*), the significance of the syllable structure of sentential heads (verb-stems) is spelled out in the mapping. As we can see in (2.16), a 're-prosodization' of the simple clauses in (2.14) in terms of CMT, the same VP structure

prosodized differently in (2.16a) and (2.16b) on the bases of the phonological information given in (a) of (2.15*ii*). Consequently, the desired prosodic domain of B-A with both cases of the verb-stem is correctly mapped. This correctly mapped domain then enables a correct prediction of the rule.

(2.16) $[_{IP}\ NP\ [_{VP}\ V_{mono\text{-}/di\text{-}syllabic}\ NP]]$

a. [Kòfi̲]$_{\phi}$ [á̲-!wáré]$_{\phi}$ [Á!bénáá]$_{\phi}$ = [V$_{disyllabic}$]$_{\phi}$ [NP]$_{\phi}$

Kofi PRF-marry Abenaa

'Kofi has married Abenaa.'

b. [Yàw̲]$_{\phi}$ [à̲-kyé Àbénáá]$_{\phi}$ = [V$_{monosyllabic}$ NP]$_{\phi}$

Yaw PRF-catch Abenaa

'Yaw has caught Abenaa.'

In (2.16b), B-A realizes in the sentential head,[11] but it fails to realize in the complement. This is because, from (*ii*, a) of CMT in (2.15), no ϕ-boundary is obtained between a monosyllabic verb-stem and its complement, which would have result in the realization of B-A in the complement. In (2.16a), however, beside its realization in the sentential head, B-A also realizes in the complement. Here again, through (*ii*, a) of CMT, the disyllabic structure of the sentential head mandates it to constitute a separate ϕ from the lexical complement. Consequently, the ground is prepared for B-A to take effect on the single-segment initial syllable of the complement.

[11] The surface realization of B-A is not seen in the head because the assimilating tone from the specifier is also L. The realization in the head is clear where we have a final H tone in the specifier; e.g., ***Kòfi*** *àkyé Àbénáá* → ***Kòfi*** ***á****kyè Àbénáá* 'Kofi has caught Abenaa.'. See chapter *five*; section *5.1.1* for more details.

2.6 Summary

This chapter has discussed issues that relate the syntax; in particular, LFG, and the mapping between the phonological and the syntactic structures of the grammar. LFG has been briefly introduced and the appropriateness of the c-structure LFG postulates, as the primary input base for (prosodic) domain(s) parsing in the phonology, has also been noted. Application of some ideas of LFG will further be explored in appropriate chapters and sections of rest of this work.

The structure of the grammar for the phonology-syntax relation has also been sketched in this chapter, with which it has been emphasized that grammatical information, other than those given in the c-structure or in the syntax, in general, may be necessary in the parsing of a well-defined p-structure. In the parsing of the p-structure (i.e., with regards to the question as to how the syntactic structure is mapped to the phonological structure), with particular reference to the ϕ, various theories in the literature have been explored with respect to the application of B-A (as a working rule) in Akan. In the exploration, some shortfalls of the theories have been identified and it has been realized that, in terms of holistic and consistent explanation of B-A, these shortfalls render the theories inadequate. A different mapping theory, CMT (compositional mapping theory), has been proposed following this realization.

It has been explained that, with the proposed mapping theory (CMT), the p-structure is parsed with consideration to all present and necessary grammatical information. This enables correct predictions of rule applications by the domains of p-structure. In the rest of this study, domains of phrasal rule applications would be primarily determined on the basis of CMT.

CHAPTER THREE

PHRASAL RULES IN AKAN COMPOUNDS

3.1 Introduction

Compound constructions in Akan and phrasal rules that are triggered in them are discussed in this chapter. Compounding is generally discussed in the literature as a morphosyntactic word-formation process (see, e.g., Lieber (1980)). The resulting compound word is commonly described in the literature as a 'new' linguistic unit (word/lexeme) that is made out of two or more existing and independent words (Bybee 1985; Fabb 1998; Haspelmath 2002; etc.). Anderson (1985: 40), in particular, describes a compound word as 'word formation based on the combination of two or more members of (potentially) open lexical classes'.[12] Considering the lexical status of the compound members (i.e., the individual lexemes involved in a compound (Haspelmath 2002: 85)), a compound could be regarded as involving a quasi-syntactic structure.

Compounding is one way by which Akan increases its stock of vocabulary, specifically nouns. It is done through the association of words from the same category or different categories. Dolphyne (1988) and Anyidoho (1990) identify six two-word compound forms. These are Noun-Noun, Noun-Adjective, Verb-Verb, Verb-Noun, Adjective-Noun, and Noun-Verb. I focus on Noun-Noun and Noun-Adjective compounds in this work. Respectively notated as N-N and N-Adj, both of them yield a

[12] See Lieber (1980), Anderson (1985), Fabb (1988) and many others for detailed discussions o compound words and compound formation.

new noun, which can be either a lexicalized or a non-lexicalized compound. We focus on N-N and N-Adj compounds in this study because they are more productive in Akan, aside from the fact that one thesis could not study or account for every issue or occurrence in a language. For examples of the compounds that are not analyzed in this study, see appendix (I).

This chapter explains that, for a compound word to materialize in Akan, the constituents involved should map into one prosodic phrase/domain. Otherwise, there could be no compounding and some phonological changes that occur in a compound could not be realized. I will show that whether or not separate words could map into one prosodic phrase to constitute a compound is dependent on the tonal structure of the first constituent or the morphophonemic structure/status of the second constituent. In view of these facts, which partly constitute the present mapping theory (i.e., CMT (compositional mapping theory), presented in chapter *two*; (2.15)), the immediate realization is that the syntactic constituent structure (of the compound members), the noun phrase (NP), does not ensure a complete compound domain (and domains of occurring compound-internal rules) all alone.

The rest of the chapter is organized as follows: I look at the structure of N-N and N-Adj compounds in section *3.2*. In section *3.3*, the phonological processes or rules that occur in N-N and N-Adj compounds are discussed. The particular prosodic domain (or domain properties) and other conditions that sensitize various phrasal rules in compounds are determined in section *3.4*. In section *3.5*, the individual domains of two forms of compounds and surface boundary tones that distinguish them are presented in terms of Attribute-Value Matrix (AVM). The manifestation of the morphophonem

property of number, its effect in the determination of the domain of compounds, and subsequent influence in the application of occurring rules are also discussed in section *3.6*. Section *3.7* concludes the chapter with the reiteration that phrasal rules are better accounted for on the basis of p-structural predictions.

3.2 The structure of compounds and lexical integrity

In N-N compounds of Akan, the first compound member (N1) modifies the second one (N2). N1, then, functions like an adjective. The same modification effect takes place in N-Adj compounds, but in the opposite representation; i.e., the adjective modifies the noun. N-N and N-Adj compounds are respectively exemplified in (3.1) and (3.2). [13]

(3.1)	N——N		Compound	
a.	ɲnùá, ɛdáɲ	'woods, a house'	» ɲnùàdáɲ	'wooden house'
b.	ɲkátéé, ɲkwáɲ	'groundnut, soup'	» ɲkàtèɲkwáɲ	'groundnut soup'
c.	òdwáɲ, òníní	'a sheep, a male'	» òdwàníní	'ram'
d.	àhéné, èfié	'chiefs, house'	» àhĩmfié	'palace'

(3.2)	N——Adj		Compound	
a.	ɲtámɲ, kɛ̀séé	'(an) oaths, big'	» ɲtàɲké!séé	'(a) great oaths'
b.	àsémɲ, pápá	'story, good'	» àsɛ̀mpá(pá)	'good news'
c.	ɲsémɲ, húnú	'stories, useless'	» ɲsèɲhúnú	'nonsense'
d.	sĩká, kɔ̀kɔ̀ɔ́	'money, red'	» sĩkàkɔ́kɔ̀ɔ́	'gold'

[13] Compound members of N-Adj compounds maybe written as a single word or separate words (like a syntactic phrase). I believe that this distinction is related to the lexical/non-lexical distinction (explained in the following paragraph). The distinction, however, does not undermine analysis of the occurring rules in any way.

Most compounds in Akan are (or have been) lexicalized. As in (3.1c & d) and (3.2c & d), when a compound is lexicalized, the individual meanings of the compound members may not be explicitly evident in the meaning of the composite word. In addition, the modification effect may be hidden. However, the individual meanings of the compound members are not totally lost. Perhaps, this is to satisfy the semantic principle of compositionality (Montague 1974; Gamut 1991; etc.), which requires the realization of the basic meanings of individual units in the composite expression of a derived unit. Conversely, as in (3.1a & b) and (3.2a & b), the semantic contents of the compound members are readily perceptible in the composite meaning of some other compounds in Akan. I refer to these as non-lexicalized compounds. Despite this semantic distinction, from the morphosyntactic point of view, I consider both lexicalized and non-lexicalized compounds of Akan the same. That is, they are both NP-internal constructs.

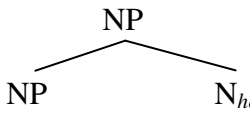
Considering the lexicalist position of LFG, the syntactic framework adopted in this thesis, a compound would be identified as a syntactic/lexical word on the basis of the Lexical Integrity Principle (LIP) (Bresnan and Mchombo 1995; Bresnan 2001; etc.) that constrains the a c-structure. LIP demands that only morphologically complete words may be leaves of c-structure tree. As such, a compound would correspond to one and only one c-structure node. In this wise, syntax plays no role in the structuring of a word and, so, the internal structure of a word cannot be accessed by the syntax. Where LIP is strictly adhered to, then, compounding would be considered to take place at some point in the grammar before syntax, perhaps in the morphology. With this position, phonological occurrences that pertain in compounds will have no syntactic reference, and so no phonology-syntax interface implications could be drawn from compounding.

In the present cases of compounds in Akan, however, besides the semantic fact (i.e., one compound member modifying the other), one needs to acknowledge the fact that a compound cannot be discussed without due consideration to its internal syntactic (and phonological) description. This is because, as a syntactic word, a compound does not correspond to a phonological word (ω) in the p-structure. In addition and more importantly, the word order of compound members is a reflection of their order in the syntax. Constituent headedness in the light of the X-bar theory of phrase structure (Jackendoff 1977) is, thus, maintained in the resulting compounds (especially, in N-Adjs). The majority of N-N and N-Adj compounds in Akan could be described, therefore, as endocentric. In other words, they are headed like syntactic phrases.

Elaborating on the reflection of syntactic phrase structure in compounds, Fabb (1998) explains that, like a syntactic head, 'the head (of a compound) represents the core meaning of the composite constituent, and it is of the same word class' (Fabb 1998: 67). Based on the 'core meaning' (in the resulting compound) and the 'same class' criteria, N2 becomes the head of N-N compounds, while N1 constitutes the head of N-Adj compounds in Akan.[14] As shown in (3.3), observe that N2 forms the core of the composite expression of the resulting compound in the N-N compound in (3.3a). N1, as the modifier (thus, the complement), attributes a quality to N2, the head. As (3.3b) also shows, in the case of N-Adj compounds, N1 constitutes the head because it is the one being modified by the Adj (the complement/adjunct).

[14] Observe in (3.3) below that N-N compounds take after the left-branching configuration of the noun phrase (NP) of a language like English – [$_{NP}$ AdjP N]. N-Adj cases, however, closely relate to the NP in Akan. Specifically, an adjective always comes after the noun (head) it modifies in Akan, [$_{NP}$ N AdjP], and this phrase structure is maintained in the compound.

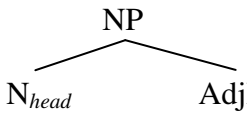
(3.3) a.



ǹnùá ɛ̀dáń → ǹnùàdáń ‘wooden house’

‘woods’ ‘house’

b.

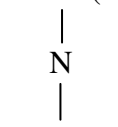


ǹtáḿ kɛ̀séɛ́ → ǹtàǹkɛ́!séɛ́ ‘great oath’

‘oath’ ‘big’

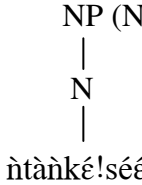
Following the adherence of N-Adj compounds to the rigid NP-internal word order, the issue of ‘lexicalized/non-lexicalized’ distinction in both N-N and N-Adj compounds, and the issue of ‘written together/separately’ distinction in N-Adj compounds, I consider a compound in Akan as a complex word and larger or higher than a prosodic word (ω). Even though a compound in Akan may correspond to a single c-structure node, as shown in (3.4) below, a look at it at the level of morphological analyzer (Butt *et el.* 1999) (i.e., decomposition at f-structure) makes it clear that it expresses information that is more than what is individually expressed in each of the compound members.

(3.4) a.



$$\begin{bmatrix} \text{PRED} & \text{‘ɛ̀dáń’} \\ \text{COMPOUND} & \begin{bmatrix} \text{PRED} & \text{‘ǹnúá’} \\ \text{NUM} & \text{PL} \end{bmatrix} \\ \text{N-TYPE} & \text{COUNT} \\ \text{NUM} & \text{SG/PL} \end{bmatrix}$$

b.



$$\begin{bmatrix} \text{PRED} & \text{‘ǹtáḿ’} \\ \text{COMPOUND} & [\text{PRED} \quad \text{‘kɛ̀séɛ́’}] \\ \text{N-TYPE} & \text{COUNT} \\ \text{NUM} & \text{SG} \end{bmatrix}$$

Butt *et el*. (1999: 92) describe the morphological analyzer as 'a finite state machine which encodes … rules of compounding'. With it, (Butt *et el*. 1999) particularly looked at lexical compounding in German. In this work, I use it to explain the internal structure of Akan compounds. It is intuitively known that a modification takes place in a compound, as the f-structures in (3.4a & b) show; specifically, a head noun is modified by an adjunct (noted as compound following Butt *et el*. (1999) description) in the cases in Akan. The f-structures explain that the head nouns (i.e., N2 in N-N and N1 in N-Adj) actually carry the PRED attribute of the compounds. Becoming part of the PRED, the adjuncts then attribute a property to the head. Also, in (3.4a) in particular, observe that the adjunct is a plural noun (i.e., [NUM PL]), but the derived compound in Akan is not specified for number (i.e., it could be singular or plural). The semantic, syntactic and, as will become evident, the prosodic structures/features of N-N and N-Adj compounds in Akan render them complex. Explanation of the phrasal rules occurring in them in the phonology-syntax interface perspective; especially in the p-structure, therefore, becomes desirable (i.e., with reference to the question as to whether explanation of phrasal rules from the perspective of phonology-syntax interface is desirable; see (iii) of the research questions noted in the introduction of this thesis). N-TYPE in (3.4) means 'noun type'.

3.3 Basic rules in Akan compounds

Based on the present assumption that N-N and N-Adj compounds attain from syntactic phrase of NP in particular, compound constructions constitutes one of the areas where the interface between syntax and phonology is manifested in Akan. In the formation of this NP-internal construction in Akan, some tonal and segmental changes occur. In th

section, I discuss some of these phonological changes (as rules) in detail and explain them in terms of the phonology-syntax interface.

Dolphyne (1988) identifies six phonological changes/occurrences in Akan compound constructions. These are:

i. Vowel harmony,

ii. Homorganic nasal assimilation,

iii. Nasalization of voiced plosives,

iv. Loss of final vowel (or syllable),

v. Loss of vowel or nasal prefix,[15]

vi. Changes in the basic tones of stems

I focus on changes in the basic tones of stems, loss of final vowel or syllable, and loss of onsetless (or single-segment) initial syllable in this work. Before I discuss these rules, however, I briefly show the application of vowel harmony (VH), homorganic nasal assimilation (HN-A), and nasalization of voiced plosives (Voiced-to-Nasal) in compounds in Akan.

VH is a regressive assimilation rule in Akan and, with it, all the vowels in a word are required to be of a common tongue root (ATR) specification. This requirement follows from the fact that all the vowels in Akan are categorized into two phonetically distinct classes based on tongue root position. These are /*i, e, o, u, a*/ and /*ɪ, ɛ, ɔ, ʊ, a*/,

[15] As noted in chapter *one*, the deleted segment could be part of a monomorphemic word and not just a prefix. So, Dolphyne's description can be further refined. I will continue to use the 'onsetless (or single-segment) initial syllable' description.

respectively noted as advanced ([+ATR]) and unadvanced/retracted ([–ATR]) tongue root vowels (e.g., Dolphyne 1988). VH operates regressively, so in (i) of (3.5a) the [–ATR] feature specification of the vowels in N1 becomes [+ATR] through the adoption of the [+ATR] feature specification of the vowels in N2.

(3.5) N1 N2/Adj

a. àsɛ́ń, dúá 'hanging, tree'

i. **à**s**ɛ**́ń!dúá → **ɑ**s**é**ń!dúá *VH*

ii. ɑséń!**d**úá → ɑséń!**n**úá 'crucifix' *V-to-N*

b. ǹtáḿ, kɛ̀sɛ́ɛ́ 'oath, big'

ǹtà**m̀**kɛ́!sɛ́ɛ́ → ǹtà**ŋ̀**kɛ́!sɛ́ɛ́ 'great oath' *HN-A*

With Voiced-to-Nasal (*V-to-N*), an initial voiced stop in N2 becomes a nasal with the specification of the final nasal in N1. Thus, observe in (ii) of (3.5a) that the voiced stop in N2, /d/, is realized as a copy of the final nasal in N1, /n/. Finally, with HN-A, a final nasal in N1 adopts the place of articulation of an initial consonant in N2, hence the realization of /m/ in N1 as /ŋ/ by the influence of /k/ in N2.

3.3.1 Alterations of the basic tones in stems

Dolphyne (1988) notes two alternative surface tone realizations in the first stem (N1) in Akan compound constructions: *i*) N1 is said on low (L) tone in some compounds (e.g., see (3.6)), and *ii*) the lexical tone of N1 is maintained in some others. In terms of rule application, I suggest that the realization of L tone in N1 is due to the application of

tonal rule, which I refer to as H-Deletion. Two other tonal rules also apply besides H-Deletion, as will be shown and explained in the following. I refer to them as H-Insertion and boundary assimilation (noted as B-A in chapters *one* & *two*). H-Deletion and B-A do not apply concurrently though, as will be observed in section *3.4.4*.

3.3.1.1 The H-Deletion rule

The most common tone pattern for compounds is one with which the first stem is said on L tone (Dolphyne 1988: 120). This surface tone structure results from the application of the H-Deletion rule.[16] As schematized in (3.6a), N1 gets rid of its H tone(s) in the stem with the application of H-Deletion and it is pronounced L by default. The application of the rule is exemplified in (3.6b & c) below in N-N and N-Adj compounds respectively. It is important to note that H-Deletion is essentially optional in the N-Adj compounds, except where the compound is also lexicalized, as in (3.6c).

(3.6) a. *The H-Deletion rule*

$$[\ldots\acute{\sigma}\ldots]_{N_1} \rightarrow [\ldots\grave{\sigma}\ldots]_{N_1} / [_{NP} \_\_ [\ldots\sigma\ldots]_{N_2/Adj}]_{Compound}$$

b. [òdwáǹ]$_{N_1}$ + [òníní]$_{N_2}$ → [òdwàníní]$_N$
‘sheep’ ‘male’ ‘a ram’

c. [ǹsɛ́mí]$_{N_1}$ + [húnú]$_{Adj}$ → [ǹsèǹhúnú]$_N$
‘stories’ ‘useless’ ‘nonsense’

[16] H-Deletion would better be called ‘Non-low-deletion’ to include downstepped high. However, following Marfo (2004a), I have adopted the term H-Deletion on the basis that no distinction is made between an H and a downstep H with application of H-Deletion.

As can be seen in both noun stems in (3.6b), almost all Akan nouns have an L toned onsetless (or single-segment) initial syllable in the singular form. In the application of H-Deletion, there is a tendency to account for the L tone that realizes in N1 as a regressive spread of this L tone of the onsetless initial syllable in N2.[17] Although such an account seems logical, I draw attention to the fact that it does not take all cases into account. Observe in (3.6c) that N1 is again pronounced L by default, although the adjective is without a prefix, let alone an L-toned one. There are also cases of N-N compounds with which there is no onsetless (or single-segment) initial syllable in N2, but H-Deletion applies and default L tone subsequently realizes in N1. Examples are as given in (3.7).

(3.7) *N2 without a (L-toned) onsetless initial syllable*

a. $[sìká]_{N1}$ + $[bɔ́tɔ́]_{N2}$ → $[sìkàbɔ́tɔ́]_{N}$
'money' 'sack' 'money bag/pocket'

b. $[àsɛ́ḿ]_{N1}$ + $[sé!rɛ́ɛ́]_{N2}$ → $[àsɛ̀ǹsé!rɛ́ɛ́]_{N}$
'story' 'laughter' 'humor'

It will be observed in section *3.5* that this surface L tone realized on the N1 of N-N/N-Adj compounds is actually a spread of its (i.e., N1) initial L tone. In some N-Adj compounds, however, an absolute default L tone is realized on N1. In N-N and N-Adj compounds presented in (3.8a & b) respectively, I show that H-Deletion consistently

[17] As noted in chapter *one*, an onsetless initial syllable in N2 is always deleted in the compound constructions. Also see section *3.3.2* for details.

applies irrespective of the syllable or segmental representation of the N1. Subsequently, the default L tone is realized on the N1s.

(3.8) *Compound constructions*

a.	N———N		Compound	
i.	ǹyàmé, àsɛ́ḿ	'a god, a story'	» ǹyàmèsɛ́ḿ	'the scriptures'
ii.	àtùó, àdúró	'guns, medicine'	» àtùdúró	'gun powder'
iii.	àbó!sóḿ, èfíé	'idols, house'	» àbòsòḿfíé	'shrine'
iv.	àhɔ́!hóɔ́, ɛ̀dáń	'guests, house'	» àhɔ̀hòdáń	'guest house'
v.	kr̀ònóó, àdéɛ́	'thievery, a thing'	» kr̀ònòdéɛ́	'stolen good'

b.	N———Adj		Compound	
i.	ká!sá, téńtéń	'language, tall'	» kàsàténtéń	'a talkative'
ii.	ǹsá, fúfúó	'wine, white'	» ǹsàfúfúó	'palm-wine'
iii.	àdwúmá, déń	'task, hard'	» àdwùmàdéń	'difficult task'
iv.	sĩká, kɔ̀kɔ̀ɔ́	'money, red'	» sĩkàkɔ́kɔ̀ɔ́	'gold'
v.	àbòfr̃á, bɔ̀né	'child, bad'	» àbòfràbɔ́!né	'truant'

3.3.1.2 H-Insertion in N-Adj compounds

Besides the tonal alteration due to H-Deletion, an additional one occurs in N-Adj compounds that previous works (e.g., Dolphyne (1988) and Anyidoho (1990)) did not consider. With this alteration, L toned initial syllable of adjectives consistently resurfaces as H toned in the construction (e.g., see (iv & v) of (3.8b) above). I suggest that this tonal alteration is due to a rule I termed, H-Insertion, and formulated in (3.9).

(3.9) *The H-Insertion rule*

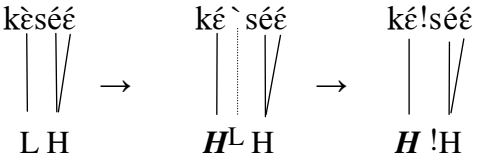
$$[\,\grave{\sigma}_1\ldots\sigma_n]_{Adj} \rightarrow [\,\acute{\sigma}_1\ldots\sigma_n]_{Adj} \;\; / [\,[\sigma\ldots]_{N_1}\,\_\_\,]_{Compound}$$

A great portion of data collected indicates that H-Insertion is generally an optional rule. Thus, *àbòfràbɔ́!né* in (v) of (3.8b) above could be said as *àbòfràbɔ̀né*. In some other N-Adj compounds, however, H-Insertion must apply. For example, I found out that *sɨ̀kàkɔ́kɔ̀ɔ́* in (iv) of (3.8b) cannot be said as *sɨ̀kàkɔ̀kɔ̀ɔ́*. For the sake of consistency, therefore, I recognize H-Insertion in all N-Adj compounds.

Application of H-Insertion is explicit where the initial syllable of the adjective (that is absorbing the inserted H) is lexically L. In this case, the lexical L tone of the initial syllable is either displaced or delinked. A displacement or a delinking is dependent on whether the succeeding syllable is H-toned or L-toned respectively. Where the succeeding syllable is H-toned, observe in the structures in (3.10a) that its pitch level is reduced by the impact of the displaced lexical L tone of the initial syllable. Downstepping of the H tone on the succeeding syllable indicates the pitch reduction. The data in (3.10b) also show the consistency of H-Insertion.

(3.10) *H-Insertion* in stem-initial L and succeeding H adjectives

a.



b.

	N —— Adj		Compound	
i.	ètí, bɔ̀né	'head, bad'	» èt̃ibɔ́!né	'bad luck'

ii.	ɔhéné, kèséɛ́	‘king, big’	» ɔhèn(è)kɛ́!séɛ́	‘great king’
iii.	sĭká, kèséɛ́	‘money, big’	» sĭkà kɛ́!séɛ́	‘big money’
iv.	ǹtòmá, tùǹtúḿ	‘cloth, black’	» ǹtòmà túń!túḿ	‘black cloth’

Where the succeeding syllable is also L tone, however, in consonance with Obligatory Contour Principle (OCP: Leben 1973; Odden 1986; Antilla and Bodomo 2000; etc.), it is assumed that no L tone has been set afloat. As structured in (3.11a), observe that the initial syllable had shared in a common lexical L tone. Therefore, it has only been delinked from the tier of this common L tone. The data in (3.11b) show more N-Adj compounds with H-Insertion and initial L tone delinking in the adjective.

(3.11) *H-Insertion* in stem-initial L and succeeding L adjectives

a. kɔ̀kɔ̀ɔ́ → kɔ́kɔ̀ɔ́ → kɔ́kɔ̀ɔ́

L H → *H* L H → ***H*** LH

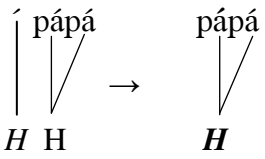
b.

	N —— Adj		Compound	
i.	sĭká, kɔ̀kɔ̀ɔ́	‘money, red’	» sĭkàkɔ́kɔ̀ɔ́	‘gold’
ii.	ǹtòmá, kɔ̀kɔ̀ɔ́	‘cloth, red’	» ǹtòmà kɔ́kɔ̀ɔ́	‘red cloth’
iii.	ǹkwáń, dɛ̀ɛ̀dɛ́	‘soup, sweet’	» ǹkwàǹdɛ́(ɛ̀dɛ́)	‘sweet soup’
iv.	ǹnwóḿ, dɛ̀ɛ̀dɛ́	‘song, sweet’	» ǹnwòm̀dɛ́(ɛ̀dɛ́)	‘sweet song’

H-Insertion also applies in adjectives with H-initial syllable. However, contrary to its obvious realization on an L-initial syllable, it does not show up in the phonetic form. Since the initial syllable is lexically H toned, what happens is that the inserted H tone docks on it and further merges with its lexical H tone. This analysis is in line with t

universal grammar (UG) convention whereby two identical tones assigned to or associated with a single bearing unit are merged into one (Goldsmith 1976; Marfo 2001; etc.). The structures in (3.12a) illustrate the merger that has taken place in the adjectives in (3.12b).

(3.12) *H-Insertion* in H-initial adjectives

a. 

b.

	N —— Adj		Compound	
i.	àdwéné, pápá	'mind, good'	» àdwèm̀pá(pá)	'good intention'
ii.	bɨ̀sé, nwónó	'cola, bitter'	» bɨ̀sènwónó	'bitter cola'
iii.	ǹkwàǹtá, ènáń	'junction, four'	» ǹkwàǹtànáń	'crossroad'
iv.	àfiɗié mónó	'machine, new'	» àfiɗi mónó	'new machine'

From (3.10 – 3.12), observe that an 'L-H' word boundary tone polarity is always realized in the compound with the concurrent operation of H-Deletion (in N1) and H-Insertion (in Adj). Note, however, that H-Insertion is not tied to H-Deletion. As shown in (3.13), in an ordinary 'N-and-Adj' phrase, where H-Deletion does not apply in the noun, H-Insertion may still apply in adjectives. H-Insertion, then, is an independent rule.

(3.13) *H-Insertion* in ordinary 'N-and-Adj' phrase

i.	sɨ̀ká, kɔ̀kɔ̀ɔ́	'money, red'	» sɨ̀ká kɔ́kɔ̀ɔ́	'red money'
ii.	ǹkwáń, dɛ̀ɛ̀dɛ́	'soup, sweet'	» ǹkwáń dɛ́ɛ̀dɛ́	'tasty soup'

iii.	ɛ̀kwáń, kɛ̀séɛ́	'way, big'	» ɛ̀kwáń kɛ́!séɛ́	'big way'
iv.	bɪ̀sé, tùǹtúḿ	'cola, black'	» bɪ̀sé túń!túḿ	'black cola'

3.3.2 Loss of initial syllable and final vowel or syllable

As noted earlier, Dolphyne (1988) also notes two segmental alterations in Akan compounds. These are loss of onsetless or single-segment initial syllable in N2 and loss of final vowel or syllable in N1. These occurrences could be verified from the N-N data in (3.14) and N-Adj data in (3.15) below.

(3.14)

	N —— N		Compound	
i.	ǹnùá, ɛ̀dáń	'woods, house'	» ǹnùàdáń	'wooden house'
ii.	ònùá, ɔ̀dɔ́	'sibling, love'	» ònùàdɔ́	'brotherly love'
iii.	àtùó, àdúró	'guns, medicine'	» àtùdúró	'gun powder'
iv.	àhéné, èfɪ́é	'chiefs, house'	» àhɪ̃mfɪ́é	'palace'
v.	yàréɛ́, m̀pá	'illness, bed'	» yàré!pá	'sick bed'
vi.	àbɛ́, ǹkwáń	'palmnut, soup'	» àbɛ́!kwáń	'a wooden house'

(3.15)

	N —— Adj		Compound	
i.	ǹkwàǹtá, ɛ̀náń	'junction, four'	» ǹkwàǹtànáń	'crossroad'
ii.	àfɪdɪ́é, mónó	'machine, new'	» àfɪdɪmónó	'new machine'
iii.	òkúnú, pápá	'husband, good'	» òkùǹpá(pá)	'good husband'
iv.	ètɪ́ré, bɔ̀né	'the head, bad'	» ètɪ̃bɔ́!né	'bad luck'
v.	ɔ̀yéré, fó!fórɔ́	'wife, new'	» àyè(fó!)fórɔ́	'newly wed'
vi.	àdwùmá, déń	'work, hard'	» àdwùmàdéń	'difficult task'

I explain that these two occurrences have to do with the kind of vocalic sounds (i.e., vowels, liquids and nasals) sequence that is allowed at the boundary of compound members. With the loss of onsetless/single-segment initial syllable, observe from (3.14) and (3.15a) that a vowel or a nasal in N2 is deleted in the resulting compound. I refer to this occurrence as 'initial segment deletion' (henceforth, In-Seg-Deletion). I realized from data collected that an initial nasal in N2 could remain in the compound, unlike an initial vowel. So, (v & vi) of (3.14) could also be read as *yàrém!pá* and *àbéń!kwáń*. Also, observe in (3.14) and (3.15) that a final vocalic sequence (i.e., either vowel-vowel or liquid/nasal-vowel) in N1 is simplified in a compound. I also refer to this occurrence as 'vocalic sequence shortening' (henceforth, V-Short). In (3.16a & b) below, In-Seg-Deletion and V-Short are respectively schematized.

(3.16) a. *The initial segment deletion rule*

$$[\sigma_{In\text{-}seg}\text{–}\sigma\ldots]_{N_2} \rightarrow [\text{–}\sigma\ldots]_{N_2} \;/\; [[\sigma\ldots]_{N_1} \_\_\;]_{Compound}$$

b. *The vocalic sequence shortening rule*

$$[\ldots vv/Nv]_{N_1} \rightarrow [\ldots v/N]_{N_1} \;/\; [\; \_\_\; [\sigma\ldots]_{N_2}\,]_{Compound}$$

Where the vocalic sequence is 'vowel-vowel' (*vv*) or 'nasal-vowel' (*Nv*), V-Short is realized by a simple deletion of the last vowel, as could be seen in (iii, iv, & v) of (3.14) and in (ii & iii) of (3.15). An occurring '*vv*' or '*Nv*' sequence is, however, maintained where the second vowel is /a/, as in (i & ii) of (3.14) and in (vi) of (3.15). With 'liquid-vowel' sequence, the whole syllable is deleted as shown in (iv & v) of (3.15). Indee

most words with final 'liquid-vowel' sequence, [re], could be said in isolation without the sequence in Asante-Twi.[18] Thus, it could be assumed that the short forms rather enter into the compound construction. That is why the 'liquid-vowel' sequence is excluded in the schematization of V-short in (3.16b).

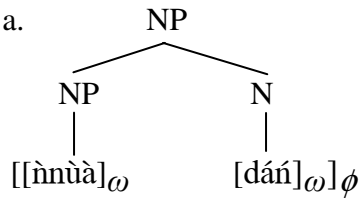
3.4 Domain for compound and its internal rules

At a glance, it is obvious that the syntactic phrase of NP, as noted in (3.3), immediately constitutes the domain of N-N and N-Adj compound constructions and, especially, the rules that occur in them. However, following the observations and proposals made in chapters *one* and *two* that the involvement of syntax in phonological rule analysis is only remote, I contend and show in the following that a particular prosodic domain, the phonological phrase (ϕ), instead, is the required domain. In addition and more importantly, it is properties of the ϕ that the rules we have identified and explained in compounds, particularly H-Deletion, refer to for application.

I suggest that a compound in Akan is attained where the NP-internal constituents (i.e., N-N or N-Adj) could also map into one ϕ. Otherwise, as will become evident, a compound is not obtained. Considering the Strict Layer Hypothesis (SLH: Selkirk 1984, 1986, etc.), which requires each prosodic domain to contain only pieces of the immediately lower domain, each constituent in the NP-mapped ϕ is also a prosodic word (ω), as shown in (3.17a & b) for N-N and N-Adj compounds respectively.

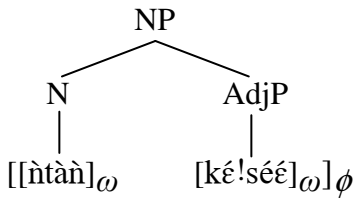
[18] The nouns, *ètîré* 'the head' and *ɔ̀yéré* 'wife' could be said as *ètî* and *ɔ̀yé* respectively. Others are *kyèrè* 'to catch' as *kyè*; *pĭrè* 'restlessness' as *pĭ*; etc.

(3.17) a.



'wooden-house'

b.



'great oath'

I also suggest that the basic tonal rule (in N1), H-Deletion, only applies before N2 or Adj where the two compound members are within a primary *ϕ*. In other words, H-Deletion would fail to apply where NP is not immediately contained in one *ϕ*. Nonetheless, as I will show in section *3.6*, a compound could still be derived through *ϕ*-rephrasing, unless N2 or Adj immediately constitutes a separate *ϕ*. I will show that an alternative tone rule to H-Deletion, B-A, predicted by the ensuing prosodic domain boundaries is set off within the compounds that are attained through *ϕ*-rephrasing.

Up to this point, it is undeniably true that the basic syntactic structure/domain, NP, is also adequate for the N-N and N-Adj compound constructions and for the application of H-Deletion. In the following, I introduce more issues in the compounds that motivate the use of prosodic analysis (in the explanation of rule applications) and render direct-syntax analysis (of phrasal rules) inadequate.

3.4.1 Tonal structure of N1 and H-Deletion

It has been observed that H-Deletion consistently applies in compound constructions irrespective of the syllable or segmental representation of the compound members involved. However, a scrutiny of a few other N-N compounds (compared with those we have seen so far) reveals that H-Deletion is responsive to the tonal structure or pattern

N1. I have observed that the tonal structure of NI must have an initial L and a final H to allow the application of H-Deletion in it. With this information, the suggestion here is that there is an active tonal condition in place, non-realization of which N1 fails to undergo H-Deletion. Following Marfo (2001) and Marfo (2004a), I refer to this condition as 'Word-Edge (ð...ơ)', stated in (3.18).

(3.18) *Word-Edge (ð...ơ)*

H tones of N1 must delete in N_1-N_2 compounds whose initial and final tones are L and H respectively.

I contend that the initial L tone that is required by Word-Edge is necessary for a (default tone) takeover in N1 following the application of H-Deletion. As can be seen in (3.19i-iii), therefore, H-Deletion does not apply in N1s that are H-initial.

(3.19) *Word-Edge* violation and non-application of *H-Deletion*

	N —— N		Compound	
i.	lɔ́rĭ, èkwáń	'lorry, a way'	» lɔ́rĭkwáń	'a street'
ii.	ádàsà, m̀má	'people, children'	» ádàsàm̀má	'mankind'
iii.	táyà, àkóré	'catapult, a branch'	» táyà kóré	'… for catapult'
iv.	kòóbì, ǹkwáń	'salted-fish, soup'	» kòóbìǹkwáń	'fish soup'
v.	òwúrà, kwààkú	'lord, personal name'	» Òwúràkú	'PN'

Also, observe in (3.19iv & v) that, even where there is an initial L tone, since Word-Edge also prohibits a final L tone on N1, H-Deletion still fails to apply. This part of Word-Edge could be reasoned in two ways: Firstly, considering the fact that H-Deleti

proceeds from the right-edge of N1 through to its left-edge and that only H tones are susceptible to the rule, H-Deletion can neither possibly bypass nor delete the final L tone before deleting succeeding leftward H tones. Secondly, assuming the succeeding leftward H tones could be deleted, in the sense of OCP, a final L will constitute a sequence of identical tones with the default L spreading towards it. Thus, in (3.19iv & v), H-Deletion is pre-empted for tonal structure well-formedness in the resulting compound. As shown in (3.20), a tonal alteration version of (3.19), forcing H-Deletion to apply in N1 in these cases will only result in tonal structure ill-formedness and, for that matter, incorrect phonetic forms.

(3.20) Tonal ill-formedness with *H-Deletion*

	N —— N		Compound	
i.	lɔ́rì, èkwáń	'lorry, a way'	» *lɔ̀rǐkwáń	'a street'
ii.	ádàsà, m̀má	'human, children'	» *àdàsàm̀má	'mankind'
iii.	táyà, àkóré	'catapult, a branch'	» *tàyà kóré	'… for catapult'
iv.	kòóbì, ǹkwáń	'salted-fish, soup'	» *kòòbǐǹkwáń	'fish soup'
v.	òwúrà, kwààkú	'lord, PN'	» * Òwùràkú	'a PN'

It is important to note that, unlike in N-N compounds, Word-Edge is irrelevant to the application of H-Deletion in N-Adj compounds. Thus, as also shown in (3.21), H-Deletion could apply in N1s regardless of their violation of Word-Edge. Recall that H-Deletion is also an optional rule in non-lexicalized N-Adj compounds. So, the lexical tones of the N1s in (3.21) could also be maintained.

(3.21) Irrelevance of Word-Edge in N-Adjs

	N —— Adj		Compound	
i.	lɔ̀rì, kétéwá	'lorry, small'	» lɔ̀rì kétéwá	'a small car'
ii.	òwúrà, pápá	'lord, good'	» òwùràpá(pá)	'a good master'
iii.	táyà, kèséé	'catapult, big'	» tàyàké!séé	'a big catapult'
iv.	dúkù, téńtéń	'salted-fish, soup'	» dùkùtéńtéń	'a long scarf'
v.	bɔ́tɔ́, fó!fórɔ́	'a sack, new'	» bɔ̀tɔ̀ fó!fórɔ́	'a new sack'

The irrelevance of Word-Edge in N-Adj compounds may be due to a reasoning that an independent set of rules applies in N-Adj compounds. This position of reasoning is supported by the additional rule of H-Insertion in N-Adj compounds, observed in section *3.3.1.2*. Alternatively, it may be explained that H-Deletion (as a well-conditioned rule in N-N compounds) is copied and indiscriminately applied in all tonal structure of N1 in N-Adj compounds.

3.4.2 Exceptions to H-Deletion and the essence of p-structure

From the discussions in section *3.4.1*, one would expect that whenever the Word-Edge condition is met in N1 H-Deletion should take place, but this is not the case. As a characteristic of many phonological rules and as noted by Dolphyne (1988) and Anyidoho (1990), there are a few N-N compounds within which H-Deletion does not apply in N1, even though the N1s satisfy Word-Edge. Some of these compounds are shown in (3.22). On the basis of the mapping theory proposed in this work, Compositional Mapping Theory (CMT) (noted in chapter *one*; (2.15)), in this section, I explain that these few N-N compounds are contained in the ϕ in a different way. In t interim, however, let us consider them as exceptions to H-Deletion.

(3.22) Exceptions to H-Deletion

	N —— N		Compound	
i.	àkókɔ́, ɔ̀níní	'chicken, male'	» àkókɔ́níní	'cockerel'
ii.	ɛ̀kɔ́ń, ɛ̀pó	'the neck, knot'	» ɛ̀kɔ́ḿpó	'goiter'
iii.	ɛ̀sóró, àbóá	'sky, animal'	» à/ɛ̀sóróbóá	'e.g. bat'
iv.	ɛ̀tíré, ǹnwíí	'the head, hair'	» ɛ̀tí!nwíí	'hair'
v.	yàréɛ́, m̀pá	'sickness, a bed'	» yàré!pá	'sick bed'
vi.	àsɔ́ré, ɛ̀dáń	'worship, building'	» àsɔ́ré!dáń	'church'

Following the seeming inconsistency that the data in (3.22) bring in the application of H-Deletion, I now highlight why rule applications (here, H-Deletion) are better analyzed with prosodic considerations. Observe that, with direct-syntax analysis, the compounds in (3.22) would just have to be regarded as exceptions to H-Deletion because N1 and N2 still constitute a common syntactic category of NP, just like with those within which the rule consistently applies. In addition, each N1 meets the Word-Edge condition, failure of which would have explained the non-application of H-Deletion. With prosodic account, however, it could be conveniently explained that these compounds are not exceptions (to H-Deletion) at all. Instead, they constitute a case of mapping where the desired prosodic domain for H-Deletion application is not attained. I explain the domain non-attainment in (3.22) as follows.

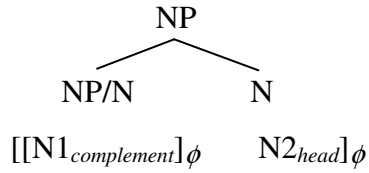
Tones are assigned to syllables at the lexical level in Akan, just as in other tone languages, such as Yoruba, Bambara, etc. Since tone is not generally assigned post-lexically to infer or explain accentual structures, as in a language like Kimatuumbi (Odden 1987), I assume that an assigned tone or tonal structure at the lexical level

also inherently accentuated (Marfo 2004a). However, we do not expect maintenance of this lexical and inherently accentuated tonal structure in a post-lexical environment or in a construction like the N-N compound if a particular rule has to apply in it. In compound constructions, therefore, the tonal structure of N1 must yield to H-Deletion once it meets the Word-Edge condition. This is not the case in (3.22).

I explain that the failure of N1s in (3.22) to allow H-Deletion is due to the significance of a phonological factor, which I refer to as tonal prominence and which is realized in the N1s. Tonal prominence enforces the maintenance of the lexical tone structure (and, for that matter, the inherent accentuation) of N1s in the post-lexical environment of N-N compounds as well. This explanation is echoed by (ii (b)) of CMT; i.e., *a tonally prominent lexical complement of a branching NP primarily maps into one* ϕ (see chapter *one*; (2.15)).[19] From the point of view of CMT mapping, therefore, the failure of H-Deletion in (3.22) is due to the fact that the complements (N1s) had primarily constituted separate ϕs through the mandate of tonal prominence before rephrasing with N2. The (tonal) prominence motivated rephrasing results in ϕ-domain subcategorization frame given in (3.23) below. This ϕ-domain subcategorization frame (and others in chapter *five*) is based (or inspired) on one proposed in Zec and Inkelas (1990) in their explanation of issues relating to presentational particle, *fa*, in Hausa. In the same work, Zec and Inkelas also propose a ω-domain subcategorization frame for clitics in Serbo-Croatian.

[19] The basis of tonal prominence is given in the following section, *3.4.3*. A similar prosodic explanation is made by Zec and Inkelas (1990) in their explanation of the distribution of the presentational particle, *fa*, in Hausa. Among other environments, they contend that *fa* is also licensed to appear before a constituent that is *intonationally emphasized*.

(3.23) *Prosodization on the basis of CMT mapping*



I suggest that the N1s (i.e., the tonally prominent complements) in (3.22) set up the frame for the purpose of integration. That is, even though each N1 is immediately contained in one ϕ, in order to realize a compound, each N2 also needs to be integrated into the domain of the compound, ϕ. The integration is also necessary because an N2 in the singular cannot map into a separate ϕ, although the sister, N1, has mapped separately. Since an N2 has to be prosodized, the subcategorization frame makes it possible for it to be contained in a common ϕ with another ϕ; i.e., that of N1. Once the N1 had phrased separately, it would have been possible for the N2 to phrase separately as well, but for its singularity. In section *3.6*, I show that N2 phrases separately where it is in the plural form.

Indeed, containing one prosodic domain in another of the same kind (or at the same level), presently ϕ in ϕ, violates the first of the basic principles (given in chapter *one*; (1.3)) on which the p-structure is established – i.e., 'a given non-terminal unit of the prosodic hierarchy, X^P is composed of one or more units of the immediately lower category X^{P-1}' – and, of course, SLH. Selkirk (1996: 90) recasts the principle in constraint terms as *NONRECURSIVITY* (i.e., *no* C^i *dominates* C^j, j = i). However, considering this principle/constraint in optimality theoretic explications, it could be dominated by another constraint that allows such a recursion; e.g., *RECUR*; sayin *recursion is allowed in each prosodic domain*.

Returning to the frame in (3.23), [[N1]$_{\phi}$ N2]$_{\phi}$, observe that the primary ϕ constitution of N1 institutes a right-edge ϕ-boundary between it and N2. Considering the fact that H-Deletion is only prompted within a primary ϕ of two ωs, I urge notice to the fact that it is this internal boundary that thwarts the triggering domain of H-Deletion and desensitizes its application in the compounds in (3.22).

3.4.3 Basis of tonal prominence and rule applications

Exploring the idea of tonal prominence introduced in the immediately preceding section further, I explain that it is inspired on the Tonal Prominence scale (de Lacy 2002: 1-3), which proposes that higher tone is more prominent than lower tone. Relating this idea to Akan, a two-tone language, it follows that an H tone is prominent than an L tone (i.e., *H* > *L*) or a H-involved tone structure is prominent than all L tone structure (i.e., …*H*… > *L*…). The prominence status of an H tone is emphasized at the post-lexical level where the H tone(s) does not submit to an occurring phrasal rule, here H-Deletion.

The need for tonal prominence establishment in the tone structure of some complements in compounds also stems from phonetic representation (i.e., actual pronunciation) of the resulting compound. Where it is appropriate, therefore, tonal prominence is phonetically motivated in some 'Word-Edge respected' N1s. This explains that the non-application of H-Deletion in (3.22) is not just an exception. Instead, tonal prominence had enforced each N1 to primarily phrase separately.

It is important to note that the realization of tonal prominence in an N1 does not necessarily block the formation of the compound. As structured in (3.23), it has been noted that the 'prominence induced' primary ϕ of N1 only results in a domain recursio

where one ϕ is nested in another ϕ, thereby finally resulting in domain of a compound. As exemplified in (3.24) below, a reanalysis of (3.22), both the construction of a compound and the non-application of H-Deletion are adequately accounted for within the p-structure of the grammar.

(3.24) Domain recursion and Non-application of H-Deletion

	N ——— N		Compound	
i.	[[àkókɔ́]ϕ ònînî]ϕ	'chicken, male'	» àkókɔ́nînî	'cockerel'
ii.	[[ɛ̀kɔ́ǹ]ϕ ɛ̀pó]ϕ	'the neck, knot'	» ɛ̀kɔ́mpó	'goiter'
iii.	[[ɛ̀sóró]ϕ àbóá]ϕ	'sky, animal'	» à/ɛ̀sóróbóá	'e.g. bat'
iv.	[[èt̂íré]ϕ ǹnwîî]ϕ	'the head, hair'	» èt̂í!nwîî	'hair'
v.	[[yàréɛ́]ϕ m̀pá]ϕ	'sickness, a bed'	» yàré!pá	'sick bed'
vi.	[[àsɔ́ré]ϕ ɛ̀dáǹ]ϕ	'worship, building'	» àsɔ́ré!dáǹ	'church'

In addition, observe in (3.24) that the rules, V-Short and In-Seg-Deletion, apply. Unlike H-Deletion, they are not restricted to apply in a primary ϕ. Both V-Short and In-Seg-Deletion apply as long as the compound members are contained in one ϕ, hence the application of V-Short in (3.24v) and the application of In-Seg-Deletion in all the compounds.[20] It will become evident in section *3.6* that where N-N or N-Adj sequences in an NP individually phrase into separate ϕs, in which case there is also a left boundary to the N2 or Adj, they cannot rephrase into a common ϕ. In this way, a compound does not result and none of the rules, H-Deletion, In-Seg-Deletion and V-Short, applies.

[20] Once again, let us note that the initial single-segment nasals in N2s in (3.24iv & v) could remain; i.e., as *èt̂í!ǹnwîî* and *yàré!m̀pá*.

3.4.4 Domain recursion and boundary assimilation

Following the ϕ recursion that desensitizes the application of H-Deletion, an alternative tone sandhi is set off. This tone sandhi has already been noted in chapters *one* and *two* as B-A (i.e., the boundary assimilation rule) and, in its application, an onsetless or single-segment initial syllable of a succeeding word is assimilated by the final tone of the preceding word. So, in the N-N compounds in (3.24) above, repeated in (3.25) below for ease of reference, observe that B-A initiates from the final H tone of the N1 and realizes in the initial onsetless or single-segment syllable of N2. Domain-wise, however, it is important to note that the ensuing internal ϕ-boundary in the recursive structure conditions B-A, ϕ-domain juncture rule. Schematized in (3.26), therefore, B-A could not have applied without the internal ϕ-boundary.

(3.25) Domain recursion and application of B-A

i.	[[àkókɔ́]ϕ ònínî]ϕ	'chicken, male'	» àkókɔ́nínî	'cockerel'
ii.	[[ɛ̀kɔ́ń]ϕ ɛ̀pó]ϕ	'the neck, knot'	» ɛ̀kɔ́mpó	'goiter'
iii.	[[ɛ̀sóró]ϕ àbóá]ϕ	'sky, animal'	» à/ɛ̀sóróbóá	'e.g. bat'
iv.	[[ètî́ré]ϕ ànwîî]ϕ	'the head, hair'	» ètî!nwîî	'hair'
v.	[[yàréɛ́]ϕ m̀pá]ϕ	'sickness, a bed'	» yàré!pá	'sick bed'
vi.	[[àsɔ́ré]ϕ ɛ̀dáń]ϕ	'worship, building'	» àsɔ́ré!dáń	'church'

(3.26) *The boundary assimilation rule*

$$[\grave{\sigma}_{[-Onset]}\text{–}\sigma]_{\omega} \rightarrow [\acute{\sigma}_{[-Onset]}\text{–}\sigma]_{\omega} \quad / \; [\,[_{N1} \ldots \acute{\sigma}]_{\phi} \; \underline{\quad} \,]_{\phi}$$

Since in a compound an onsetless or single-segment initial syllable in N2 is delet
(recall In-Seg-Deletion), the effect of B-A is not obvious if the lexical L tone of t

syllable is deleted along with it. Such is the cases in (3.25i–iii) and, here, I refer to the application of B-A as assimilation-by-default. On the other hand, where the lexical L tone is not deleted along with the onsetless or single-segment initial syllable, B-A is realized by the dislodging of this lexical tone (hence, assimilation-by-dislodging) by the 'assimilating' H in N1. As a result, as also shown in the cases in (3.25iv-vi), the dislodged L tone causes pitch reduction in the stem-initial H tone, hence the downstep. With prosodic analysis, therefore, explanation of tonal alterations in N2 is also clarified along with all the other rules we have observed.

3.5 Domain of compounds in Attribute-Value Matrix

In order to relate phonological information to the parallel structures of LFG, in particular, the c-structure, Butt and King (1998) encode the p-structure in terms of an attribute-value matrix (AVM). In the encoding, Butt and King (1998) explain that the AVM of the p-structure is projected from the hierarchical (pseudo-tree) structure of the p-structure, not from the c-structure. Perhaps, this is due to the fact that the p-structure involves more than the c-structural information. Butt and King also explain that the AVM of the p-structure contains attributes such as phonological form (P-FORM), prosodic domain (DOM), tone, etc. (see (3.27) below). In this sense, as they put it, the attributes in the p-structure are generally prosodic in nature. Through the enforcement of *projection precedence*, they further contend that, for this AVM to be useful in all phonological processes, the linear order of the phonological string should be maintained in the AVM. Thus, the AVM of the p-structure is unlike that of the f-structure, which is not ordered. Butt and King do not particularly explain *projection precedence*. In th

work, I liken it to precedence relation between nodes in the syntax. For instance, between nodes A and B, precedence is explained in the syntax as 'node *A* precedes node *B* if and only if *B* is to the right of *A* and neither *A* nor *B* dominates the other'.

In this work, I particularly make use of the AVM of the p-structure to give explicit representation of lexical and phrasal tone structure in a construction besides the prosodic mappings. As could be observed in (3.27) below, the AVMs emphasize the individual tonal structure that obtains in a compound involving single ϕ-phrasing (i.e., $[\ldots]_{\phi}$) on one hand and one involving ϕ-rephrasing (i.e., $[[\ldots]_{\phi} \ldots]_{\phi}$) on the other hand.

(3.27) *P-structure in AVM*

a. *ǹnùàdáń* 'wooden house'

$$\begin{bmatrix} \text{DOM} & \phi \\ \text{P-FORM} & \text{nnuadan} \\ \left\{ \begin{bmatrix} \text{DOM} & \omega \\ \text{LEX-TONE} & \text{L-LH} \\ \text{P-FORM} & \text{n-nua} \end{bmatrix} \right. & \\ \left. \begin{bmatrix} \text{DOM} & \omega \\ \text{LEX-TONE} & \text{L-H} \\ \text{P-FORM} & \text{ɛ-dan} \end{bmatrix} \right\} & \\ \text{BND-TONE} & \text{L-H} \end{bmatrix}$$

b. *àkókɔ́nîní* 'cockerel'

$$\begin{bmatrix} \text{DOM} & \phi \\ \text{P-FORM} & \text{akokɔnini} \\ \left\{ \begin{bmatrix} \text{DOM} & \phi \\ \text{LEX-TONE} & \text{L-H}_{Prom} \\ \text{P-FORM} & \text{a-kokɔ} \end{bmatrix} \right. & \\ \left. \left\{ \begin{bmatrix} \text{DOM} & \omega \\ \text{LEX-TONE} & \text{L-H} \\ \text{P-FORM} & \text{o-nini} \end{bmatrix} \right\} \right\} & \\ \text{BND-TONE} & \text{H-H} \end{bmatrix}$$

In (3.27a), observe that a 'L-H' word boundary tone structure (BND-TONE) attains and characterizes the resulting compound, which involves a single ϕ-domain. As explained earlier and could be seen in (3.27a), this BND-TONE obtains from the fact that both compound members are ωs within a primary ϕ. Accordingly, the lexical tone structure (LEX-TONE) in the stem of N1 (i.e., -LH) realizes as L through the application of the H-Deletion rule, while the LEX-TONE in the stem of N2 (i.e., -H) is maintained.

In the case of the compound involving ϕ-rephrasing in (3.27b) on the other hand, a 'H-H' BND-TONE is attained. As has also been explained before, observe that N1 constitutes a separate ϕ within another ϕ. This has been explained on the basis of tonal prominence and, with it, H-Deletion is blocked (in N1). Both constituents in the resulting compound accordingly maintain the lexical tone structures in the stems and 'H-H' boundary tone appropriately obtains. Domain mapping in the p-structure then explains the differences in BND-TONE between (3.27a & b).

3.6 Number, p-structure and compound constructions

In Akan, the morphophonemic property of number is regularly represented by a prefix (and a suffix in a few cases) in the noun (Osam 1993; Bodomo and Marfo 2002). Almost all Akan nouns are underlyingly prefixed in their singular forms.[21] For this

[21] Singular number is normally marked by a vowel, as can be seen in (3.28) below. A few other nouns are said without a prefix though; e.g. *bɔ́tɔ́* 'sack', but they are prefixed in their plural forms; i.e., *mm**m**ɔ́tɔ́* (< *m**b**ɔtɔ*) or *àbɔ́tɔ́* 'sacks'. Others also have prefixes in their singular forms, which are simply unchangeable in the plural. These are the uncountable nouns; e.g., *ǹsúó* 'water', *ǹkwáń* 'soup'. They are conceptually classified as plural forms based on their mass or uncountable identity. In the present discussion, however, I still consider them as default forms, along with the regular singular noun forms.

reason and following Marfo (2004a), I assume in this work that the singular form of the noun is the default or unmarked case, with which there has not been any mutation, and the plural form is the marked case.

In the plural forms, number is always marked in the prefix by either the vowel /A-/ in ATR harmony with the vowels in the stem, as shown in (3.28a), or a nasal prefix /N-/ that is homorganic to the stem-initial consonant, as also shown in (3.28b). Through these number affixations to the noun, Bodomo and Marfo (2002) distinguish nine (9) noun classes for Akan (see appendix *II* for these classes and some examples).

(3.28a)

Singular			Plural (*A*-prefix)	
è-kúɔ́	'rhino'	»	à-kúɔ́	'rhinos'
ɔ-pɛ́!tɛ́	'vulture'	»	à-pɛ́!tɛ́	'vultures'
è-fíé	'house'	»	à-fíé	'houses'
ò-yúó	'antelope'	»	à-yúó	'antelopes'

(3.28b)

Singular			Plural (*N*-prefix)	
ɔ-kŕámáń	'dog'	»	ŋ̀-kŕámáń	'dogs'
è-dùá	'tree'	»	ǹ-nùá	'trees'
à-fidíé	'trap'	»	ŋ̀-fidíé	'traps'
è-bŕɛ́	'time'	»	m̀-*b*ŕɛ́ » m̀-*m*ŕɛ́	'times'

Discussions in this section focus on the plural forms of the nouns, with which number is made markedly distinct. In the N-N word order, number is sometimes represented in both constituents for an optional agreement in number or only in N1 just for plurality

the phrase/compound. On the contrary, number must be represented in both constituents for grammaticality in the case of N-Adj word order. Note here that number representation in an Adj (adjective) actually constitutes nominalization of the adjective. In fact, besides compound construction, nominalization of adjectives (and verbs) is also one of the ways by which Akan increases its stock of vocabulary.

When number is represented in the head (i.e., N2) of N-N word orders and in the complement (i.e., Adj) of N-Adj word orders, all the essential rules we have observed in compounds fail to apply in both cases, except B-A. Indeed, as has been witnessed in chapter *two*, B-A applies at ϕ-domain junctures in larger constructions as well. So, unlike the other rules (i.e., H-Deletion, In-Seg-Deletion and V-Short), it can be said that B-A is not unique to compounds. Since H-Deletion, In-Seg-Deletion and V-Short are the true compound internal rules, I presume that where all of them fail to apply in an N-N or N-Adj order, a compound cannot be realized. As can be seen in (3.29) and (3.30) below, such is the case when number appears in the succeeding N2 (in N-N) or Adj (in N-Adj); B-A consistently applies while H-Deletion, In-Seg-Deletion and V-Short fail to apply. So, compounds are not attained. Data collected do not support the starred cases, with which H-Deletion has been forced to apply.

(3.29) Number in N2 (non-realization of compound)

	N —— *pl*-N		N-N sequence	*Compound
i.	ǹyàmé, ǹ-sɛ́mí 'a god, stories'	»	ǹyàmé ǹ!sɛ́mí 'stories about god'	*ǹyàmè ǹsɛ́mí
ii.	sàǹkúó, ǹ-nwómí 'piano, songs'	»	sàǹkúó ǹ!nwómí 'piano music'	*sàǹkùò ǹnwómí

iii.	àhɔ́!hóɔ́, à-dáń 'guests, houses'	»	àhɔ́!hóɔ́ á!dáń 'guest houses'	*àhɔ̀hòɔ̀ àdáń
iv.	dwóń!sɔ́, à-dáń 'urine, houses'	»	dwóń!sɔ́ á!dáń 'places of urinal'	*dwòǹsɔ̀ àdáń

(3.30) Number representation in Adj (non-realization of compound)

	N —— *pl*-Adj		N-Adj sequence	*Compound
i.	à-kyɛ́, à-tùntùḿ 'hats, black ones'	»	àkyɛ́ átùntùḿ 'black hats'	*àkyɛ̀ àtùntùḿ
ii.	à-sɛ́ń, à-kɛ̀séɛ́ 'bowls, big ones'	»	àsɛ́ń ákɛ̀séɛ́ 'big bowls'	*àsɛ̀ǹ àkɛ̀séɛ́
iii.	ǹ-tóá, ǹ-kétéwá 'knives, small ones'	»	ǹtóá ń!kétéwá 'small knives'	*ǹtòà ǹkétéwá
iv.	ǹtòmá, à-fitáá 'clothes, white ones'	»	ǹtòmá á!fitáá 'white clothes'	*ǹtòmà àfitáá

In terms of prosodic analysis, it has been noted that a N-N/N-Adj compound is obtained where the two constituents map into one ϕ, either primarily or recursively. Based on this fact, it is important to note that compounds are not obtained in (3.29) and (3.30) because the constituents could not be mapped to a common ϕ. As shown in (3.31) for N-N and N-Adj sequences, observe that the individual syntactic/prosodic words in the NP constitute separate ϕs.

(3.31)

	C-structure		P-structure	
a.	$[_{NP}$ NP $N_{[+Num]}]$	→	$[$àhɔ́!hóɔ́$]_{\phi}$ [**á**-!dáń$]_{\phi}$	'houses for guest'
b.	$[_{NP}$ N $AdjP_{[+Num]}]$	→	$[$àkyɛ́$]_{\phi}$ [**á**-tùntùḿ$]_{\phi}$	'black hats'

The individual words constitute separate ϕs because, as a marked morphophonemic unit, the plural marker in N2 and Adj in the N-N and N-Adj sequences respectively renders them morphologically complex to be contained in one ϕ with the N1. In other words, this morphophonemic complexity in the succeeding N2/Adj mandates them to phrase separately, as predicted by point ((*ii*) c) of the proposed mapping theory, CMT, given in chapter *two*; (2.15) – i.e., *a succeeding number-marked NP-internal constituent constitutes a separate* ϕ.

Considering ϕ-rephrasing (resulting in domain recursion) as observed in some compounds, one would wonder why the separately mapped N2 or Adj does not rephrase with N1. I explain this with the suggestion that ϕ-rephrasing is only 'rightward directed' in Akan. That is, ϕ-rephrasing should be initiated from the left-aligned constituent within the NP. This calls for an order of mapping where a primary ϕ of N1 rephrases with N2 or Adj (i.e., $[\text{N}\mathit{1}]_{\phi} \rightarrow [[\text{N}\mathit{1}]_{\phi}\ \text{N2/Adj}]_{\phi}$), but not one with which a primary ϕ of N2 or Adj rephrases with N1 (i.e., $*[\text{N}\mathit{2}/\text{Adj}]_{\phi} \rightarrow [\text{N}\mathit{1}\ [\text{N}\mathit{2}/\text{Adj}]_{\phi}\ ]_{\phi}$). To put it differently, a succeeding N2 or Adj does not institute a subcategorization frame for ϕ-domain recursion. The underlying assumption here, therefore, is that ϕ-rephrasing is a property of N1. So, where N2 or Adj primarily phrase separately, as in the cases in (3.29) and (3.30), N1 must also map into a separate ϕ.

Now, following the failure of NPs in (3.29) and (3.30) to be contained in one ϕ, the exclusive properties of the ϕ-domain that predict H-Deletion, In-Seg-Deletion, and V-Short are not attained, hence the non-application of these rules in them. Recall that H-Deletion only applies within a primary ϕ of two ωs while In-Seg-Deletion and V-Short apply in a ϕ, but not necessarily in a primary one.

Further, observe in (3.30i & ii), repeated in (3.32) below, that H-Insertion which applies in an L-toned stem-initial syllable in N-Adj sequences, also fails to apply in the Adjs. Perhaps, the rule failed to apply here because of the nominalization of the Adjs; i.e., it only applies in 'true' Adjs. Besides this explanation, however, domain-wise, prosodic reasoning is appropriate here. That is, as a domain-limit rule, H-Insertion only applies where the absorbing L-toned stem-initial syllable of the Adj absolutely aligns to the left-edge of the *ω*-/*ϕ*-domain within which it is contained. As can be observed in (3.32), instead of the stem-initial syllable, the number marker (prefix) in the (nominalized) Adj, constituting an extra syllable, occupies the immediate left-edge of the resulting *ϕ*-domain. Thereby, H-Insertion is rendered inapplicable.

(3.32) Number representation in Adj (non-realization of compound)

	N —— *pl*-N			*Compound
i.	à-kyɛ́, à-tùntùḿ 'hats, black ones'	»	àkyɛ́ átùntùḿ 'black hats'	*àkyɛ̀ àtùntùḿ
ii.	à-sɛ́ń, à-kɛ̀sɛ́ɛ́ 'bowls, big ones'	»	àsɛ́ń ákɛ̀sɛ́ɛ́ 'big bowls'	*àsɛ̀ǹ àkɛ̀sɛ́ɛ́

Having observed where and how H-Insertion applies, it is important to note that the H tone that is realized on the nominalizing prefix of the Adjs in (3.32) and, indeed, the prefixes of N2s in (3.29) is not due to H-Insertion but, rather, the application of B-A. It has been noted that B-A, as a domain juncture rule, is triggered when *ϕ*-boundary (or boundaries) is attained between N1 and N2/Adj. Following the attainment of *ϕ*-boundaries between the constituents, B-A applies consistently in the data.

3.7 Summary

The structure of N-N and N-Adj compounds has been explored in this chapter. The desirability of the p-structure in the phonology-syntax interface analysis of phrasal rules in compounds has been shown. It has been realized that analysis within the p-structure enables exhaustive explanation of phrasal rule applications. This is because, depending on other necessary grammatical information available, the same syntactic structure (in this chapter, NP) could be prosodized differently. As has been observed with expressions of the proposed mapping theory, Compositional Mapping Theory (CMT), it is the involvement of other grammatical information in rule applications that make the domain(s) immediately given in the syntax inadequate or inappropriate. It has been observed in compound constructions that it is desirable to explain phrasal rules from the perspective of the phonology-syntax interface. This is because syntactic structures significantly contribute to the input base on which the p-structure is parsed for explanation of phrasal rule applications.

Some rules have been identified and discussed. With prosodic phonological manipulations, where and when any one of them should apply has been established. It has been shown that the H-Deletion rule is a strict ϕ-internal rule – i.e., it applies within a primary ϕ. 'Initial segment deletion' (In-Seg-Deletion) and 'vocalic sequence shortening' (V-Short) are also noted as ϕ-internal rules but, unlike H-Deletion, it has been explained that they are not restricted in a primary ϕ in application. H-Insertion has also been shown to be sensitive to a stem-initial syllable that immediately aligns to the left-edge of a succeeding ω/ϕ-domain only while 'boundary assimilation' (B-A) is explained as a rule that applies across ϕ-boundary or boundaries.

Through attribute-value matrix (AVM) representation, the two types of compound domains identified in this study; i.e., single ϕ-phrasing and ϕ-rephrasing, and the surface tone structure each of them predicts have been presented. Having been able to also explain the construction or otherwise of N-N and N-Adj compounds and the application of occurring internal phrasal rules adequately with prosodic considerations, it is evident that the p-structure (and, for that matter, the prosodic hierarchy) plays a crucial role in the grammar. In chapter *five*, phrasal phenomena that occur in simple clauses, topic, focus and *wh*-question fronting constructions are identified and appropriately discussed in the same theory, p-structure, after the (syntactic) structures of these constructions are discussed in the following chapter, chapter *four*.

CHAPTER FOUR

STRUCTURE OF TOPIC, FOCUS AND *WH*-QUESTION CONSTRUCTIONS

4.0 Introduction[22]

We have identified and explained some phrasal rules which apply in compounds within the p-structure of the phonology in chapter *three*. In topic, focus, and *wh*-question fronting constructions of Akan also, some phrasal rules that need to be analyzed within the p-structure obtain. Before the identification and discussion of these phrasal rules (in chapter *five*), however, I discuss the structure of topic, focus, and *wh*-question fronting in Akan and the discourse-contextual information that is expressed in each of them within the LFG framework in this chapter. I show how these constructions in Akan are configured in the c-structure, encoded in the f-structure, and represented in the information structure (i-structure).

It is generally assumed in the literature that topic and focus are pragmatic (and, in some languages, overlay) functions, but are distinguished in the information structure on the basis of specific discourse-contextual expression. This diverse discourse-contextual expression between topic and focus constructions of Akan will be ascertained in this chapter, besides their differences at c-structure. I also show that focus and *wh*-

[22] This chapter is a revised version of Marfo and Bodomo (2004). It gives a detailed account of topic, focus, and *wh*-question fronting constructions in Akan. Indeed, the chapter could be considered as a preparation for the phonology-syntax interface analysis of the phrasal phenomena that occur in Akan topic, focus, and *wh*-question fronting constructions discussed in chapter *five*. However, I have separated it from chapter *five* in order to lessen the length of a combined chapter.

question fronting constructions of Akan share a common c-structure configuration, but that this common c-structure configuration does not entirely translate into a common discourse-contextual expression in the two constructions.

The chapter is organized as follows: In section *4.1*, I describe the c-structure representation and other facts that pertain in each of the constructions as compared to a related canonical clause. Where necessary, I also show the difference(s) and similarities between one construction and another. Individually and in comparison to each other, the discourse-contextual information each of the constructions expresses in the i-structure of the grammar is also described in section *4.2*. Section *4.3* concludes our observations and analyses of the structures of the constructions.

4.1 Representation of the constructions

Topic, focus and *wh*-fronting constructions in Akan involve extra-sentential c-structure representation. In the representation, a constituent (in topic, in focus or in question) appears at the left-periphery of the construction; i.e., scope of an operator function. Thus, as shown in (4.1) below, in the c-structure, where precedence and dominance relations are encoded, these 'scope-taking' constituents show an iconic structural precedence and dominance (hence, prominence) over other constituents in the constructions; basically, the constituents in the embedded canonical clause.

(4.1) $[\ NP_{topic/focus/wh\text{-}word}\ [_{IP}\ NP\ [_{VP}\ V\ NP]]$

In the LFG framework, constructions like topic, focus, and *wh*-fronting, exhibiting this marked word order (in relation to a canonical clause), are described as forms wi

grammaticalized discourse function (DF) (Berman 1997; Bresnan 2000, 2001; etc.) projected to absorb a prominent constituent in the structural hierarchy. Following Saah (1988) and Boadi (1990), I assume in this study that topicalization, focusing and *wh*-fronting in Akan involve extraction and/or dislocation of a particular constituent from a canonical clause position to the left-periphery of the resulting extra-sentential clause. Not intended to undermine the non-derivational position of LFG, this assumption is only made to explain these marked sentence types more clearly from some point in the grammar. In the following sections, I describe the structures of the constructions individually and ascertain similarities and differences between them.

4.1.1 Topic constructions

Discourse-semantically, a topic is often referred to as that constituent that the rest of the sentence is about and the prominent one associated with aspects of given or old information (Givón 1976; Kiss 1995; Frascarelli 2000; Choi 2001; etc.). As given information, it is assumed that a speaker and a hearer have some knowledge about the topic and can identify it (from a previous discourse). In a topic construction, the rest of the sentence is generally treated in the literature as the comment on the topic.

As a pragmatic function, it is generally known that a topic is discourse prominent. However, as given information, topic introduces no new information into the discourse (cf. focus in section *4.1.2*). In fact, in Akan, this lack of newness is clear. A topic only connects its (topic) construction to a previous discourse within which it has been given. As shown between (4.2) and (4.2′), observe that the topicalized constituents, *Kofi* 'PN' and *Kusi* 'PN' in (4.2′a & b), as given information in the previous discours

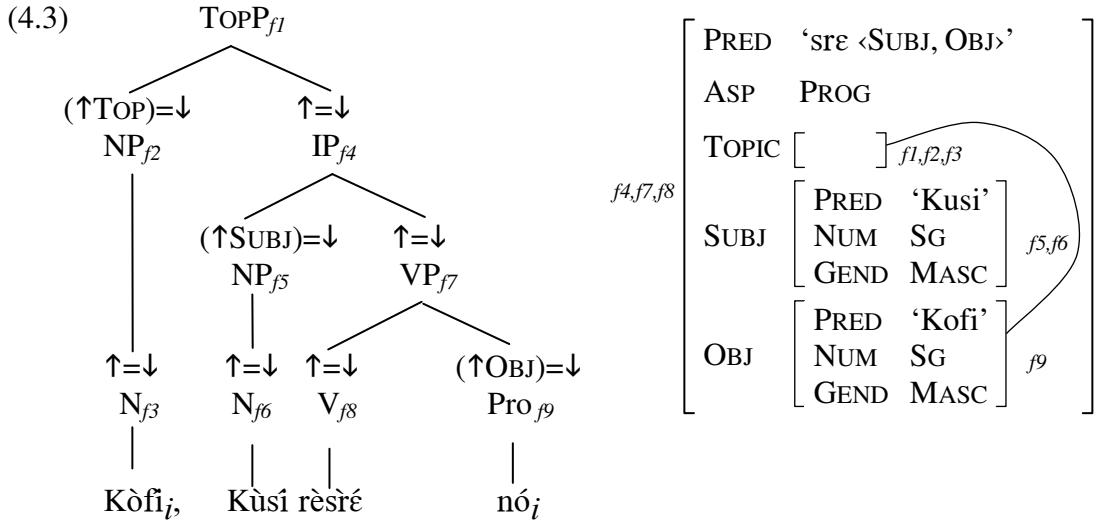
in (4.2a & b) respectively, appropriately connects the topic constructions to these previous discourses. The topic construction in (4.2c′), however, does not relate to the previous discourse in (4.2c), although it is grammatical.

(4.2)	*Previous discourse*		(4.2′)	*Topic constructions*
a.	Kòfí ǹsóɛ́?	⇔	a.	Kòfí$_i$, [$_{IP}$ Kùsí rè-sɍ́ɛ́ nó$_i$]
	Kofi also			Kofi, Kusi PROG-beg 3SG
	'What about Kofi?'			'(about) Kofi, Kusi is begging him.'
b.	Kùsí rè-yɛ́ déɛ́ń?	⇔	b.	Kùsí$_i$, [$_{IP}$ ɔ$_i$-rè-sɍ́ɛ́ Kòfi]
	Kusi PROG-do what			Kusi, 3SG-PROG-beg Kofi
	'What is Kusi doing?'			'(about) Kusi, he is begging Kofi.'
c.	Kùsí rè-yɛ́ déɛ́ń?	⇎	c.	Kòfí$_i$, [$_{IP}$ Kùsí rè-sɍ́ɛ́ nó$_i$]
	Kusi PROG-do what			Kofi, Kusi PROG-beg 3SG
	'What is Kusi doing?'			'(about) Kofi, Kusi is begging him.'

As has already been noted and could be observed from (4.2′), a topic is configurationally encoded in Akan. Additionally, as in Italian (see, e.g., Frascarelli (2000)) and many other languages, an intonational break (indicated by a comma) separates a topic from the comment (i.e., the canonical/lower clause) in the phonetic representation. As the c-structure of the construction in (4.2a′) shows in (4.3), therefore, a topic sits in the specifier position of its functional projection of Topic Phrase (Spec-TOPP). The structures in (4.3) also particularly show the formal functional annotations of the c-structure of LFG, which indicate information flow in it, and how t

(instantiated) c-structure nodes correspond to the attribute-value matrices (AVMs) of an f-structure counterpart through the Structure-Function Mapping theory (Bresnan 2001; Dalrymple 2001; Falk 2001; etc.).

(4.3)



Observe from the data in (4.2a′ & b′), repeated in (4.4a & b) below, that the topicalized object and subject are replaced in the respective canonical clause positions by a pronoun, *ɔ̀nó* (represented as *nó* in the object position (4.4a) and with only the initial syllable, *ɔ̀*, in the subject position (4.4b). In this regard, the fronted constituent is both the DF in the topic construction and an argument function in the embedded canonical clause. Referred to as resumptive pronoun (hence, RPro), this pronoun also agrees with the topic in person and in number.

(4.4) a. [$_{\text{TOPP}}$ Kòfî$_i$, [$_{\text{IP}}$ Kùsî [$_{\text{NP}}$ rè-sɨ́ɛ́ [$_{\text{NP}}$ nó$_i$]]]]

Kofi, Kusi PROG-beg RPro

'(about) Kofi, Kusi is begging him.'

b. [$_{\text{TOPP}}$ Kùsí$_i$, [$_{\text{IP}}$ [$_{\text{NP}}$ ɔ$_i$-] [$_{\text{VP}}$ rè-sɹ̀ɛ́ Kòfí]]

Kusi, RPro- PROG-beg Kofi

'(about) Kusi, he is begging Kofi.'

With its agreement with the topic in person and in number, the RPro depends on the reference of the topic for its own reference.[23] Note however that, with regards to grammatical function, the RPro does not depend on the reference of the topic. Nevertheless, the reference results in an 'antecedent-anaphor' relation; i.e., the RPro is (A-bar) bound by the topic. In the cases in (4.4), the RPros refer back to the topic at Spec-TOPP. The co-indexation indicates the anaphoric relation and the overt grammatical marking of topic.

Concerning the topic/comment distinction, as noted earlier, the whole embedded canonical clause constitutes a comment. It is, however, the RPro (in its appropriate number and person specifications) that puts the interpretation of the comment in the frame of interpretation set by the topic. Following Jacobs (1986: 103), I explain that the topic (and, indeed, all DFs) part of a sentence sets a frame of interpretation and the comment, as a complementary part, is interpreted in accordance with this frame of interpretation set by the topic – i.e., with reference to the topic. It follows then that overt grammatical marking contributes to the relationship between topic and comment in Akan. Therefore, lack of an RPro in canonical clause position or a proper RPro in

[23] The person and number agreement requirement on the RPro in relation to the interpretation of the fronted constituent in Akan effectively distinguishes the language from languages with *intrusive* pronoun. Intrusive pronoun is allowed only as some kind of saving device – e.g., to overcome an island violation (Demirdache 1997: 193). In Akan, however, the pronoun is grammatically required.

canonical clause position renders a topic construction ungrammatical, as can also be observed from the data in (4.5a-d).

(4.5) a. *[$_{TOPP}$ Kòfí$_i$, [$_{IP}$ Kùsî [$_{VP}$ rè-sɪ̀ré ___ $_i$]]]

Kofi, Kusi PROG-beg ___

'(about) Kofi, Kusi is begging him.'

b. *[$_{TOPP}$ Kùsî$_i$, [$_{IP}$ ___ $_i$ [$_{VP}$ rè-sɪ̀ré Kòfí]]]

Kusi, ____ PROG-beg Kofi

'(about) Kusi, he is begging Kofi.'

c. *[$_{TOPP}$ Kòfí$_i$, [$_{IP}$ Kùsî [$_{VP}$ rè-sɪ̀ré *wó*$_i$]]]

Kofi, Kusi PROG-beg 2SG

'(about) Kofi, Kusi is begging you.'

d. *[$_{TOPP}$ Kùsî$_i$, [$_{IP}$ *yɛ̀*$_i$-[$_{VP}$ rè-sɪ̀ré Kòfí]]]

Kusi, 1PL- PROG-beg Kofi

'(about) Kusi, we are begging Kofi.'

The constructions in (4.5a & b) are ungrammatical because there are no RPros in position and, without RPro, the canonical clause structure cannot be interpreted with reference to the topicalized constituent. There are RPros in position in (4.5c & d), as the frame of interpretation demands, but they are still ungrammatical because inappropriate RPros (with respect to number and or person specifications) are in position.

This antecedent-anaphor relation is not a characteristic of topic constructions alone. As will be observed in sections *4.1.2* and *4.1.3*, it is also realized in other extra-sentential constructions as well. The maintenance of the canonical clause structure, ev

in an extra-sentential construction, therefore, seems to be of paramount importance in Akan. Indeed, the maintenance of the canonical clause structure and the anaphoric relation contribute to the importance of explaining these extra-sentential constructions from a canonical standpoint (i.e., for the sake of clarity).

With the anaphoric relation in the extra-sentential clauses, another issue of syntactic significance that demands attention, especially in the present syntactic framework, is the phonetic representation of the RPro in the object and other post-verbal environments. As noted by Saah (1988: 24), referring to Stewart (1963: 149), unlike in the subject position, occurrence of the RPro is very much restricted in post-verbal environments. The restriction in the post-verbal environments has to do with the feature specification of animacy. A distinction is, therefore, made between an overt and a covert manifestation of an RPro.

Where a fronted object is animate, its canonical position is filled with the RPro, "*no*", as has been observed in (4.4a). Conversely, as shown in (4.6a) below, the RPro is covertly represented where the object is inanimate. In this case, the topic is only semantically related to the comment part of the construction. Saah (1992: 221) refers to the lack of overt RPro in the inanimate situation as an 'empty category' (*EC*) situation in Akan. As also shown in (4.6b), a phonetic RPro for an inanimate object in topic is rejected.

(4.6) Kùsí rè-fórò dùá nó
Kusi PROG-climb tree DEF
'Kusi is climbing the tree.'

⇒ a. [$_{\text{TOPP}}$ Dùá nó$_i$, [$_{\text{IP}}$ Kùsî [$_{\text{VP}}$ rè-fóró Ø$_i$]]]

tree DEF, Kusi PROG-climb *e*

'(about) the tree, Kusi is climbing it.'

⇒ b. * [$_{\text{TOPP}}$ Dùá nó$_i$, [$_{\text{IP}}$ Kùsî [$_{\text{VP}}$ rè-fóró nó$_i$]]]

tree DEF, Kusi PROG-climb 3SG

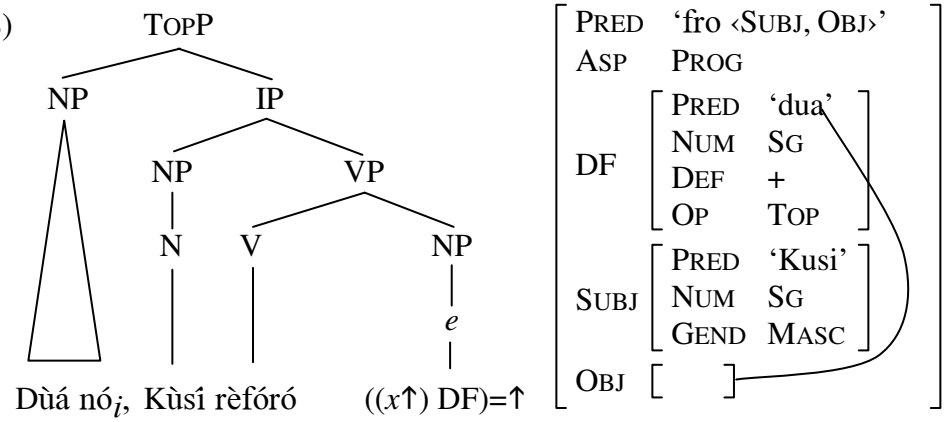
'(about) the tree, Kusi is climbing it.'

In LFG, where it is necessary to show in the c-/f-structures that the inanimate object is covertly represented, some versions account for the phenomenon through the Principle for Identifying Gaps (Bresnan 2001: 181), given in (4.7). This principle links such an *EC* to the Spec-DF (TOPP) constituent, as shown in (4.8) with the construction in (4.6a).

(4.7) *Principle for Identifying Gaps*:

Associate XP → *e* with ((*x*↑) DF)=↑

(4.8)



Through the Principle for Identifying Gaps, the violation of the c-structure principle of Economy of Expression (noted in chapter *two*; section *2.2.1.3*) by having an *EC* in the c-structure is bypassed. At the same time, the Extended Coherence condition, whi

requires a Spec-DF constituent (a non-argument) to be integrated in the argument structure by an association with an argument function in the f-structure, is also met (also see the f-structure in (4.3) for topic integration in the a-structure). I contend that, perhaps, the animacy restriction on objects, and not on subjects, in Akan also put emphasis on the Subject Condition (SC) that constrains the c-structure. As noted in chapter *two*, SC requires every predicate to have a subject. Based on the SC, in Marfo and Bodomo (2004) we posit the condition, Strict Phonetic Subject (SPS) in (4.9) below, which has to be observed in extra-sentential constructions in Akan.

(4.9) *Strict Phonetic Subject*:

Every predicator must have a phonetic subject in the embedded canonical clause of an extra-sentential clause.

SPS is motivated against a possible proposal that an extraposed subject does not need RPro in the canonical clause, since it is still the most prominent in the relational hierarchy and the default DF. In this sense, SPS is not merely a stipulation. In fact, it has to be satisfied in other extra-sentential constructions in Akan as well; e.g. focus constructions (in the next section, *4.1.2*) and relative clauses.

4.1.2 Focus constructions

In the discourse-semantic sense, a focus construction in Akan has a point of prominence within it (Boadi 1974) where new and or contrastive information is intentionally placed for the purpose of emphasis. The constituent that carries this new (or contrastive) information is the focus of the sentence. The rest of the sentence, the embedded canonical clause, constitutes the background of the sentence. The background is al

generally described in the literature as the presupposed material in the sentence (e.g., Boadi (1974), Jacobs (1986), Kroeger (2004)) based on the reasoning that it is shared information among participants of a particular speech setting, the speaker and the hearer(s). On the other hand, as its primary function, focus fills the speaker-hearer informational gap (Butt and King 1998). Based on the notion of presupposition, Zubizarreta (1998: 1) also defines focus as 'the non-presupposed part of a sentence'. I will revisit the discourse-semantic structure of focus in comparison with topic and *wh*-question fronting constructions in sections *4.2.1* and *4.2.2* respectively.

Just as we witnessed with topic constructions, focus constructions (of new and or contrastive information importance) in Akan are also configurationally encoded in the manner that the constituent in focus is extracted from a canonical clause position and placed at the specifier position (i.e., operator scope position) of its extra-sentential projection of focus phrase (Spec-FocP). In (4.10), the sentential head (the verb) and the object argument are put in focus in (4.10a & b) respectively.

(4.10) Kòfí rè-bòá Á!má
Kofi PROG-help Ama
'Kofi is helping Ama.'

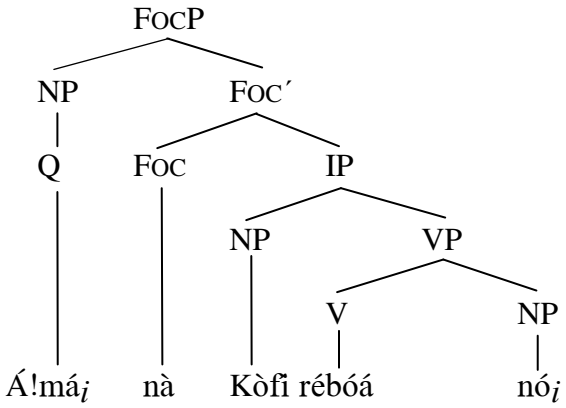
⇒ a. [$_{FocP}$ Bòá$_i$ *nà* [$_{IP}$ Kòfí [$_{VP}$ ré-bóá$_i$ Á!má]]]
help FOC Kofi PROG-help Ama
'It is help (that) Kofi is helping Ama.'

⇒ b. [$_{FocP}$ Á!má$_i$ *nà* [$_{IP}$ Kòfí [$_{IP}$ ré-bóá nó$_i$]]
Ama FOC Kofi PROG-help 3SG
'It is Ama (that) Kofi is helping.'

In addition and unlike in topic constructions, observe in (4.10a & b) that a clitic morpheme, "*na*", referred to as focus marker (FOC) following Saah (1988); Boadi (1974 & 1990) and Marfo (to appear), occurs at the right-edge of the constituent in focus. Boadi (1974: 7) explains that the FOC has the function of narrowing down the referential range of its host, the constituent in focus.[24] The function of the FOC in focus constructions, therefore, is a semantic one; it has discourse information significance.

As also shown with the c-structure of (4.10b) in (4.11), at the right-edge of the constituent in focus, the FOC actually appears in the head position of the functional projection, FOCP.

(4.11)



We have noted in section *4.1.1* that, in the various marked-sentence types of Akan, an RPro replaces a fronted argument function in the canonical clause structure. This explains the occurrence of RPro in the object position of the sentence in (4.10b)/(4.11). However, note in (4.10a) that when the verb is fronted/focused, the same form of the verb-stem remains *in-situ*. In other words, the verb has a discourse function in the front position, but it remains the main verb in the nuclear clause. This is predicate clefting.

[24] The FOC also appears with a fronted *wh*-question function. See section *4.1.2.3* for details.

There is no other way of encoding contrastive (and/or new) focus in Akan besides this marked configuration, within which the FOC can be invoked.[25] That is to say, a constituent cannot be focused *in-situ* in Akan because the FOC cannot be invoked in the canonical clause. Indeed, as has been noted in (4.11) above, the FOC only appears in the head position of FOCP and it is only introduced after constituent left-periphery dislocation to Spec-FOCP. This explains the ungrammaticality of the constructions in (4.12a & b); i.e., the introduction of the FOC in the canonical clauses in (4.12a & b) renders them ill-formed.

(4.12) a. *[$_{IP}$ Kòfi [$_{VP}$ á-bóá Á!má *nà*]]

Kofi PRF-help Ama FOC

'It is Ama (that) Kofi has helped.'

b. ? *[$_{IP}$ Kòfi *nà* [$_{VP}$ á-bóá Á!má]]

Kofi FOC PRF-help Ama

'It is Kofi who has helped Ama.'

With the 'question mark' on (4.12b), I explain that, at a glance, the construction seems well-formed (or grammatical). The seemingly well-formed structure of (4.12b) is only due to the fact that a lexical constituent (NP), which is also already in the subject position, is hosting the FOC. We see the syntactic and, particularly, the semantic ill-

[25] Indeed, there are other ways of putting a constituent in focus (specifically, prominence) in non-extracting constructions; for instance, the use of intonation (e.g., *KÒFÍ á-!bóá Á!má* 'KOFI has helped Ama.') and inherent focused-marked words like 'only' (e.g., *Kòfí **nkóáá** á-!bóá Á!má* '**Only** Kofi has helped Ama.'). However, it is important to note here that I am referring to focus that involves not only prominence, but new/contrastive information as well.

formedness of the construction where the subject position is occupied by a pronoun. As can be seen in (4.12b′) below, a 'pronoun-in-subject' alternative to (4.12b), adjunction of the FOC to the pronoun subject is completely out. This confirms the suggestion that the FOC cannot be invoked in the canonical IP, but at the head position of an extra-sentential clause of FOCP, as shown in (4.12b″).

(4.12) *b′. [$_{IP}$ Wó *nà* á-bóá Á!má]

2SG FOC PRF-help Ama

'It is you who has helped Ama.'

b″. [$_{FOCP}$ Wó$_i$ *nà* [$_{IP}$ wó$_i$ á-bóá Á!má]

2SG FOC 2SG PRF-help Ama

'It is you who has helped Ama.'

The ill-formedness of (4.12b & b′) is not far fetched and should not be contentious. At the subject position, an NP is considered as the default topic; i.e., 'it has the unique property of being both an argument function and a grammaticalized discourse function' (Bresnan 2001: 98). Being a topic, therefore, it cannot simultaneously be focus-marked (by the FOC) in the canonical clause. As shown in (4.13) below, Kroeger (2004) notes a similar case in Indonesian (Bahasa) where the focus marker, '=*lah*', cannot mark the subject NP in a basic sentence. Hence, as he puts it, the ungrammaticality of the sentence in (4.13b) is due to the fact that the subject position has topic-like properties and so, it cannot take pragmatic focus. As (4.13c) shows, the subject NP can only take pragmatic focus in an extra-sentential clause.

(4.13) *From Kroeger (2004: 156)*

a. Orang itu mencuri dompet saya.
person that steal wallet my
'That person stole my wallet.'

b. * Orang itu=*lah* mencuri dompet saya.
person that=FOC steal wallet my
(for: 'That person stole my wallet.')

c. Orang itu=*lah* yang mencuri dompet saya.
person that=FOC REL steal wallet my
'It was that person who stole my wallet.'

Besides "*na*", Boadi (1974) draws attention to the fact that a few other morphemes, particularly "*deɛ*", which occurs in the same syntactic position as "*na*", also seems to play a role of a focus marker in Akan. The other morphemes noted and referred to as 'emphatics' in Boadi (1974) are *mípó* 'even', *mímòmì* 'rather or conversely' and *árá* 'self'. See appendix *III* for their occurrences and functions.

Certainly, "*deɛ*" has a focus marking function. However, as Boadi also makes clear, I urge notice to the fact that "*deɛ*" does not encode the concept of new information in definite terms, as does "*na*". Boadi (1974) put the distinction between "*na*" and "*deɛ*" as follows:

> We may characterize *na* as the exclusive focus-marker. … *na* narrows down the referential range of the constituent to which it is attached and places it in an

> exclusive class by itself … *deɛ* may be described as the non-exclusive or potentially inclusive. … *deɛ* makes more modest claims about the new information and presupposes a weaker commitment on the part of the speaker.
>
> Boadi (1974: 7-9)

As shown in (4.14) below, the *na*-focus construction in (4.14b) is interpreted as 'Kofi is helping nobody else, but Ama'. Hence, the constituent in focus, Ama, is exclusively emphasized. The *deɛ*-focus construction in (4.14a) on the other hand conveys the interpretation, 'Kofi may be doing something else to or for other people (e.g., insulting them), but Ama is rather getting help from him'. With this interpretation, Ama is only in a near exclusive class. [26]

(4.14) a. Á!má$_i$ *dèɛ̀* Kòfi rè-bòá nó$_i$
Ama FOC Kofi PROG-help 3SG
'As for Ama, Kofi is helping her.'

b. Á!má$_i$ *nà* Kòfi ré-bóá nó$_i$
Ama FOC Kofi PROG-help 3SG
'It is Ama that Kofi is helping.'

[26] Indeed, *deɛ*-focus constructions are rather similar to *external* topic constructions in English. In *external* topic constructions in English, the constituent in topic is preceded by the words, 'as for'; e.g., *As for* Kofi, a lady slapped him. *External* topic "might be used to signal a return to a previously mentioned or inferred topic" (Kroeger 2004: 138). E.g.:

i. Kofi, what happened to him? → *As for* Kofi, the man slapped him.
ii. Yaw was grounded. What about Kofi → *As for* Kofi, the man slapped him.

The inexactness of *deɛ*-focus construction is even clearer in terms of contrastive account of focus. That is, supposing that a statement is made with regards to an event, but a constituent in that statement (e.g., the subject or the object) is contrary to the truth of the event, in the correction of the statement by focus, the *na*-focus construction gives the appropriate contrastive account. Hence, observe in (4.15) below that cohesion (indicated by a continuous arrow) obtains between the declarative statement and (4.15b). On the other hand, we realize that the *deɛ*-focus construction in (4.15a) does not logically follow from the declarative statement, hence the broken arrow indicating incoherence. This buttresses the point that "*deɛ*" does not have the same focus marking function as "*na*". As will be discussed in detail in chapter *five*, "*na*" has phonological implications as well in the embedded canonical clause (specifically, in the VP), which "*deɛ*" does not have. Comparing (4.15a) to (4.15b), observe that an H tone is realized through the verb in (4.15b), but not through the verb in (4.15a), which maintains the canonical clause tone structure. Through prosodic analysis, I will explain that the surface H tone in the *na*-focus construction is associated with "*na*".

(4.15) Kòfǐ rè-bòá Yàẁ
Kofi PROG-help Yaw
'Kofi is helping Yaw.'

--> a. Dààbî! Á!má$_i$ *dèɛ̀* Kòfǐ rè-bòá nó$_i$
no Ama FOC Kofi PROG-help 3SG
'No! As for Ama, Kofi is helping her.'

→ b. Dààbî! Á!má$_i$ *nà* Kòfî ré-bóá nó$_i$

no! Ama FOC Kofi PROG-help 3SG

'No! It is Ama that Kofi is helping (her).'

Also supporting the point that "*na*" and "*deɛ*" have different pragmatic focus functions is the fact that, in a (*wh*-)question-answer pair, the constituent in focus corresponds to the answer constituent to the question. As will be shown in section *4.1.3*, where a *wh*-question word is fronted in Akan, the construction also shares a common c-structural configuration with the focus construction. If "*deɛ*" has the same syntactic and discourse-contextual functions as "*na*", then, one would expect it to appear after a fronted question-word as well. However, as I will show, this is not the case.

With the differences in focus expressions by "*na*" and "*deɛ*" and the assertion from Boadi (1974: 7) that "*na*" restricts the referential range of its host; i.e., the constituent in focus, we can say that the FOC licenses or assigns the focus feature and/or position to a constituent. This point is discussed further in section *4.2* along with other facts on extra-sentential projection and pragmatic function.

4.1.3 *Wh*-question constructions

A *wh*-question construction in Akan is primarily identified by any of the following interrogative phrases or pronouns in (4.16) and some others. Following Boadi (1990); Marfo and Bodomo (2004); etc., I refer to these pronouns as 'question words or phrases' (hereafter, Q-words/phrases). As discussed in the following sections (*4.1.3.1* and *4.1.3.2*), each of the Q-words could remain *in-situ* or could be fronted.

(4.16)	i.	hwáń / hwáánómń	'Who / which people'
	ii.	sɛ́ń	'How'
	iii.	NP + sɛ́ń	'How much / many (of something)'
	iv.	á!dɛ́ń / á!dɛ́ń ńtî / sɛ́ déɛ́ń	'Why / for what reason'
	v.	ɛ̀hé / ɛ̀héé!fá	'Where'
	vi.	(ɛ̀)déɛ́ń / (ɛ̀)déɛ́bɛ́ń	'What'
	vii.	bŕɛ́bɛ́ń / dàbɛ́ń	'When'

4.1.3.1 Q-word in-situ

These Q-words are substitutes for the various syntactic categories serving as the traditional argument functions, such as subject, object, etc. As illustrated in the canonical clauses in (4.17a & b) for the subject and the object respectively, therefore, these Q-words can remain *in-situ* as substitutes of the new information they are intended to induce in the discourse. As also shown in (4.17c), however, the sentential head has a different disposition in its *in-situ* representation. That is, it always maintains its predicate slot with another verb, '*yɛ*', literally meaning '*do*'. In addition, the Q-word occurs at the end of the sentence.

(4.17) [$_{IP}$ Bàá rè-sèré àbòfŕá nó]

Baah PROG-laugh child DEF

'Baah is laughing at the child.'

⇒ a. [$_{IP}$ *Hwáń* [$_{VP}$ rè-sèré àbòfŕá nó]]

who PROG-laugh child DEF

'Who is laughing at the child?'

⇒ b. [$_{IP}$ Bàá rè-sèré [$_{NP}$ *hwáń*]]

Baah PROG-laugh who

'Baah is laughing at who?'

⇒ c. [$_{IP}$ Bàá rè-*yé* àbòfŕá nó *dééń*]

Baah PROG-do child DEF what

'What is Baah doing to the child?'

4.1.3.2 Q-word fronting

Besides the *in-situ* representation of the *wh*-construction in Akan, with which the so-called canonical phrase structure is maintained, there is another option of representation. This option involves the fronting of the Q-word (hence, Q-word fronting). A Q-word fronting in Akan refers to the dislocation of the Q-word to the left-periphery of an extra-sentential clause. In addition, as illustrated in (4.18), the clitic morpheme, "*na*", which has been referred to as focus marker (FOC) in focus constructions, is also introduced at the right-edge of the fronted Q-word. An apparent phrase structure variation is, therefore, realized where a Q-word is extraposed.

(4.18)

	Q-word *in-situ* structure		Q-word fronting structure
a.	[$_{IP}$ Bàá rè-sèré *hwáń*]	⇒	*Hwáń$_i$* nà [$_{IP}$ Bàá ré-séré nó$_i$]
	Baah PROG-laugh who		Who FOC Baah PROG-laugh 3SG
	'Baah is laughing at who?'		'Whom is Baah laughing at?'
b.	[$_{IP}$ Kòfi bé-!dúá *dééń*]	⇒	*Dééń* nà [$_{IP}$ Kòfi bé-!dúá]
	Kofi FUT-sow what		What FOC Kofi FUT-sow
	'Kofi will sow what?'		'What will Kofi sow?'

Further, observe in (4.18) that an RPro takes over the canonical base position of the Q-word. As noted earlier, this follows from the fact that the Q-words are substitutes of argument functions. The RPros, therefore, actually refer to argument functions. Also, recall that the occurrence of RPro is constrained by animacy in the object position (see section *4.1.1*). This explains why no RPro is in position in (4.18b).

4.1.3.3 Relationship: Q-word fronting and focus construction

Considering constituent left dislocation, the introduction of FOC at the head position of its functional projection and the occurrence of RPro in the embedded canonical clause, Q-word-fronting and focus constructions in Akan share a common extra-sentential configuration of FOCP. What is more, as the 'question and answer' pairs in (4.19) below show, it seems that a focus construction attains from a question asked in Q-word fronting fashion (4.19a), just as a canonical clause structure (i.e., without focus) may constitute an answer to a Q-word *in-situ* construction (4.19b).

(4.19) Question and answer pairs

a. [$_{FOCP}$ *Hwáń$_i$* nà [$_{IP}$ Bàá réséré nó$_i$]]
who FOC Baah PROG.laugh 3SG
'Whom is Baah laughing at?'

⇒ [$_{FOCP}$ *Yàẁ$_i$* nà [$_{IP}$ Bàá réséré nó$_i$]]
Yaw FOC Baah PROG.laugh 3SG
'It is Yaw who Baah is laughing at.'

b. [$_{IP}$ Bàá rèsèré *hwáń*] ⇒ [$_{IP}$ Bàá rèsèré *Yàẁ*]
Baah PROG.laugh who Baah PROG.laugh Yaw
'Baah is laughing at whom?' 'Baah is laughing at Yaw.'

The above illustrations are not to say that a non-extracting structure/answer cannot follow from a Q-word fronting construction and focus construction cannot follow from a Q-word *in-situ* construction. Also, the illustration in (4.19a) does not mean that we cannot have or induce focus in Akan without a Q-word fronting construction counterpart. I believe that a Q-word fronting construction in Akan is only a reflection of the configuration of a focus construction. I will explain in sections *4.1.3.4* and *4.2.2* that Q-word fronting in Akan is only an optional representation and, as compared to a related Q-word *in-situ* and a focus construction, it does not alter the semantic content in the information structure.

For the purpose of putting contrastive and new information across, focus constructions may also conversely follow from a previous statement (4.20a) or a previous *yes-no* question (4.20b).[27] The discourse-contextual information expressed in the focus construction is contrastive in exclusiveness to the discourse-contextual information pertaining in the canonical clause; i.e., *it is Yaw and only Yaw (not me or anybody else) that Baah is laughing at*. The contrastive information given here is in addition to the fact that the constituent in focus, Yaw, constitutes the new information in the discourse.

(4.20) <u>Canonical statement</u>

a. Bàá rèsèré *mé*
Baah PROG.laugh 1SG
'Baah is laughing at me.'

<u>Canonical question</u>

b. Bàá rèsèré *mé*?
Baah PROG.laugh 1SG
'Is Baah laughing at me?'

[27] As noted in chapter *one*; section *1.6*, observe that a '*yes-no*' question is only distinguished from a statement by differences in sentence-final intonation.

⇒ Focus: Dààbí, *Yàẁ$_i$* nà Bàá réséré nó$_i$

No, Yaw FOC Baah PROG.laugh 3SG

'No, it is Yaw who Baah is laughing at.'

Now, in section *4.1.2*, it was explained that the morpheme, "*deɛ*", is not an exclusive FOC as "*na*" in the interpretation of the respective constructions of occurrence. With Q-word fronting, these two FOCs are further set apart. That is, "*deɛ*" cannot appear after an extraposed Q-word. As shown in (4.21), therefore, unlike with *na*-focus constructions (see, e.g., (4.18)), *deɛ*-focus constructions cannot have related Q-word fronting constructions. Thus, it will not be considered any further in this study.

(4.21) Yàẁ$_i$ *dèɛ̀* Bàá rè-kyèá nó$_i$

Yaw FOC Baah PROG-greet 3SG

'As for Yaw, Baah is greeting him.'

⇒ *Hwáń$_i$ *dèɛ̀* Bàá rè-kyèá nó$_i$

who FOC Baah PROG-greet 3SG

'Whom is Baah greeting?'

4.1.3.4 Q-word in-situ and Q-word fronting: Some perspectives

All the data collected indicate that all Q-words (or Q-word involved phrases) in Akan could remain *in-situ* or could be extraposed. Contrary to my intuition and observation, however, Saah (1988) observes that some Q-word *in-situ* constructions related to greetings in Akan are canonically fixed in phrase structure. Thus, a corresponding Q-word fronting option is ungrammatical. Perhaps, Saah's observation is true in the oth

dialects of Akan. In Asante-Twi, however, as shown in (4.22), Q-word fronting (and the occurrence of the FOC) in such greetings related constructions is indisputably attested.

(4.22)

	Q-word *in-situ*		Q-word fronting
a.	[$_{IP}$ wò hó tè *séń*]	⇒	*Séń* nà [$_{IP}$ wò hó té(ɛ́)]
	2SG self be.PRES how		how FOC 2SG self be.PRES
	'How are you?'		'How are you?'
b.	[$_{IP}$ wɔ̀-fr̀ɛ́ wò *séń*]	⇒	*Séń* nà [$_{IP}$ wɔ̀-fr̀ɛ́ wó]
	3PL-call.HAB 2SG how		how FOC 3SG-call.HAB 2SG
	'What is your name?'		'What is your name?'
	('What do they call you?')		('What do they call you?')

It seems to me that Saah (1988) was referring to Fante (or Akyem), considering his selection of texts (e.g. *déń* in Fante instead of *séń* in Asante-Twi). However, even in Fante, Q-word preposing is generally acceptable (as I found out from native speakers). Indeed, the fact that preposing in greetings related constructions is not often done, although grammatical, backs up my claim (in section *4.2.2*) that Q-word fronting does not induce any further emphasis than what a Q-word at *in-situ* inherently expresses.

Saah (1988) also notes that where a Q-word/phrase is functioning as an adverbial of reason, it must be extraposed obligatorily, as shown in (4.23b). Otherwise, as also shown in (4.23a), the construction is ungrammatical; i.e., where the Q-word remains *in-situ*. While being cautious, he further suggests that a Q-word needs to be at a stressed or emphatic position, hence the left-periphery dislocation (specifically, the specifier position of some projected pragmatic/discourse function).

(4.23) *From Saah (1988: 20)*

* a. Kwàdwó bɔ̀-ɔ̀ Á!má *déèǹ àdé ńtî*
Kwadwo hit-PST Ama what thing because
'Kwadwo hit Ama for what reason?'

b. (sɛ́) *Déèǹ àdé ńtî* nà Kwàdwó bɔ̀-ɔ̀ Á!má
what thing because FOC Kwadwo hit-PST Ama
'For what reason/why did Kwadwo hit Ama?'

As will be reiterated in section *4.2.2*, I claim that a Q-word does not invoke any further emphasis in a Q-word fronting construction than what it expresses in a canonical clause counterpart in Akan. Indeed, as Saah (1988) rightly points out, a construction like (4.23a) is ungrammatical. However, the ungrammaticality here is only due to the fact that the whole interrogative phrase, *déèǹ àdé ńtî*, asking for the reason behind the agent's (Kwadwo) action is incomplete and not because the Q-word involved phrase (hence, Q-phrase) cannot be extraposed. The complete Q-phrase should include the complementizer, "*sɛ́*". That is, it should read as ***sɛ́*** *déèǹ àdé ńtî*, meaning 'for what reason'. I explain the incompleteness of *déèǹ àdé ńtî* further as follows:

Recall that a Q-word or, as in this case, a Q-phrase is only a substitute for a canonical clause constituent it is intended to bring out as a new information. Since the Q-phrase in (4.23a) has actually replaced a phrase expressing the patient's (Ama) action, asking for the reason behind Kwadwo's action also means finding out what Ama did to Kwadwo. That is, what did Ama do that caused Kwadwo to hit her? Supposing that *laughing* at Kwadwo is what Ama did, the corresponding declarative construction

(4.23a) would be expressed as in (4.24a) below, and not the ungrammatical form in (4.24b), which is without the complementizer, "*sέ*", as part of the whole Q-phrase. Without "*sέ*", the ungrammatical representation in (4.24b) actually corresponds to the ungrammatical Q-phrase fronting construction in (4.23a).

(4.24) a. Kwàdwó$_j$ bɔ́-ɔ́ Á!má$_i$ ***sέ*** *ɔ́$_i$-à-séré* (*nój*) *ńtî*
Kwadwo hit-PST Ama __ 2SG-PRF-laugh him because
'Kwadwo hit Ama because she has laughed (at him)'

b. * Kwàdwó$_j$ bɔ́-ɔ́ Á!má$_i$ *ɔ́$_i$-à-séré* (*nój*) *ńtî*
Kwadwo hit-PST Ama 2ps-PRF-laugh him because
'Kwadwo hit Ama because she has laughed (at him)'

Likewise, when substituting the phrase representing Ama's action in (4.24a), *sέ ɔ̀àséré* (*nó*) *ńtî*, with a related Q-phrase, "*sέ*" (which is actually related to "*ńtî*" in the phrasal form, *sé ... ńtî* 'because'), must be part of the whole Q-phrase. Thus, I highlight the fact that it is because of the absence of "*sέ*" in *déèǹ àdé ńtî* in (4.23a) and, for that matter, incompleteness of *déèǹ àdé ńtî* that the construction is ungrammatical and not because the Q-phrase cannot remain *in-situ*. As the alternative to (4.23a) in (4.25a) below shows, the same Q-word *in-situ* construction is grammatical with "*sέ*" as part of the whole Q-phrase.

(4.25) a. Kwàdwó bɔ́-ɔ́ Á!má ***sέ*** *déèǹ àdé* *ńtî*
Kwadwo hit-PST Ama __ what thing because
'For what reason/why did Kwadwo hit Ama?'

b. (sɛ́) *Déèǹ àdé ńtî* nà Kwàdwó bɔ́-ɔ́ Á!má
what thing because FOC Kwadwo hit-PST Ama
'For what reason/why did Kwadwo hit Ama?'

In addition, the Q-word *in-situ* construction in (4.25a) conveys the same discourse-contextual information that is carried in the Q-word fronting counterpart in (4.25b); i.e., no semantic contrast is expressed between (4.25a) and (4.25b). In the following section, I discuss the individual discourse-contextual information of the constructions, including that of topic, in detail in the perspective of LFG.

4.2 Individual discourse-contextual information

It has been noted that topic, focus, and Q-word fronting constructions in Akan share a marked word order with regards to constituent left dislocation to operator scope position; i.e., a prominent c-structure position. However, focus and Q-word fronting constructions particularly share a common c-structure configuration and differ from topic construction in terms of functional projection headedness. That is, while in focus and Q-word fronting constructions FOC occurs in the head position of the projected functional phrase, no such morpheme occurs in topic constructions, rendering the TOPP headless. One may argue that the intonation break to the right of topic is the head of the TOPP, just as "*na*" is the head of FOCP. Indeed, as noted chapter *one*, prosody (here, intonation) may have direct relevance to phrase structure (Butt and King 1998; Choi 2001; Zubizarreta 1998; etc.). In this work (and, indeed, in consonance with c-structure constraint of economy), I consider the intonational break as only phonologically significant (see chapter *five* for details).

In this section, I move away from these phrase structure differences and discuss the individual discourse-contextual information that is realized in each construction, as compared to each other and related canonical clauses.

4.2.1 Topic versus focus

It has been noted in previous sections that topic and focus connote 'old' (or given) and 'new' (and/or contrastive) information respectively. Obviously, therefore, on the basis of the 'old and new' information distinction, which I refer to as *NEWNESS*, focus and topic constructions in Akan convey distinct discourse-contextual information in the information structure (i-structure) (Vallduví 1992; Lambrecht 1994; etc.), which is described as 'a domain of grammar where the discourse-contextual information is reflected at the sentence level' (Choi 2001: 21). Following the feature-based i-structure (Choi 1999, 2001; Lee 2001; etc.), therefore, the preliminary discourse-contextual information specifications of topic and focus in Akan with regards to *NEWNESS* is as shown in (4.26).

(4.26) Preliminary i-structure for topic and focus

+NEW	Focus
–NEW	Topic

In the literature, detailed distinctions have been made in the notions of topic and focus in some languages. With topic, there has been a distinction between 'continuing topic' versus 'shifted topic' distinction (see Herring (1990), Aissen (1992) etc.). Also with focus, there are 'completive or presentational focus' versus 'contrastive focus' (s

Herring (1990), Rochemont and Culicover (1990), etc.) and 'broad focus' versus 'narrow focus' (Frascarelli 2000). I acknowledge these distinctions. However, in this work, I concentrate on the general notions that separate topic and focus – i.e., 'given' and 'new/contrastive'.

Now, assuming that there is a previous discourse from which topic and focus follow, the i-structure in (4.26) explains that a constituent in topic, with its [–NEW] specification, must also be given in the previous discourse. On the other hand, with the specification of [+NEW], a constituent in focus may not be in the previous discourse. Even where a constituent we want to focus is given in a previous discourse, discourse-exclusivity (in the interpretation of '*X* and only *X*') is invoked in the focus construction in Akan. To some extent, these facts on discourse-contextual information were verified in the topic constructions in section *4.1.1* (the data in (4.2)). In comparison with focus, we revisit the facts with the data in (4.27) below.

(4.27) a. *Previous discourse*:

[$_{IP}$ Kòfí kùm̀-m̀ déέń]

Kofi kill-PST what

'Kofi killed what? / What did Kofi kill?'

b. *Topic*:

⇒ i. [$_{TOPP}$ Kòfí$_{[–NEW]i}$, [$_{IP}$ ò$_i$-kùm̀-m̀ gyàtá]]

Kofi, 3SG-kill-PST lion

'About Kofi, he killed a lion.'

⇐ ii. [$_{TOPP}$ Gyàtá$_{[+NEW]i}$, [$_{IP}$ Kòfí kùm̀-m̀ nó$_i$]]

lion, Kofi kill-PST 3SG

'About a lion, Kofi killed it.'

Observe that, with a topic construction as an answer to the question asked in the previous discourse in (4.27a), only the topic construction in (i) of (4.27b) constitutes a logical response. This is because the constituent in topic there, *Kòfî*, is also given in the previous discourse, (4.27a). For that matter, *Kòfî* carries the proper specification of topic, [–NEW]. Unlike (i) of (4.27a), the construction in (ii) of (4.27a) does not follow logically from the previous discourse. In other words, the constituent that has been topicalized there, *gyàtá*, is not given in the previous discourse. So, this topic construction cannot be the appropriate one, although it is perfectly grammatical.

With the feature specification of [+NEW] for a constituent in focus, the opposite reasoning applies in focus constructions. As has also been shown in (4.28), observe that only the focus construction in (i) of (4.28b) could constitute a logical answer to the question posed in the previous discourse in (4.28a) and the reason is that the constituent in focus, *gyàtá*, is not given in the previous discourse. Thus, it appropriately specifies for [+NEW] that the previous discourse (question) demands in a focus-related answer. The other focus construction in (ii) of (4.28b) is not ungrammatical, but it is not the coherent answer here, since the constituent in focus, *Kòfi*, is already given in the previous discourse (question) and need not be necessarily focused here.

(4.28) a. *Previous discourse*:

[$_{IP}$ Kòfi kùm̀-m̀ déɛ́ń]

Kofi kill-PST what

'Kofi killed what? / What did Kofi kill?'

b. *Focus*:

⇒ i. [$_{FOCP}$ Gyàtá$_{[+NEW]i}$ nà [$_{IP}$ Kòfí kúḿ-m̀ nó$_i$]]

Lion FOC Kofi kill-PST 3SG

'It is the lion that Kofi killed.'

⇐ ii. [$_{FOCP}$ Kòfí$_{[–NEW]i}$ nà [$_{IP}$ ò$_i$-kúḿ-m̀ gyàtá nó]

Kofi FOC 3SG-kill-PST lion DEF

'It's Kofi who killed the lion.'

From the discussions so far, it is obvious that topic and focus are critically distinguished on [NEW]. But one fact of commonality between them in the i-structure is certain. That is, as pragmatic and overlay functions, both topic and focus constitute a point of prominence in their individual discourse. As shown in the i-structure in (4.29), therefore, on *PROMINENCE* specification, any constituent that is either topicalized or focused specifies for [+PROM]. The rest of the constructions is specified as [–PROM].

(4.29) Complete i-structure for topic and focus

	+PROM	***–PROM***
+NEW	Focus	–
–NEW	Topic	–

Prominence hierarchy at i-structure may be expressed individually depending on the feature specifications in (4.29), *NEWNESS* and *PROMINENCE*. With reference to Choi (2001: 34), this results in the realization of two informational hierarchies. These hierarchies are presented in (4.30).

(4.30) Informational hierarchies

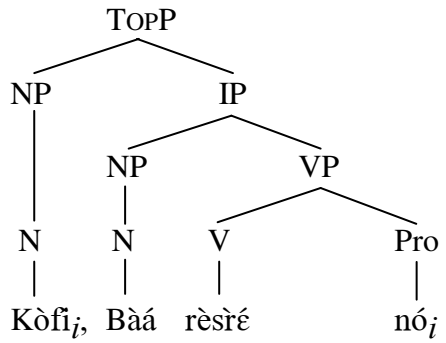
i. ***NEW***: [+NEW] > [–NEW]

ii. ***PROM***: [+PROM] > [–PROM]

With this two-way feature distinction, the informational hierarchy is unlike the structural hierarchy at the c-structure, which is simply defined in terms of precedence and dominance. But, indeed, [+PROM] specification in the i-structures of topic and focus in Akan is reflected in their individual c-structures as well. That is, a constituent in topic and in focus appears in the specifier position of individual functional projections (i.e., Spec-TOPP and Spec-FOCP respectively), the most prominent c-structure position. Hence, as could be observed in (4.31) below, 'harmonic alignment' (Aissen 1999; Bresnan 2000; Choi 2001; Lee 2001; etc.) applies between the c- and i-structures of each of the constructions. With harmonic alignment, the prominence position in one parallel structure of LFG matches that in another structure. I-structure is observed in (4.31) as distinct structure from the f-structure projected off the c-structure and it is accessible to the semantic structure (s-structure) (King 1997; Butt and King 1998; etc.).

(4.31) Individual c- and i-structures of topic and focus

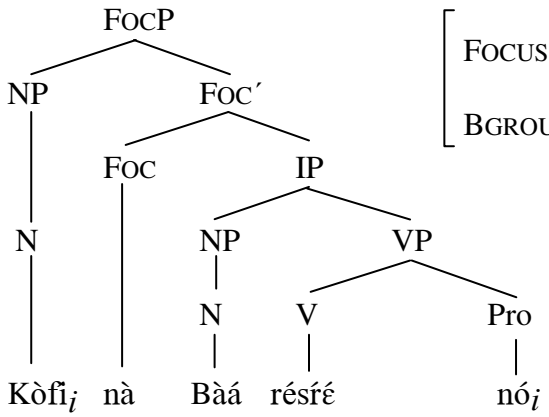
a.

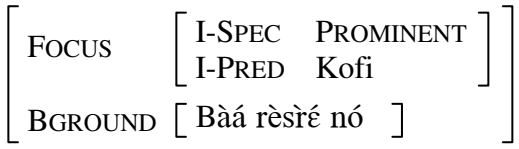


$$\begin{bmatrix} \text{TOPIC} & \begin{bmatrix} \text{I-SPEC} & \text{PROMINENT} \\ \text{I-PRED} & \text{Kofi} \end{bmatrix} \\ \text{COMMENT} & [\ \text{Bàá rèsɪ́ɛ́ nó}\ ] \end{bmatrix}$$

'As for Kofi, Baah is begging him.'

b.





'It is Kofi that Baah is begging.'

Explaining the i-structures in (4.30) further, observe that the information specification (I-SPEC) is with reference to *PROM* only and so, both constructions share a common information profile. Again, the object function, 'Kofi', constitutes the informational predicate (I-PRED) in both constructions. The rest of the construction constitutes 'comment' and 'background' (BGROUND) in topic and focus construction respectively.

4.2.2 Q-word fronting versus focus

It has been noted in section *4.1.3.3* that Q-word fronting and focus constructions essentially share a common marked c-structure configuration; i.e., *[$_{FOCP}$ XP* na *[$_{IP}$ …]]*. However, considering the individual discourse-contextual information that is expressed in the i-structure of each of them, as compared to the discourse-contextual information expressed in the respective *in-situ* and canonical clause counterparts, it has been mentioned that the two constructions are functionally divergent. I explain in this section that semantic contrast is only evident in focus constructions.

In exploring the semantic information divergence in the i-structure of Q-word fronting and focus constructions, let us assume that discourse-contextual information

the constructions particularly has to do with (or is tied to) the obligatory occurrence of the FOC (besides the constituent left-dislocation). With this assumption, focus assignment to the Spec-DF/FOCP constituent is appropriately done through government and 'Spec-Head' adjacency. However, unlike in focus constructions, the occurrence of the FOC in Q-word fronting constructions does not invoke any contrastive information in the discourse other than what obtains in related Q-word *in-situ* counterparts. In other words, Q-word fronting does not alter the semantic content of the interrogative in any way. This has been noted in section *4.1.3.4* between the Q-word/phrase *in-situ* construction in (4.25a) and the Q-word/phrase fronting one in (4.25b), repeated here as (4.32a) and (4.32b) respectively.

(4.32) a. Kwàdwó bɔ́-ɔ́ Á!má ***sɛ́ dɛ́ɛ̀ǹ àdé ntî***
Kwadwo hit-PST Ama _ what thing because
'For what reason/why did Kwadwo hit Ama?'

b. (*sɛ́*) *Dɛ́ɛ̀ǹ àdé ntî* nà Kwàdwó bɔ́-ɔ́ Á!má
__ what thing because FOC Kwadwo hit-PST Ama
'For what reason/why did Kwadwo hit Ama?'

Boadi (1990: 78) suggests that the lack of a corresponding discourse-contextual information change (or semantic contrast) in Q-word fronting construction, as compared to a related Q-word *in-situ* construction, is due to the fact that Q-words are actually inherently focus-marked. Accordingly, they do not need any further special reference. In this wise, Q-word fronting is only an alternative and an optional representation. Indeed, inherent focus-marking of Q-words here is not unique to Akan. As Kiss (1995) notes, in Hungarian, universal quantifiers are also inherently focus-marked and so, they do n

need to be licensed at a particular functional position for (some contextual) focus. In the case of Akan, perhaps, there is a distinction between the (surface) pragmatic focus that the FOC assigns and the one that is inherent to Q-words. Thus, a Q-word cannot encode its inherent focus in addition to the pragmatic one.

I claim in this study that a Q-word holds the core of the information structure of a construction within which it appears (i.e., the expression of interrogative). As such, a Q-word does not need any further semantic buffer, in this case FOC, to complete what it already and inherently establishes. In fact, following a previous discourse, sometimes, only a Q-word could be employed to represent the whole construction within which it occurs. Consequently, in (4.33) below, the whole construction in (4.33b) can be replaced with the Q-word in (4.33c), drawing directly from (4.33a).[28] On the contrary, where we want to focus the subject in (4.33a), for instance, the only option is to put the subject in the 'focus-presupposition' structure, as shown in (4.33d). Since a non-Q-word is not inherently focus-marked, (4.33e) cannot represent the whole of (4.33d).

(4.33) a. *Kòfí* bé-!dúá àbá nó
Kofi FUT-plant seed DET
'Kofi will plant the seed.'

⇒ b. *Hwáńᵢ* nà ɔᵢ-bé-!dúá àbá nó = c. *Hwáń*?
Who FOC 3SG-FUT-plant seed DET 'Who?'
'Who will plant the seed?'

[28] Note that whether or not a Q-word can represent a whole *wh*-construction is constrained by animacy and number specifications of argument functions in the construction. So, in *Kòfí àbó Á!má* 'Kofi has beaten Ama' for instance, where we have two animate argument functions the same Q-word, *hwáń* 'who', can substitute for any one of them. So, it is not enough to use only the Q-word in this case.

⇒ d. *Kòfi$_i$* nà ò$_i$-bé-!dúá àbá nó ≠ e. *Kòfi*
Kofi FOC 3SG-FUT-sow seed DET 'Kofi'
'It is Kofi who will sow the seed.'

Since (4.33e) cannot replace (4.33d), it is not a suitable follow up function to (4.33a). This follows from the fact that, unlike a Q-word, it is not inherently focused-marked.

As noted earlier, contrary to the stance taken in this study, Saah (1988: 19) claims that (as a motivation for the preposing) clause-initial Q-word occurrence is more emphatic, as compared to the *in-situ* counterpart. The question however is, to what extent is a fronted Q-word more emphatic? With regards to discourse-contextual information, what can we draw from it that is different from what is obtained in a related Q-word *in-situ* construction? At the prominent c-structure position, Spec-FOCP, a Q-word seems emphasized. But, as compared with a related Q-word *in-situ* construction, it is actually vacuous in terms of semantic contrast. Q-word fronting induces nothing more into its information profile other than what is in the information profile of the *in-situ* counterpart (i.e., the general interrogative expression of the Q-words).

Unlike in a Q-word fronting construction, the identification of semantic contrast in the i-structure of a focus construction, as compared to that of a related canonical clause, is indisputable and readily perceptible. That is, contrastive information is attained in the construction, particularly relating to the constituent in focus. In this case, among all the constituents in the construction, the one in focus is highlighted as the point of contrastive discourse information (of certainty) in the construction; hence, its constitution as the 'point of prominence' (Boadi 1974). For instance, the focus construction in (4.34) below, is interpreted as '*it is Kofi and only Kofi (i.e., nobody els*

who will sow the seed', and not just as '*Kofi will sow the seed*'. With the latter interpretation, none of the constituents is identified as prominent (or new) information. Accordingly, other people besides *Kofi* might sow the seed as well; hence, the contrast between it and the former interpretation of focus.

(4.34) Kòfi$_i$ nà ò$_i$-bé-!dúá àbá nó
Kofi FOC 3SG-FUT-sow seed DET
'It is Kofi who will sow the seed.'

Kiss (1995: 212) also puts the interpretation of focus as follows: 'the focus operator serves to express identification'. In the construction in (4.34) for instance, the left-periphery dislocation and the FOC identify *Kofi*, and only *Kofi*, as the one who is sowing the seed. We can, therefore, say that the occurrence of the FOC in a focus construction does not only contribute to the contrast in the phrase structure configuration of the construction (as compared to a related canonical clause). It also contributes to semantic contrast in the i-structure as well.

Despite the distinction made between Q-word fronting and focus constructions in relation to their individual non-extracting counterparts (i.e., with regards to semantic content), it is important to note that 'focus-presupposition' information pattern reflects in both constructions and that goes to prove that both Q-word and focus express prominent new information. The association of prominent new information to Q-words in particular here may be controversial in Akan. But one cannot deny the fact that Q-word fronting constructions involve some sort of focusing besides the fact that a Q-word is actually inherently focus-marked, as has already been noted. Kroeger (2004: 13

notes that 'the question word bears a pragmatic focus, since it specifies the crucial piece of new information which is required; the rest of the question is part of presupposition'. That is to say, since a Q-word constitutes a linguistic devise for the identification of a specific piece of prominent new information, it should be recognized as prominent new information as well. As shown in (4.35) below, it is important to note that it is from the questioning in Q-word fronting construction in (4.35a) that *Baah* 'PN' is realized as prominent new information in (4.35b) and, for that matter, the focus.

(4.35) a. Question: [*Hwáń*$_i$] nà ɔ$_i$-ré-sómá àbòfrá nó?
who FOC 3SG-PROG-send child DEF
'Who is sending the child?'

⇒ b. Focus: [*Bàá*$_i$] nà ɔ$_i$-ré-sómá àbòfrá nó
Baah FOC 3SG-PROG-send child DEF
'It is Baah who is sending the child.' (answer to (4.35a))

In the feature-based i-structure, which is extended here to include Q-words, Q-words and focused constituents in Akan would therefore depict identical information profile on discourse *NEW* and *PROM*, as shown in (4.36). Also shown on the i-structure is the specification of topic, as discussed in the previous section.

(4.36) I-structure for topic, focus, and Q-word

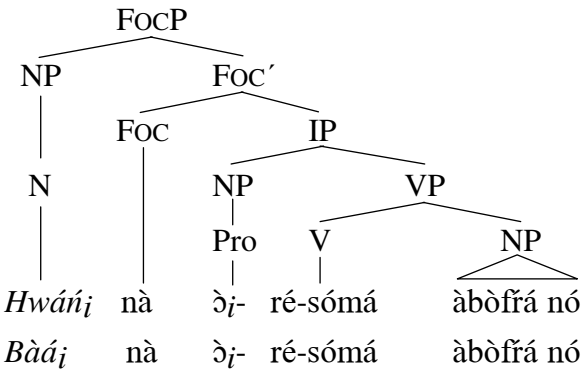
	+PROM	***–PROM***
+NEW	Focus Q-word	–
–NEW	Topic	–

Going back to Q-word fronting and focus constructions in relation to their non-extracting counterparts, it has been noted that, unlike in Q-word fronting constructions, FOC has an alteration function in focus constructions that alters the default discourse-contextual information of a related canonical clause. I refer to this information alteration function of the FOC in focus constructions as 'discourse-contrast', since it results in contrastive information (of certainty; i.e., '*X* and only *X*') that characterizes focus constructions in Akan. Conversely, 'discourse-neutral' (Lee 2001) is obtained with occurrence of FOC in Q-word fronting constructions, since the same information expressed in related Q-word *in-situ* constructions is expressed in them. It logically follows then that 'Q-word fronting in Akan is only an optional representation' (Boadi 1990: 78) and the obligatory occurrence of FOC with it is only a general syntactic restriction. In line with structural markedness, I refer to FOC in Q-word fronting constructions as 'configurational focus', since its occurrence contributes to the marking of the whole c-structure of the construction. Recall that Q-word fronting and focus constructions are noted as marked sentence-types.

Having identified and explained the realization of the common information profile (defining pragmatic focus) in Q-words and focused constituents, I now present the common c-structure and individual i- and f-structures of the Q-word fronting and focus constructions in (4.37) below. In the i-structure in (4.37b) in particular, I show how the common information profile come to bear in the interpretation of Q-word fronting and focus constructions relative to the interpretation that obtains in *in-situ* and canonical clause counterparts – i.e., the semantic expressions of 'discourse-neutral' of Q-words and 'discourse-contrast' of focus.

(4.37) Information structuring in Q-word fronting and focus constructions

a. *c-structure*



b. *i-structures*

Q-word fronting

$$\begin{bmatrix} \text{FOCUS} \begin{bmatrix} \text{F-TYPE} & \text{NEUTRAL} \\ \text{I-PRED} & \text{'Hwan'} \end{bmatrix} \\ \text{BGROUND} \begin{bmatrix} \text{ɔrèsòmá} \\ \text{àbòfrá nó} \end{bmatrix} \end{bmatrix}$$

Focus

$$\begin{bmatrix} \text{FOCUS} \begin{bmatrix} \text{F-TYPE} & \text{CONTRASTIVE} \\ \text{I-PRED} & \text{'Baah'} \end{bmatrix} \\ \text{BGROUND} \begin{bmatrix} \text{ɔrèsòmá} \\ \text{àbòfrá nó} \end{bmatrix} \end{bmatrix}$$

c. *f-structures*

Q-word fronting

$$\begin{bmatrix} \text{PRED} & \text{'soma ⟨SUBJ, OBJ⟩'} \\ \text{ASP} & \text{PROG} \\ \text{DF} & [\ ] \\ \text{SUBJ} & \begin{bmatrix} \text{NUM} & \text{SG} \\ \text{PRED} & \text{'Hwan'} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{NUM} & \text{SG} \\ \text{DEF} & + \\ \text{PRED} & \text{'abofra'} \end{bmatrix} \end{bmatrix}$$

Focus

$$\begin{bmatrix} \text{PRED} & \text{'soma ⟨SUBJ, OBJ⟩'} \\ \text{ASP} & \text{PROG} \\ \text{DF} & [\ ] \\ \text{SUBJ} & \begin{bmatrix} \text{NUM} & \text{SG} \\ \text{PRED} & \text{'Baah'} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{NUM} & \text{SG} \\ \text{DEF} & + \\ \text{PRED} & \text{'abofra'} \end{bmatrix} \end{bmatrix}$$

How the common c-structure is realized has already been discussed in section *4.1.3.3*.

The argument functions subcategorized for by the verb, *sòmà*, in both constructions a

also encoded in the individual f-structures. Also encoded in the f-structures is the identification of the projected discourse function (DF) with an argument function, the subject. The semantic significance in the discourse of Q-word fronting and (non-Q-word) focusing is also given in the separate i-structures.[29] Here, the focus type (F-TYPE) of the Q-word, *hwáń* (noted as I-PRED) is given as 'neutral' following FOC function as 'discourse-neutral' in Q-word fronting construction, while that of the focused constituent, *pàpá*, is given as 'contrastive' following FOC function as 'discourse-contrast' in focus constructions. The rest of both constructions are given as presupposition/background information (BGROUND).

Since Q-words have been noted as inherently focus-marked in Akan, finally, it is important to note that a Q-word fronting construction is distinguished from its *in-situ* counterpart only on the basis of c-structure configurational markedness. As noted on several occasions, with respect to discourse-contextual information realization, both representations are essentially the same.

4.3 Summary

In this chapter, it has been observed that topic, focus and Q-word fronting (in *wh*-questions) constructions in Akan are configurationally encoded. That is, these constructions are marked for the reason that a constituent in topic, a constituent in focus, and a fronted Q-word occupy the specifier position of a discourse function that is

[29] Recall that we are particularly referring to the alteration impact (in semantics) that the information profile Q-word and focus share; i.e., [+PROM]; [+NEW], has in the i-structure of their individual constructions, as compared to the i-structure of respective *in-situ* construction and canonical clause counterparts.

projected beyond some canonical phrase structure. It has, however, been noted that a topic construction differs structurally from focus and Q-word fronting constructions in functional projection headedness.

The information profiles of topic, focus and Q-word functions in Akan have also been identified. Explicitly, we have noted that the functions are discourse-contextually prominent, but while topic specifies for old information, focus and Q-word specify for new information in the i-structure of the grammar where individual discourse-contextual information are modeled. We have drawn attention to the individual semantic content of Q-word fronting and focus constructions in particular, based on the individual discourse-contextual information that obtains in them in comparison to discourse-contextual information that obtain in respective *in-situ* construction and canonical clause counterparts. It has been explained that the occurrence of the FOC, along with constituent left-periphery dislocation in a Q-word fronting construction does not result in semantic contrast because the discourse-contextual information expressed in it is the same one that obtains in an *in-situ* counterpart. On the other hand, constituent left-dislocation and the occurrence of the FOC in a focus construction do bring into play semantic contrast between its discourse-contextual information and that of a related canonical clause; i.e., a constituent in focus is highlighted among others as an obvious 'point of contrastive information' in the i-structure.

In the following chapter (*five*), I discuss phrasal rules that occur in topic, focus, and *wh*-question constructions in Akan in terms of the phonology-syntax interface. With prosodic analysis, the role of the phrase structure (and the other grammatical structures) of topic, focus, and Q-word fronting constructions in the application of the occurring phrasal rules are considered within the phonological structure.

CHAPTER FIVE

PHRASAL RULES IN TOPIC, FOCUS, AND Q-WORD FRONTING CONSTRUCTIONS

5.0 Introduction

In Akan topic, focus, and *wh*-question fronting constructions, some general and unique phonological rules and one syntactic representation (i.e., the 'antecedent-anaphor' relation noted in chapter *four*; section *4.1.1*) are realized, as compared to the structures in related canonical clauses. These phonological rules and syntactic representation (hence, phrasal operations/rules) draw phonology-syntax interface implications in the grammar. In this chapter, I discuss these phrasal rules in the perspective of the phonology-syntax interface.

Theoretically, I continue in the prosodic analysis. In other words, I explain the phrasal operations that occur in Akan topic, focus, and *wh*-question fronting constructions within the p-structure that has been explored in chapters *one* and *two* and has been appealed to in the explanation of rules in Akan compounds in chapter *three*. In this wise, the position that I continue to advance in this chapter is that phrasal (phonological) rules are decisively accounted for with prosodic considerations. Accordingly, the essence of the p-structure is again paramount in phrasal rule analysis in this chapter. Also, with reference to the question as to whether both phonological rules and (some) syntactic representations are explained with pieces of information in ea other's structure (see (iv) of the research questions in the introduction of this thesis), th

chapter explains with the syntactic representation of 'antecedent-anaphor' relation in Akan that, indeed, syntax may refer to phonology, just as syntax may have influence in phonology as we have seen so far in the explanation of various phonological rules. In this chapter, therefore, issues relating to 'syntax-in-phonology' and 'phonology-in-syntax' are observed.

Organizationally, the next section, *5.1*, observes how the structural representation of topic construction (i.e., the constituent fronting and the intonational break) influences domain mapping in the p-structure and how the phonological rule that obtains in topic constructions is sensitive to available prosodic domains. Since focus and Q-word fronting constructions share a common c-structure (see chapter *four*; section *4.1.3.3*), they are explored together in section *5.2*. I discuss how their structural representation (i.e., constituent fronting, FOC insertion, and the focus effect) influences domain mapping in the p-structure and how phonological rules that obtain in them are set off by the resulting prosodic domains. Phonological (specifically, tonal) rule domains and phonetic realizations are presented in terms of Attribute-Value Matrix (AVM) in section *5.3*. In section *5.4*, I discuss a case of phonological (prosodic) influence in syntactic representation; specifically, the syntactic representation of 'antecedent-anaphor' relation in Akan. Finally, section *5.5* concludes the chapter.

5.1 Tonal structure of topic constructions

I show in this section that no distinctive tonal rule is realized in topic constructions, as compared to related simple clauses. In other words, the primary and the only occurring tonal rule in topic constructions is actually the same one that applies in the simp

clauses; i.e., the boundary assimilation rule (B-A), observed in chapters *one*, *two* and *three*. I show that this is the case, because the prosodic domain properties (and other phonological conditions) that set off B-A in simple clauses also attain in topic constructions despite the differences in phrase structure.

The application of B-A in simple clauses has been explained to some extent in section *2.7* of chapter *two*. Before analyzing its application in topic constructions in section *5.1.2* of this chapter, however, I briefly revisit B-A and its application in simple clauses in the following section, *5.1.1*. Certainly, revisiting the rule is timely here, since its application in topic constructions will be better understood in terms of its application in related simple clauses.

5.1.1 B-A in simple clauses

It has been noted in previous chapters that, with the application of B-A, a final tone of a word assimilates an onsetless or single-segment initial syllable in a succeeding word. Following this phonological fact in the initial/absorbing syllable, it was also noted that B-A is immediately conditioned by the syllable structure of the initial syllable. This condition has been referred to as 'syllable singleness'.

In (5.1) below, syllable singleness explains the application of B-A at both syntactic word boundaries of the clause in (5.1a) and non-application of the rule at the boundaries in the construction in (5.1b). Specifically, in (5.1a), the initial/absorbing syllables in the succeeding words (i.e., the verb and the object) are onsetless. So, B-A applies in them. In (5.1b), on the other hand, the initial syllables in the verb and the object are onset-marked (i.e., with onsets). So, B-A is blocked in them.

(5.1) Syllable singleness and application of B-A

a. [$_{IP}$ Kòfí [$_{VP}$ à-núnú [$_{NP}$ Àdú]]] ⇒ Kòfi á-!núnú Á!dú
Kofi PRF-tickle Adu
'Kofi has tickled Adu.'

b. [$_{IP}$ Kòfí [$_{VP}$ rè-núnú [$_{NP}$ Bàá]]] ⇒ Kòfi **r**è-nùnú **B**àá
Kofi PROG-tickle Baah
'Kofi is tickling Baah.'

Looking into the unyielding nature of the onset-marked initial syllables to the application of B-A, I reckon that the reason behind has to do with constituent opacity. In other words, the onsets (i.e., the consonants) are opaque. Being opaque, an onset of an absorbing syllable blocks the assimilatory effect of B-A, as has been realized in (5.1b).[30]

In terms of prosodic analysis, one crucial fact about B-A that was observed in the previous chapters is that the rule does not apply at every syntactic word boundary, even in cases where syllable singleness is met. As shown in (5.2a), for example, and unlike in (5.1a) above, B-A applies between the subject NP and the verb, but not between the verb and the object NP. As also shown in (5.2b), application of B-A

[30] There are some languages in which consonants block (or allow) tone spreading although, in most cases, consonants of a particular quality block a process. For instance, Hyman and Schuh (1974) and Schuh (1978) note that, in Bade (a Chadic language spoken in Nigeria), H-spreading is blocked from taking place in a L-toned initial syllable of a succeeding word if this syllable begins in nonglottalized voiced obstruent, including prenasalized voiced stops, as could be seen in the data below. The present case in Akan then is not unusual, although no specifications are made on the blocking consonants.

Bade: (from Schuh 1978: 226)

/nén kàtáw/	→ nén ká!táw	'I returned.'
/nén dàmáw/	→ nén dá!máw	'I submerged.'
/nén gàfáw/	→ nén **g**àfáw	'I caught.'

between the verb and the object NP in this case renders the tonal structure in the object and, for that matter, in the whole construction ill-formed.

(5.2) $[_{IP}$ Yàẁ $[_{VP}$ à-bó $[_{NP}$ Àbénáá]]]

⇒ a. Yàẁ à-bó Àbénáá b. * Yàẁ à-bó Á!bénáá

Yaw PRF-beat Abenaa

'Yaw has beaten Abenaa up.'

Based on the fact that B-A does not apply at syntactic word boundaries consistently, it has been explained that B-A does not immediately refer to constituent linearity and boundaries in the syntax. Rather, its application is predicted by phonological phrase (ϕ) boundary or boundaries that obtain between syntactic units. As shown in (5.3), a repetition of (3.26) in chapter *three*; section *3.4.4* (with a few additional descriptions), therefore, B-A has been described as a ϕ-domain juncture rule. Specifically, an onsetless or single-segment initial syllable of a succeeding word, which is also aligned to the left-edge of a ϕ it is contained, is assimilated by the final tone of the preceding word. The preceding word could be ϕ or a lower prosodic unit.

(5.3) *The boundary assimilation rule*

$$[_{S_2}\grave{\sigma}_{[-Onset]}\text{–}\sigma]_{\phi} \rightarrow [_{S_2}\acute{\sigma}_{[-Onset]}\text{–}\sigma]_{\phi} \;/\; [\,[_{S_1}\ldots\acute{\sigma}]\;\bar{\omega}/\omega/\phi\;\underline{\quad}\,]_{\phi}$$

Through the present mapping proposal, CMT, sketched in chapter *two*; (2.15) and partly given in (5.4) below, it was realized that simple clauses in Akan are primarily prosodized on the basis of the c-structure, as in (5.4*i*). But it was also noted that oth

grammatical information may be necessary in the prosodization in achieving a resourceful p-structure. One such information that was noted in the proposal of CMT is the syllable structure of the verb-stem; a phonological information (see (5.4*ii*)).

(5.4) *Compositional Mapping Theory* (*CMT*)

i. Spec-IP lexical constituent(s) constitutes one ϕ while the sentential head maps into a separate ϕ with its immediate complement.
$\Rightarrow$ $[_{IP}$ NP $[_{VP}$ V NP]] is mapped as $[NP]_{\phi}$ $[V\ NP]_{\phi}$

ii. A disyllabic verb-stem phrases separately from its lexical complement.

Now, from the syntactic and phonological information considered in CMT in (5.4), the simple clauses in (5.5) below are prosodized differently, although they have the same c-structure configuration. With this difference in mapping, B-A correctly applies with appropriate prosodic predictions within each of them. Specifically, in (5.5a), B-A realizes at the left-edge of the predicate (i.e., at 'NP_{Subj}-predicate' boundary) and at the left-edge of the object (i.e., at the 'predicate-NP_{Obj}' boundary) on the attainment of ϕ-boundaries. In (5.5b), on the other hand, B-A applies at 'NP_{Subj}-predicate' boundary only because that is the only syntactic boundary that also coincides with a ϕ-boundary.

(5.5) $[_{IP}$ NP $[_{VP}$ $V_{mono-/di-syllabic}$ NP]]

a. $[Kòfi]_{\phi}$ $[à\text{-}wáré]_{\phi}$ $[Àbénáá]_{\phi}$ = $[V_{disyllabic}]_{\phi}$ $[NP]_{\phi}$
Kofi PRF-marry Abenaa

$\Rightarrow$ $[Kòfi]_{\phi}$ $[á\text{-}!wáré]_{\phi}$ $[Á!bénáá]_{\phi}$
'Kofi has married Abenaa.'

b. [Yàẁ]$_{\phi}$ [à-bó Àbénáá]$_{\phi}$ = [V$_{monosyllabic}$ NP]$_{\phi}$

Yaw PRF-beat Abenaa

⇒ [Yàw̲]$_{\phi}$ [à-bó Àbénáá]$_{\phi}$

'Yaw has beat Abenaa.'

It is important to note that B-A has actually (but vacuously) applied between the subject NP and the verb in (5.5b), just as it has applied in (5.5a) with a downstepped effect in the verb. As noted earlier, B-A is not obvious in (5.5b) only because the assimilating syllable in the subject NP and the absorbing syllable in the verb are both L toned. So, assimilation obtains through identical tone merger in the absorbing syllable, the perfective aspectual marker. Application of B-A would have been obvious if the subject NP is H-final. In that case, however, as shown in (5.6a) below, the lexical H tone in the monosyllabic verb-stem surfaces as L tone, instead of a downstepped H tone (via the impact of the dislodged lexical L tone of the aspectual prefix). As also shown in (5.6b), a downstep in a monosyllabic verb-stem is ill-formed.

(5.6) [$_{IP}$ Kòfì [$_{VP}$ à-***bó*** [$_{NP}$ Àbénáá]]]

⇒ a. Kòfì *á-**bò*** Àbénáá

Kofi PRF-beat Abenaa

'Kofi has beaten Abenaa up.'

b. * Kòfì *á-!**bó*** Àbénáá

From data collected and from my own native speaker intuition, it seems to me that there must always be a tonal polarity ('L-H' or 'H-L') between the onsetless (perfect) aspectual prefix and a monosyllabic verb-stem. Explicitly, when the onsetless aspectual prefix is realized as L toned, the stem maintains its H tone (see 'L-H' in (5.5b) above

Conversely, when the prefix is realized as H toned, the stem assumes a default L tone (see 'H-L' in (5.6a)). Tonal polarity here is not an ad hoc assumption. As Pulleyblank (1986: 203), for instance, notes, '[it] is a common phenomenon in tone systems where a morpheme appears as H when adjacent to a L-tone, and as L when adjacent to a H-tone'.

There are limitations to the tonal polarity realization though. As shown in (5.7) below, when a monosyllabic verb-stem is sentence final (5.7a) or followed by another verb in a serial verb construction (5.7b) tonal polarity is not attained in the verb in question, but downstepping, just as it is realized in disyllabic verb-stems.

(5.7) a. Monosyllabic verb-stem at clause-final position

Kòfi á-!dá *not* *Kòfi á-dà

Kofi PRF-sleep

'Kofi has slept / Kofi is asleep.'

b. Monosyllabic verb-stems in serial verb construction

Kòfi á-!tó á-bɔ̀ Àbénáá *not* *Kòfi á-tɔ̀ à-bɔ́ Àbénáá

Kofi PRF-throw PRF-hit Abenaa

'Kofi has threw (something) at Abenaa (to hit her).'

The cases in (5.7) further call attention to the significance of the p-structure in phrasal rule analysis. In direct-syntax analysis, the two environments for downstepping in monosyllabic verb-stems (via application of B-A) are obviously diverse and also contradictory in explanation – i.e., *i*) the verb must be clause-final and *ii*) the verb must be first in serialization (in other words, the verb in question must not be clause-final). Also, since the syllable structure of a word is of no direct significance to the synta

verbs of every stem syllable structure will be considered equally, thereby giving more room for varied and complicated explanations as to where downstep should obtain or should not obtain. With prosodic analysis, however, these environments are conveniently captured with a statement. As the CMT-based prosodization of (5.7) in (5.8) shows, downstepping in the monosyllabic verb-stem obtains where the verb-stem aligns to the immediate right-edge of the ϕ within which it is contained. Recall that the downstep in the verb-stem initiates from the preceding unit with a final H tone, which dislodges a lexical L tone in the verb's onsetless prefix. The dislodged L tone then effects a reduction in the pitch level of the H tone in the verb-stem.

(5.8) a. Monosyllabic verb-stem at clause-final

[Kòfi]$_{\phi}$ [$_{VP}$ á-ꜜdá]$_{\phi}$

'Kofi has slept.'

b. Monosyllabic verb-stems in serial verb construction

[Kòfi]$_{\phi}$ [$_{VP}$ á-ꜜtó]$_{\phi}$ [$_{VP}$ á-bɔ̀ Àbénáá]$_{\phi}$

'Kofi has threw (something) at Abenaa.'

The ϕ-domain mappings in (5.8a & b) and the application of B-A therein are straightforward. In (5.8a), the lexical subject NP is immediately mapped into a separate ϕ from the verb with *LCC* (Lexical Category Condition) in perspective. Recall (from chapter *two* (2.6)) that *LCC* requires only lexical syntactic elements in overt representation and their projections to be considered in the mapping between syntax and p-structure. The intransitive (or complement-lacking) verb, although monosyllabic,

forced to phrase separately. Now, aligned to the right-edge of a ϕ, downstep is then allowed in the monosyllabic verb-stem through the application of B-A. Also, in (5.8b), the subject NP is immediately contained in one ϕ. As sentential heads, the verbs must phrase from each other. The succeeding verb, *àbɔ́*, however maps into one ϕ with the object NP, since it has a monosyllabic stem. Now, observe that whereas downstep is realized in the first verb, it is not realized in the succeeding one. Again, this is explanatorily simple in the p-structure; i.e., while the first verb immediately aligns to the right-edge of the ϕ within which it is contained, the succeeding one does not.

5.1.2 B-A in topic constructions

Having explained the application of B-A in simple clauses in detail, in this section, I continue with its application in topic constructions. In the prosodization of Akan topic constructions, I suggest that the constituent in topic immediately maps to a separate *I* (intonational phrase). This mapping follows from a generally held view in the literature that 'the ends of *I*s coincide with positions where pausing and lengthening may occur' (Dresher 1996: 43). Thus, once again, note that prosodic domain mapping is not entirely based on syntax, particularly the c-structure. As shown in (5.9) below, following the attainment of *I* status by the constituent in topic, the embedded canonical clause (i.e., IP; the comment) is also mapped into a common *I*.

(5.9) *C-structure* *I-domain mapping*

$[_{\text{TOPP}}$ Kòfi$_i$, $[_{\text{IP}}$ ɔ$_i$-à-fŕɛ́ Àtó]]] ⇒ [Kòfi$_i$]$_I$ [ɔ$_i$-à-fŕɛ́ Àtó]$_I$

Kofi, 3SG-PRF-call Ato

'Kofi, he has called Ato.'

B-A has been noted to apply between constituents that are separated by a *ϕ*-boundary or boundaries. Accordingly, in (5.9) above, observe that B-A does not apply between the constituent at Spec-TOPP, *Kòfi*, and ɔ̀-(*nó*) at Spec-IP, although *Kòfi* is H-final and /ɔ̀-/ is onsetless L-toned. In this case, *I*-boundaries attain between the constituents and B-A is appropriately blocked. This goes to affirm the fact that, domain-wise, B-A is only prompted by a *ϕ*-domain boundary or boundaries.

Within the embedded simple clause, contained in the succeeding *I*, however, B-A applies at the 'Spec-IP-predicate' and the 'predicate-complement' boundaries. As shown in (5.10) below, a complete prosodization of the construction in (5.9), B-A applies at these simple clause-internal (morpho)syntactic boundaries because the *ϕ*-boundaries that prompt the rule attain and coincide with the (morpho)syntactic boundaries in the embedded simple clause. Thus, the initial claim that B-A is also the primary phrasal rule in topic construction is confirmed.

(5.10) *C-structure*: $[_{\text{TOPP}}$ Kòfi$_i$, $[_{\text{IP}}$ ɔ̀$_i$- $[_{\text{VP}}$ à-fɾ̌ɛ́ Àtó]]]

⇒ *I-domain mapping*: [Kòfi$_i$]$_{\boldsymbol{I}}$ [ɔ̀$_i$-à-fɾ̌ɛ́ Àtó]$_{\boldsymbol{I}}$

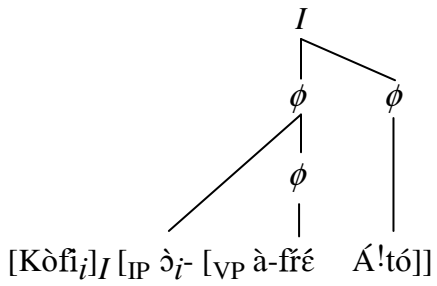
⇒ *ϕ-domain mapping*: [Kòfi$_i$]$_I$ [ɔ̀$_i$- [à-fɾ̌ɛ́]$_{\boldsymbol{\phi}}$]$_{\boldsymbol{\phi}}$ [Á!tó]$_{\boldsymbol{\phi}}$]$_I$

'Kofi, he has called Ato.'

A clarification of the *ϕ*-domain mapping and application of B-A in (5.10) is in order here. Observe that the RPro (at Spec-IP), as a functional constituent, does not constitute a separate *ϕ*. According to the present *ϕ* phrasing algorithm, CMT, among other grammatical facts, a constituent (in isolation) at Spec-IP has to be lexical in order

constitute a separate *ϕ*. Although the RPro is an independent word in the grammar, as far as the phonology is concerned, it is only reduced to a prosodic clitic and must adjoin to the verb. Considering the role of *LCC* in the mapping, however, the RPro does not immediately map into one *ϕ* with the verb either. As shown in (5.11), it rather becomes a sister to the *ϕ* containing the verb in another *ϕ*, resulting in a *ϕ*-recursion.

(5.11)



Considering Selkirk's (1996) distinction of prosodic clitics on the bases of sisterhood and dominance, the placement of the RPro as a sister to the adjacent *ϕ* in another *ϕ* makes it an *affixal clitic*. The other two clitics noted in Selkirk (1996: 188) are *internal clitic* and *free clitic*. I draw attention to the fact that, in Selkirk's analysis, the clitic is rather a sister to a prosodic word (*ω*) (not to a *ϕ*, as in (5.11)).

Continuing the clarification, it has been noted in the present mapping theory, CMT, that the verb constitutes a *ϕ* with or without its complement, depending on the syllable structure of the verb-stem and or the contentiveness (i.e., lexical or non-lexical status) of the complement. Since the verb in (5.10/11) is disyllabic and its complement is lexical, they are contained in separate *ϕ*s within the *I*. In the ensuing p-structure, observe that B-A still applies at the 'Spec-VP' boundary in (5.10/11), although the RPro is not immediately contained in a *ϕ*. This is because, a *ϕ*-boundary still realizes betwe

it and the sentential head (the verb) through the containment of the verb in a ϕ. Once again, note that B-A has applied in the verb, but it is not obvious because the assimilating tone is also L. As noted earlier, the assimilating L tone merges with the L tone in the absorbing syllable, instead of dislodging it.

Coming back to the intonational break as a grammatical input for *I*-domain identification in Akan, I explain here that intonational breaks resulting in *I*-boundaries may also arise in constructions with an NP containing a number of nouns; i.e., intonational breaks do not obtain at the right-edge of topic constituents alone. Consider the surface tone structure of the three nouns in the object NP of the constructions in (5.12b & c) with differences in prosodization of the c-structure in (5.12a).

(5.12) a. $[_{IP}$ Kòfi $[_{VP}$ à-fŕé $[_{NP}$ $[_{N_1}$ Àfúá] $[_{N_2}$ Àtàá] né $[_{N_3}$ Àtó]]]]
Kofi PRF-call Afua Ataa and Ato

⇒ b. [[Kòfi]$_\phi$ [á!fŕé]$_\phi$ [Á!fúá]$_\phi$]$_I$ [Àtàá]$_I$ [[né Àtó]$_\phi$]$_I$
'Kofi has called Afua, Ataa, and Ato.'

⇒ c. [[Kòfi]$_\phi$ [á!fŕé]$_\phi$ [Á!fúá]$_\phi$ [Átàá]$_\phi$ [né Àtó]$_\phi$]$_I$
'Kofi has called Afua Ataa and Ato.'

In (5.12b), the nouns in the object NP are considered as a list of names separated from each other by an intonational break. With the intonational breaks in place, each noun is mandated to map into a separate *I*. Consequently, B-A does not and cannot apply at the noun boundaries, although a noun and a succeeding one may be H-final and onsetless L-initial respectively. On the other hand, in (5.12c), the first and the second nouns a

considered as the name of an entity (a person). In this case, intonational break does not obtain between them. Accordingly, *I*-boundaries do not attain at the noun boundaries. However, note that the nouns do not constitute a compound either (see chapter *three* for the definition and domain of a compound). Instead, as lexical constituents, each of them is contained in a separate ϕ. With the attainment of ϕ-boundaries between adjacent nouns, since the first noun is H-final and the initial syllable in the second noun is onsetless, L-toned, and left-aligned (to the ϕ within which it is contained), B-A is conditioned to apply and it applies appropriately.

All these illustrations and analysis suggest that the p-structure (especially, one, the parsing of which other pieces of grammatical information are considered) is desirable in the explanation of application or non-application of phrasal rules, here B-A.

5.2 Phrasal rules in focus and Q-word fronting constructions

Besides B-A, an additional phrasal tone rule applies in focus and Q-word fronting constructions of Akan. I show in this section that the occurrence of FOC, "*na*" (as against "*deɛ*"), in focus and Q-word fronting constructions initiates this additional tonal rule and, in consonance with the indirect reference position taken in this study, I explain that the application of this rule is better explained in the p-structure of the grammar. I also explain that this tonal rule in focus and Q-word fronting constructions is due to a focus motivated domain restructuring and that it is sensitive to the left-edge of succeeding *I*-domain that attains from the restructuring. As will become evident, the restructuring also breaks down some edge alignments of ϕ-domains in a related simple (or Q-word *in-situ*) clause that becomes embedded in the focus (or Q-word frontin

construction. Consequently, the application of the expected tone rule in simple clauses, B-A, is blocked.

I begin the analysis by using only the current information specified in the present mapping theory, CMT (e.g., (5.4)), in the parsing of the focus constructions in (5.13).[31]

(5.13) *Canonical tone structure and focus tone structure*

a. $[_{FOCP}$ Ésî$_i$ $[_{FOC}$ nà$]$ $[_{\mathbf{IP}}$ wó- $[_{VP}$ àbóá nó$_i]]]$

⇒ [Ésî$_i$ nà$]_\phi$ [wó- [á-bóá nó$_i]_\phi]_\phi$

Esi FOC 2SG- PRF-help 3SG

'It is Esi that you have helped.'

b. $[_{FOCP}$ Kòfì$_i$ $[_{FOC}$ nà$]$ $[_{\mathbf{IP}}$ ɔ$_i$- $[_{VP}$ àkyé Àbénáá$]]]$

⇒ [Kòfì$_i$ nà$]_\phi$ [ɔ$_i$- [á-kyé Àbénáá$]_\phi]_\phi$

Kofi FOC 3SG-PRF-catch Abenaa

'It is Kofi who has caught Abenaa.'

c. $[_{FOCP}$ Ésî$_i$ $[_{FOC}$ nà$]$ $[_{\mathbf{IP}}$ Yàẁ $[_{VP}$ àbó nó$_i]]]$

⇒ [Ésî$_i$ nà$]_\phi$ [Yàẁ$]_\phi$ [á-bó nó$_i]_\phi$

Esi FOC Yaw PRF-beat 3SG

'It is Esi that Yaw has beaten (up).'

---

[31] As has been noted earlier, since focus and Q-word fronting constructions share a common c-structure (see chapter *four*), there is no need to use data from both constructions in the explanation of the prosodic restructuring and the associated rule(s). The surface tone structure that obtains in the embedded IP of focus construction is also the same as what obtains in the embedded IP in a Q-word fronting construction, as shown below, in comparison to (5.13a), for example.

$[_{FOCP}$ Hwáń$_i$ $[_{FOC}$ nà$]$ $[_{\mathbf{IP}}$ wó- $[_{VP}$ ábóá nó$_i]]]$ ⇒ [Hwáń$_i$ nà$]_\phi$ [wó- [á-bóá nó$_i]_\phi]_\phi$

who FOC 2SG- PRF-help 3SG

'Who have you helped?'

d. [$_{\text{FOCP}}$ Kòfí$_i$ [$_{\text{FOC}}$ nà] [$_{\textbf{IP}}$ ɔ$_i$- [$_{\text{VP}}$ rèbòá Àbénáá]]]

⇒ [Kòfí$_i$ nà]$_\phi$ [ɔ$_i$- [ré-bóá]$_\phi$]$_\phi$ [Á!bénáá]$_\phi$

Kofi FOC 3SG-PROG-help Abenaa

'It is Kofi who is helping Abenaa.'

In all the data in (5.13), the constituent in focus and the FOC are contained in one ϕ, since both are contained in common functional projection, FOCP (recall *LCC* on mapping). Specifically, the FOC is the head of the maximal projection that also governs the constituent in focus. With Spec-FOC and the FOC contained in one ϕ, I explain the individual ϕ-domain mappings in the embedded clauses in (5.13) in consonance with the current information specified in CMT as follows.

In (5.13a), the Spec-IP constituent could not constitute a separate ϕ because of its functional status. It is rather mapped into another ϕ with the succeeding ϕ, containing a disyllabic verb-stem and its functional complement, an RPro. Likewise, in (5.13b), the RPro in Spec-IP maps into another ϕ with the succeeding ϕ containing a monosyllabic verb-stem and its lexical complement. Unlike in (5.13a & b), in (5.13c), we have a lexical Spec-IP constituent and it is immediately mapped into one ϕ. The monosyllabic verb-stem is also contained in one ϕ with its RPro complement. Finally, in (5.13d), since the verb-stem is disyllabic and its complement is lexical, they are mapped into separate ϕs. The RPro at Spec-IP, as a prosodic clitic, is also contained in a recursive ϕ with the succeeding ϕ containing the verb.

Following the attainment of the triggering prosodic domain and domain properties of B-A; i.e., ϕ and ϕ-domain edge-alignments, one would expect the rule

apply consistently. However, this is not the case. From the data in (5.13), I explain that the H tones of the constituents at Spec-IP in (5.13a & b) cannot be the source of the surface H tones in the left-aligned aspectual prefixes in the succeeding ϕs. This is because, as can also be seen in (5.13c & d), the lexically L-toned aspectual prefixes in the succeeding ϕs again surfaces as H-toned after preceding L-final constituents. In addition, although ϕ-boundaries obtain between the FOC and the onsetless RPro at Spec-IP in (5.13b), B-A does not apply; the lexically L-toned RPro rather surfaces as H toned, instead of an assimilating L tone from FOC. Indeed, if B-A has applied, we would expect downstepping in the stem-initial H tone in the disyllabic verb-stem in (5.13a) (by the impact of the dislodged lexical L tone in the perfective aspect marker) and tone polarity in the monosyllabic verb-stem in (5.13b). The H tone on the RPro in (5.13b) is not even a lexical one (cf. the one in the c-structure). As I will show in section *5.2.3*, this H tone is as phrasal as the one in the perfective aspect in the succeeding ϕ.

Also to buttress the suggestion that, indeed, the final H tone of the Spec-IP constituents in (5.13a & b) cannot be the source of the surface H tone in the left-aligned perfective aspect in the succeeding ϕs is the surface tone realized in the onset-marked progressive aspect in the predicate in (5.13d). Recall an earlier observation in simple clauses that an onset (in the initial syllable of a word at the left-edge of a succeeding ϕ) blocks the application of B-A on the basis of the onset's opacity to the rule. In focus constructions, however, as can be seen in the verb in (5.13d), an onset-marked initial syllable also surfaces as H-toned, even after a L-final constituent in the preceding ϕ.

Based on the various observations made from the data in (5.13), I claim that the tonal alteration in the verb is due to a different tonal rule (rather than B-A) that realiz

in focus constructions. This does not mean that B-A does not apply in focus constructions at all. In (5.13d), B-A actually applies in the object upon the realization of ϕ-boundaries between the verb and the object.

5.2.1 Focus restructuring and the Inserted-H spread rule

Having observed that the tonal alterations in focus constructions cannot solely be due to B-A, in this section, I explain that the additional tonal rule in the focus constructions is brought about by a domain restructuring in the p-structure. As will become evident, this domain restructuring leads to emergence of *I*-domain boundaries and a simultaneous loss of some ϕ-domain boundaries that would have sensitized the application of B-A.

In the prosodization of Akan focus constructions, a restructuring of the basic ϕ-domains that are mapped on the basis of the current proposals of CMT (as in (5.13)) is realized. With this restructuring, the basic ϕ containing Spec-FocP and the Foc (i.e., [NP *na*]$_\phi$) picks up the immediate constituent at its recursive side, Spec-IP. Together, these constituents are then raised to the status of an *I*. As shown in (5.14), each verb is also mapped into a common *I* with its complement(s). Observe that the restructuring results in cancellation of the *LCC* motivated ϕ-boundary between Spec-IP and the verb.

(5.14) *Focus restructuring* in Akan

[$_{\text{FOCP}}$ NP *na* [$_{\text{IP}}$ *NP/Pro* [$_{\text{VP}}$ V$_{disyllabic}$ NP …]]]

a. [NP *na*]$_\phi$ [*NP*]$_\phi$ [VP]$_\phi$ [NP]$_\phi$ *CMT-based mapping*

⇒ **[**NP *na* [*NP*]$_\phi$ **]$_{\boldsymbol{\phi}}$** [VP]$_\phi$ [NP]$_\phi$ *Focus restructuring*

↳ **[**NP *na* [*NP*]$_\phi$ **]$_{\boldsymbol{I}}$ [**[VP]$_\phi$ [NP]$_\phi$ **]$_{\boldsymbol{I}}$**

b. [NP *na*]$_{\phi}$ [*Pro* [VP]$_{\phi}$]$_{\phi}$[NP]$_{\phi}$ *CMT-based mapping*

⇒ **[**NP *na Pro*]$_{\boldsymbol{\phi}}$ [VP]$_{\phi}$ [NP]$_{\phi}$ *Focus restructuring*

↳ **[**NP *na Pro*]$_{\boldsymbol{I}}$ **[**[VP]$_{\phi}$ [NP]$_{\phi}$]$_{\boldsymbol{I}}$

Following Marfo (to appear), I refer to this focus (motivated) restructuring in Akan as 'prosodic raising' (hence, p-raising), since the restructuring does not only involve ϕ-domain expansion, [NP *na*]$_{\phi}$ → [NP *na Spec-IP*]$_{\phi}$, but domain raising as well, [NP *na Spec-IP*]$_{\phi}$ → [NP *na Spec-IP*]$_{I}$. In other words, one prosodic domain is raised to an immediately preceding higher domain; in this case, ϕ to *I*. Frascarelli (2000, e.g., 62-64)) proposes similar restructuring of prosodic domains in Italian with the influence of focus and topic at play. In Frascarelli's proposal for Italian, however, the restructuring is directed towards the non-recursive side of the constituent in focus.

Following the domain realizations from p-raising, I suggest that the surface H tone that realizes in the verbs in (5.13) is an inserted one (hence, inserted-H), which is specifically induced by the L-toned FOC (see the next section, *5.2.2*, for arguments to this suggestion). As shown in (5.15) below, a restructuring of the data in (5.13), observe that this inserted-H prefers to dock on a constituent at the left-edge of a succeeding *I*, irrespective of its syllable structure. This left-edged constituent happens to be the verb.

(5.15) Focus restructuring and focus tone structure

a. [Ésî$_i$ nà]$_{\phi}$ [wó- [à-bóá nó$_i$]$_{\phi}$]$_{\phi}$

⇒ [Ésî$_i$ nà wó-]$_{I}$ [á-bóá nó$_i$]$_{I}$

Esi FOC 2SG- PRF-help 3SG

'It is Esi that you have helped.'

b. [Kòfì$_i$ nà]$_\phi$ [ɔ̀$_i$- [à-kyé Àbénáá]$_\phi$]$_\phi$

⇒ [Kòfì$_i$ nà ɔ́$_i$-]$_I$ [á-kyé Àbénáá]$_I$

Kofi FOC 3SG- PRF-catch Abenaa

'It is Kofi who has caught Abenaa.'

c. [Ésî$_i$ nà]$_\phi$ [Yàẁ]$_\phi$ [à-bó nó$_i$]$_\phi$

⇒ [Ésî$_i$ nà Yàẁ]$_I$ [á-bó nó$_i$]$_I$

Esi FOC Yaw PRF-beat 3SG

'It is Esi that Yaw has beaten (up).'

d. [Kòfì$_i$ nà]$_\phi$ [ɔ̀$_i$- [rè-bòá]$_\phi$]$_\phi$ [Á!bénáá]$_\phi$

⇒ [Kòfì$_i$ nà ɔ̀$_i$-]$_I$ [[ré-bóá]$_\phi$ [Á!bénáá]$_\phi$]$_I$

Kofi FOC 3SG- PROG-help Abenaa

'It is Kofi who is helping Abenaa.'

Further, observe in (5.15) that the inserted-H also spreads through the verb root. Hence, I refer to this tonal occurrence as the 'inserted-H spread' rule.[32] I particularly urge notice to the fact that it is *I*-boundaries that predict inserted-H spread in focus constructions. Within the *I*s, B-A also applies where the triggering ϕ-boundary or boundaries are attained. In (5.14d), for instance, unlike in (5.14b), B-A applies in the succeeding *I* between the verb and its complement. All these explanations emphasize the notion that rule domains – in the present case, B-A and inserted-H spread – are appropriately

[32] I draw attention to the fact that the inserted-H spread rule totally realizes in a predicate with the internal order of 'Aspect-Verb' (as in (5.15)), but not in a 'Verb-Aspect' order. In a 'Verb-Aspect' order, as shown below, inserted-H spread partially applies in the predicate; i.e., in the verb-stem alone.

[Ésî$_i$ nà Yàẁ]$_I$ [bóá-à nó$_i$]$_I$

Esi FOC Yaw help-PAST 3SG

'It is Esi that Yaw helped.'

defined in the p-structure and rule applications are properly explained through prosodic analysis.

5.2.2 Underscoring the origin of the Inserted-H (spread)

In the immediately preceding section, mention was made to the fact that the inserted-H, which results in the inserted-H spread rule, is induced by the L-toned FOC, "*na*". In this section, I show that this is exactly the case by revisiting the surface tone structure of the *dèɛ̀*-focus construction, explored along with the *nà*-focus construction in chapter *four* and the surface tone structure of topic construction (see section *5.1.2*).

5.2.2.1 FOC-induced Inserted-H (spread): Argument I

In chapter *four* (section *4.1.2*), it was observed that the morpheme, "*dèɛ̀*", occurs in the same syntactic position as "*nà*". In order to distinguish the two morphemes, among other facts, it was briefly noted that "*nà*" has a phonological significance, which "*dèɛ̀*" does not have. This is the inducement of the inserted-H spread rule in the construction. As shown again in (5.16), observe in comparison to the basic VP tone structure that the tone structure in the verb of the *dèɛ̀*-focus construction (5.16a) is not altered, but that in the verb of the *nà*-focus construction (5.16b) surfaces as H-toned.

(5.16) …… [$_{VP}$ rèbòá nó$_i$]

⇒ a. Á!má$_i$ *dèɛ̀* Kòfi <u>rè-bòá</u> nó$_i$ *Á!má$_i$ *dèɛ̀* Kòfi <u>ré-bóá</u> nó$_i$

Ama FOC Kofi PROG-help 3SG

'As for Ama, Kofi is helping her.'

⇒ b. Á!má$_i$ *nà* Kòfí rè-bóá nó$_i$ *Á!má$_i$ *nà* Kòfí rè-bòá nó$_i$

Ama FOC Kofi PROG-help 3SG

'It is Ama that Kofi is helping her.'

With the alternatives to (5.16a & b), I explain that application of inserted-H spread in the verb of a *dèè*-focus construction renders the tonal structure ill-formed. On the other hand, tonal ill-formedness is realized where the rule does not apply in the verb of *nà*-focus constructions. Considering the fact that both "*nà*" and "*dèè*" are 'focus markers' and appear in the same syntactic position, but the inserted-H spread rule applies in only *nà*-focus constructions, the data in (5.16) reinforces the suggestion that "*nà*" does invoke the inserted-H that results in the rule.

5.2.2.2 FOC-induced Inserted-H (spread): Argument II

It has been noted that both topic and focus constructions in Akan involve constituent (in focus or in topic) fronting in an extra-sentential clause. Further, in the prosodization of topic constructions, it has been noted in section *5.1.2* that a constituent in topic immediately maps to a separate *I* by the mandate of intonational break that inserts a boundary between it and the embedded canonical clause. The embedded canonical clause is also mapped into one *I*. In the case of focus constructions, it has been explained that a constituent in focus is also contained in an *I* with the FOC and the Spec-IP constituent through p-raising.

Now, as shown in (5.17) below, although a successive *I* is finally attained in topic constructions, just as it is attained in focus constructions, an inserted-H tone is n

realized on a constituent aligned to the left-edge of the succeeding *I*. Accordingly, the inserted-H spread rule does not apply here. Instead, as has been explained on several occasions and could be observed in (5.17), only B-A applies in the succeeding *I*.

(5.17) a. $[_{\text{TOPP}}$ Kòfi$_i$, $[_{\text{IP}}$ ɔ$_i$-à-fɾ́ɛ́ Àtó$]]$

⇒ $[Kòfi_i]_I$ $[[\underline{ɔ}_i$-$[\underline{à}$-fɾ́$\underline{ɛ́}]_\phi]_\phi$ $[\underline{Á}$!tó$]_\phi]_I$

Kofi, 3SG-PRF-call Ato

'(About) Kofi, he has called Ato.'

b. $[_{\text{TOPP}}$ Àtó$_i$, $[_{\text{IP}}$ Àfiá à-fɾ́ɛ́ nó$_i]]$

⇒ $[Àtó_i]_I$ $[[$Àfi$\underline{á}]_\phi$ $[\underline{á}$-!fɾ́ɛ́ $nó_i]_\phi]_I$

Ato, Afia PRF-call 3SG

'(About) Ato, Afia has called him.'

Compared to the surface tone structure that is realized in focus constructions, particularly in the verb, therefore, the tonal structure that results in topic constructions buttresses the claim that the realization of inserted-H (spread) in focus constructions is invoked by and, for that matter, associated with the FOC, "*nà*". Indeed, it could be argued that inserted-H spread does not apply in topic constructions because, unlike in focus constructions, the verb that absorbs the inserted-H does not immediately align to the left-edge of the *I* within which it is contained (not that inserted-H is invoke by "*na*").

5.2.3 P-raising and the regressive tone sharing rule

Besides the inserted-H spread rule, I also discuss another tonal occurrence in foc constructions that is capable of undermining the analyses made so far, if it is le

unexplained. This tonal occurrence may be realized in an RPro for a subject in focus that, as has been noted earlier, maps into one *I* with the Spec-FOCP constituent and the FOC through p-raising. It can be observed in (5.15b & d), repeated as (5.18a & b) below for ease of reference, that the lexically L-toned RPro for the subject in focus, ɔ̀(*nó*) at Spec-IP, surfaces as H-toned in (5.18a), but stays tonally intact in (5.18b).

(5.18) a. Kòfi$_i$ nà [$_{IP}$ **ɔ́**$_i$- [$_{VP}$ á-kyé Àbénáá]]

⇒ [Kòfi$_i$ nà **ɔ́**$_i$-]$_I$ [á-kyé Àbénáá]$_I$

Kofi FOC 3SG- PRF-catch Abenaa

'It is Kofi who has caught Abenaa.'

b. Kòfi$_i$ nà [$_{IP}$ **ɔ̀**$_i$- [$_{VP}$ rè-bóá Á!bénáá]]

⇒ [Kòfi$_i$ nà **ɔ̀**$_i$-]$_I$ [[ré-bóá]$_\phi$ [Á!bénáá]$_\phi$]$_I$

Kofi FOC 3SG- PROG-help Abenaa

'It is Kofi who is helping Abenaa.'

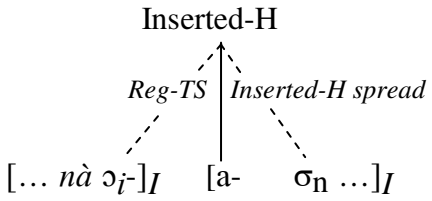
Following Marfo (2004b; to appear), I explain that the tonal difference in the RPro in (5.18) is due to a tonal rule, which takes a regressive course. On the basis of its regressive course, I refer to this rule as 'regressive tone sharing' (hereafter, Reg-TS).[33] Operating with the same immediate constraint as B-A; i.e., 'syllable singleness' (see section *5.1*), Reg-TS is blocked where the syllable to share its tone is onset-marked. Accordingly, Reg-TS applies and alters the lexical tone in the RPro aligned to the right-edge of the preceding *I* in (5.18a) through the influence of the tone in the onsetless

[33] The term, 'sharing', in Reg-TS is appropriate here in distinguishing the manner of the rule from that of assimilation. That is, unlike with B-A, for example, the tone that is being shared is not a lexical one. It is a surface one acquired through the inserted-H spread rule.

perfective aspectual morpheme, /a-/, aligned to the left-edge of the succeeding *I*. On the other hand, in (5.18b), Reg-TS is appropriately blocked from taking effect in the RPro at right-edge of the preceding *I* because the progressive aspectual morpheme, /re-/, at the left-edge of the succeeding *I*, to regressively share its acquired H tone is onset-marked.

For the sake of systematic and rational explanation of different occurrences in a construction, I assume here that Reg-TS takes place after the (*nà*-induced) inserted-H has appropriately docked. With this assumption, it follows that the spreading effect of the inserted-H is bi-directional. In other words, it spreads through the verb-stem at its right and into the RPro at its left, as shown in (5.19).

(5.19) Bi-directionality of the *nà*-induced inserted-H



Having explained the application of the Reg-TS rule, the prosodic analysis of the inserted-H spread rule remains suitable and sound. That is, the *na*-induced inserted-H docks on a constituent aligned to the left-edge of a succeeding *I*, but not on a constituent at Spec-IP or on any other succeeding constituent.

5.2.4 Inserted-H spread in the syntax

Indeed, the inserted-H spread rule could be explained directly in the syntax on the grounds that it is only realized in verbs, as we have seen in the appropriate data. Thus,

can simply be stated that the rule applies in a constituent located at the left-edge of VP. In support of such a direct-syntax explanation to inserted-H spread are cases of noun serialization and verb serialization in focus constructions.

It has been noted that, in noun serialization, each noun could be contained in an individual *I* by the mandate of intonational boundaries. If inserted-H is sensitive to left boundaries of successive *I*-domains and docks in a syllable aligned to the left-edge of *I*s, then, in focus constructions with serial nouns (in the object position, for instance), we will expect this H tone to realize in the initial syllables of the nouns that are individually contained in *I*s. As can be observed in the focus construction in (5.20) below, however, this is not the case. Inserted-H does not obtain in the nouns, which are correctly aligned to the left-edges of their individual *I*s.[34] Inserted-H (and the resulting inserted-H spread rule) only obtains in the verb at the left-edge of VP.

(5.20) [$_{FOCP}$ Kòfi$_i$ nà [$_{IP}$ ɔ$_i$- [$_{VP}$ rè-bòá [$_{NP}$ Àtàá, *Àfúá*, *Òsèî*, né Àtó]]]]
Kofi FOC 3SG PROG-help Ataa Afua Osei and Ato

⇒ [Kòfi$_i$ nà ɔ$_i$-]$_{\boldsymbol{I}}$ [^{H}[**ré-bóá**]$_{\phi}$ [Átàá]$_{\phi}$]$_{\boldsymbol{I}}$ [*Àfúá*]$_{\boldsymbol{I}}$ [*Òsèî*]$_{\boldsymbol{I}}$ [né Àtó]$_{\boldsymbol{I}}$
'It is Kofi who is helping Ataa, Afua, Osei and Ato.'

Also to support the direct-syntax explanation to the application of the inserted-H spread rule in focus constructions is the fact that, in a focus construction that involves serial verbs, the rule realizes in each of the verbs, as shown in (5.21). What is more, each of

[34] Indeed, each of the successive nouns is contained in an *I* instead of, for instance, in an ϕ. Otherwise, as can be seen between the predicate and the first noun, B-A would have also applied in the successive nouns.

the verbs is not immediately contained in an *I*, but in an ϕ, since each verb is potentially a sentential head and has to constitute a separate ϕ (with individual complements, where available), according to the present mapping theory, CMT. This realization would then suggest that inserted-H spread is not restricted to dock only on a constituent at the left-edge of an *I* after all, as the earlier prosodic analysis establishes.

(5.21) [$_{FOCP}$ Kòfí$_i$ nà [$_{IP}$ ɔ$_i$- [$_{VP}$ à-sɪ̀rɛ̀ [$_{VP}$ à-má Àtó]]]]

Kofi FOC 3SG PRF-beg PRF-give Ato

⇒ [Kòfí$_i$ nà ɔ$_i$]$_{\boldsymbol{I}}$ [ásɪ́rɛ́]$_{\boldsymbol{\phi}}$ [ámá Àtó]$_{\boldsymbol{\phi}}$

'It is Kofi who has begged for Ato.'

Indeed, inserted-H spread has really taken place in the verbs in (5.21), not B-A. If the alteration in the verbs has been due to the application of B-A, as discussed in section *5.1.1*, downstepping would have realized in the H-toned disyllabic verb-stem (by a dislodged L tone) and L tone would have realized in the monosyllabic verb-stem.

5.2.5 Inserted-H spread: A further prosodic analysis

Indeed, from the data in (5.20) and (5.21) above, the inserted-H docks at the left-edge of verbs and spreads through their stems. However, it is important to have a holistic explanation (within a particular theory) to all rules occurring in a construction or, in this dissertation, a number of constructions in order to obviate inconsistencies in explanations. Despite the sound direct-syntax analysis to the application or non-application of the inserted-H spread rule, it has been observed in previous chapters and sections that B-A is not adequately explained through direct-syntax analysis.

In fact, the non-application of the inserted-H spread rule in serial nouns, as in (5.20), and the application of the rule in serial verbs, as in (5.21), could be prosodically explained as well; thereby, affirming the utility of the p-structure in the analysis of phrasal rules. As shown in (5.22), a re-prosodization of (5.20), observe that inserted-H spread does not realize in the succeeding nouns (although each of them is immediately mapped into *I*) because all of them are also mapped into one *I* with the sentential head, the verb, through of p-raising. Now, within a major and outer *I*, the left-edges of the individual *I*-domains containing the succeeding nouns become unsusceptible to the inserted-H spread rule; i.e., they are hidden from the inserted-H.

(5.22) $[_{FOCP}$ Kòfí$_i$ nà $[_{IP}$ ɔ$_i$- $[_{VP}$ rè-bòá $[_{NP}$Àtàá], $[_{NP}$Àfúá], $[_{NP}$Òsɛ̀í], né $[_{NP}$Àtó]]]]

Kofi FOC 3SG PROG-help Ataa Afua Osei and Ato

⇒ **[**Kòfí$_i$ nà ɔ$_i$-**]*I*** **[**^{H} **[ré-bóá]**$_{\phi}$ [Átàá]$_{\phi}$ [*Àfúá*]***I*** [*Òsɛ̀í*]***I*** [né *Àtó*]***I*** **]*I***

'It is Kofi who is helping Ataa, Afua, Osei and Ato.'

Explaining the remapping of the verb and the individually *I*-contained nouns in a common *I* further is in order here. In the proposal of p-raising in focus constructions (see the structures in (5.14)), it was noted that the basic ϕ containing Spec-FOCP and the FOC restructures into an *I* with the immediate constituent at its recursive side (i.e., Spec-IP) and each verb in the embedded clause also maps into a common *I* with its complement(s). Now, since all the nouns are in the complement position of the verb, p-raising puts them in a common *I* with the verb, regardless of the intonational break that has permitted each succeeding noun to constitute a separate *I*. As also shown in (5.23

at Spec-IP position, the serial nouns are also mapped into one *I* with the basic ϕ containing the Spec-FOCP constituent and the FOC.

(5.23) [$_{\text{FOCP}}$ Kòfí$_i$ nà [$_{\text{IP}}$ [$_{\text{NP}}$Àtàá], [$_{\text{NP}}$Àfúá], [$_{\text{NP}}$Òsèî], né [$_{\text{NP}}$Àtó] [$_{\text{VP}}$ rè-bòá nó$_i$]]]

Kofi FOC Ataa Afua Osei and Ato PROG-help 3SG

⇒ **[**Kòfí$_i$ nà [Àtàá]$_\phi$ [*Àfúá*]$_I$ [*Òsèî*]$_I$ [né Àtó]$_I$ **]$_I$ [**$^{\text{H}}$[**ré-bóá** nó$_i$]$_\phi$ **]$_I$**

'It is Kofi who Ataa, Afua, Osei and Ato are helping.'

As noted with the subcategorization frame of the ϕ-rephrasing in chapter *three*, I recognize the fact that containing the *I*s of the serial nouns in another *I* also violates *NONRECURSIVITY* (Selkirk 1996) in the p-structure. Nevertheless, the recursion is permissible in the present case on the basis that *I*-domain recursion enables the parsing of appropriate rule domains and, for that matter, conclusive explanation to phrasal rules occurring. In this wise, again, in optimality-theoretic explications, *NONRECURSIVITY* would have to be dominated by a constraint like *RECUR*.

In the reanalysis of the serial verb construction in (5.21), shown in (5.24), I also contend that the inserted-H spread rule applies in both verbs because each of them is ultimately contained in a separate *I*. Here, again, the individual *I*-domain mapping of the verbs in (5.24) follows from p-raising. Recall that where serial verbs are involved in a focus construction, each of the verbs maps into one *I* with its complement(s) in the prosodic restructuring. This is so because each of the verbs is a sentential head.

(5.24) [$_{\text{FOCP}}$ Kòfí$_i$ nà [$_{\text{IP}}$ ɔ$_i$- [$_{\text{VP}}$ à-sɪ̀rɛ̀ [$_{\text{VP}}$ à-má Àtó]]

Kofi FOC 3SG PRF-beg PRF-give Ato

⇒ [Kòfí$_i$ nà ɔ$_i$]$_{\boldsymbol{I}}$ [ásŕé]$_{\boldsymbol{\phi}}$ [ámá Àtó]$_{\boldsymbol{\phi}}$

↳ [Kòfí$_i$ nà ɔ$_i$]$_{\boldsymbol{I}}$ [[ásŕé]$_{\phi}$]$_{\boldsymbol{I}}$ [[ámá Àtó]$_{\phi}$]$_{\boldsymbol{I}}$

↳ [Kòfí$_i$ nà ɔ$_i$]$_{\boldsymbol{I}}$ [ásŕé]$_{\boldsymbol{I}}$ [ámá Àtó]$_{\boldsymbol{I}}$

'It is Kofi who has begged for Ato.'

In fact, in LFG analysis, the verbs in a serial structure may constitute a 'predchain' (Bodomo 1998) (i.e., a predicate consisting of independent predicates) in the f-structure. In this case, it could be suggested that the verbs should be mapped into one *I*. However, as has been noted in chapter *two*, the p-structure is primarily parsed on the basis of information available in the c-structure of the grammar. In the c-structure, each verb constitutes a separate head. So, headedness information in the c-structure becomes an overriding factor in *I*-domain mapping in a focus construction (involving serial verbs). As shown in (5.25), the fact that serial verbs in Akan could be discontinued in the c-structure also supports the individual *I*-domain mapping of the verbs in serial structure.

(5.25) [$_{\text{FOCP}}$ Kòfí$_i$ nà [$_{\text{IP}}$ ɔ$_i$-[$_{\text{VP}}$ à-sŕè [$_{\text{NP}}$ Àtàá] [$_{\text{VP}}$ à-má [$_{\text{NP}}$ Àtó]]]]]

Kofi FOC 3SG PRF-beg Ataa PRF-give Ato

⇒ [Kòfí$_i$ nà ɔ$_i$]$_{\boldsymbol{I}}$ [ásŕé]$_{\phi}$ [Átàá]$_{\phi}$ [ámá Àtó]$_{\phi}$

↳ [Kòfí$_i$ nà ɔ$_i$]$_{\boldsymbol{I}}$ [[ásŕé]$_{\phi}$ [Átàá]$_{\phi}$]$_{\boldsymbol{I}}$ [ámá Àtó]$_{\boldsymbol{I}}$

'It is Kofi who has begged Ataa for Ato.'

In (5.25), observe that the first verb maps into one *I* with its complement, *Ataa* (separating the first verb from the second one), while the second verb maps into another *I* with its complement, *Ato*. Within the *I* containing the first verb and its complemer

the verb and the complement map into separate ϕs, since the verb-stem is disyllabic and the complement is lexical/full NP. B-A is then triggered by the internal ϕ-boundaries; hence, the surface H tone that is realized in the onsetless initial syllable of the noun, *Ataa*. Conversely, in the *I* containing the second verb and its complement, B-A is not realized in the onsetless initial syllable of the complement, *Ato*. As has been noted in several instances, again, this is because the verb-stem is monosyllabic and could not map into a separate ϕ from its complement. So, no ϕ-boundary obtains between them.

5.3 Domains and rule applications in Attribute-Value Matrices

In section *3.6* of chapter *three*, AVM-styled p-structure (through which the p-structure is related to the parallel structures of LFG (Butt and King 1998)) has been used to give explicit representations of lexical and phrasal tone structures in Akan compounds besides the mapped prosodic domains therein. In this section, I continue in this direction. I show the individual domain mapping in a simple clause, a topic construction and a focus construction and the surface tone structure that realizes in each one of them with the application of the appropriate rule(s).

It has been noted that the same phrasal rule, B-A, applies in simple clauses and topic constructions because the same domain boundaries obtain in the canonical clause, IP. The triggering domain of B-A has been identified as the ϕ and, as could be observed in the AVMs in (5.26) for a simple clause and (5.27) for a topic construction, B-A applies on the attainment of ϕ-domain boundaries. Once again, it is important to note that elements in the prosodic AVMs are hierarchically ordered (through *projection precedence*); especially, with the larger constructions.

(5.26) *Simple clause*

$[_{IP}$ Àtó $[_{VP}$ à-núnú Àdú$]]$ ⇒ [Àtó á-!núnú Á!dú]$_I$

Ato PRF-tickle Adu

'Ato has tickled Adu.'

$$\begin{bmatrix} \text{DOM} & I \\ \left\{ \begin{bmatrix} \text{DOM}_1 & \phi \\ \text{P-FORM} & \text{Ato} \\ \text{LEX-TONE} & \text{LH} \end{bmatrix} \begin{bmatrix} \text{DOM}_2 & \phi \\ \text{P-FORM} & \text{a-nunu} \\ \text{LEX-TONE} & \text{L-H} \end{bmatrix} \begin{bmatrix} \text{DOM}_3 & \phi \\ \text{P-FORM} & \text{Adu} \\ \text{LEX-TONE} & \text{LH} \end{bmatrix} \right\} \\ \text{LEFT-EDGE TONE} & \text{H} \end{bmatrix}$$

(5.27) *Topic construction*

$[_{TOPP}$ Àdú, **[IP** Àtó $[_{VP}$ à-núnú nó$]]]$ ⇒ Àdú, [Àtó á-!núnú nó]$_I$

Adu Ato PRF-tickle 3SG

'Adu, Ato has tickled him.'

$$\begin{bmatrix} \text{DOM} & U \\ \left(\begin{bmatrix} \text{DOM}_1 & I \\ \text{P-FORM} & \text{Adu} \\ \text{LEX-TONE} & \text{LH} \end{bmatrix} \begin{bmatrix} \text{DOM}_2 & I \\ \left(\begin{bmatrix} \text{DOM}_1 & \phi \\ \text{P-FORM} & \text{Ato} \\ \text{LEX-TONE} & \text{LH} \end{bmatrix} \left\{ \begin{bmatrix} \text{DOM}_2 & \phi \\ \text{P-FORM} & \text{a-nunu} \\ \text{LEX-TONE} & \text{L-H} \\ \left\{ \begin{bmatrix} \text{P-FORM} & \text{RPro} \\ \text{LEX-TONE} & \text{L-} \end{bmatrix} \right\} \end{bmatrix} \right\} \right) \\ \text{LEFT-EDGE TONE} & \text{H} \end{bmatrix} \right) \\ \text{LEFT-EDGE TONE} & \text{Nil} \end{bmatrix}$$

It could be observed from (5.26) and (5.27) that, in both constructions, the canonical clause is contained in an *I*-domain. Concerning the surface tone structure due to the application of B-A, only the tone that realizes in the absorbing syllable is given in the AVM and it is noted as LEFT-EDGE TONE. LEFT-EDGE TONE particularly refers to the left-edges of succeeding (lower) domains contained in every higher domain. For instance, in the higher domain of *I* in (5.26), LEFT-EDGE TONE refers to the left-edges of the succeeding ϕ_2 and ϕ_3. Recall that, in the application of B-A, the absorbing syllable is an onsetless initial syllable aligned to the left-edge of every succeeding ϕ in each of the constructions. In the present cases in (5.26) and (5.17), the value of LEFT-EDGE TONE has been consistently H.

Explaining the consistent surface H realization of LEFT-EDGE TONE further, observe in (5.26) that each of the syntactic constituents or P-FORMs (phonological forms) constitute one ϕ, [DOM(AIN) ϕ]. As such, B-A realizes in the onsetless initial syllables at the left-edge of succeeding ϕs, thereby altering the LEX-TONE (lexical tone structure) values of their P-FORMs. In (5.27), B-A also applies in the onsetless initial syllable of the succeeding ϕ within the succeeding *I*, but not in the onsetless initial syllable of the preceding ϕ. As has been explained before and can be witnessed from the AVM, this is because an *I* rather precedes this ϕ, which is also contained in the succeeding *I*. Consequently, B-A is blocked from applying. In the succeeding ϕ, observe that two P-FORMs are realized. However, the second P-FORM (with its LEX-TONE) is embedded in the first one because its value is a pronoun. As has been explained earlier, a pronoun (as a prosodic clitic, thus, a functional unit) cannot be independently contained in a ϕ.

In focus constructions, we have observed the application of the '*nà*-induced' inserted-H spread rule in a constituent at the left-edge of a succeeding *I*-domain and the application of B-A within *I*-domains where the triggering ϕ-boundaries are obtained in addition to the attainment of 'syllable singleness' in the absorbing syllable. In terms of AVM, these realizations in focus constructions are also shown in (5.28) below.

(5.28) *Focus construction*

$[_{FOCP}$ Kòfí$_i$ nà $[_{IP}$ ɔ$_i$-rè-bòá Àbénáá]] ⇒ Kòfí$_i$ nà ɔ$_i$-ré-bóá Á!bénáá

Kofi FOC 3SG-PROG-help Abenaa

'It is Kofi who is helping Abenaa.'

$$\begin{bmatrix} \text{DOM} & U \\ \left\langle \begin{bmatrix} \text{DOM}_1 & I \\ \text{P-FORM}_1 & \text{Kofi} \\ \text{LEX-TONE} & \text{LH} \\ \left\{ \begin{bmatrix} \text{P-FORM}_2 & \text{RPro} \\ \text{LEX-TONE} & \text{L} \end{bmatrix} \right\} \end{bmatrix} \begin{bmatrix} \text{DOM}_2 & I \\ \left\{ \begin{bmatrix} \text{DOM}_1 & \phi \\ \text{P-FORM} & \text{re-boa} \\ \text{LEX-TONE} & \text{L-LH} \end{bmatrix} \right\} \left\{ \begin{bmatrix} \text{DOM}_2 & \phi \\ \text{P-FORM} & \text{Abenaa} \\ \text{LEX-TONE} & \text{LH} \end{bmatrix} \right\} \\ \text{LEFT-EDGE TONE} & \text{H} \end{bmatrix} \right\rangle \\ \text{LEFT-EDGE TONE} & \text{H-}\textit{SPREAD} \end{bmatrix}$$

Observe that the whole focus construction in (5.28) is contained in a phonological utterance (*U*). The Spec-FOCP (P-FORM$_1$) and the Spec-IP (P-FORM$_2$) constituents, *Kofi* and the RPro, also map into one *I* through p-raising. However, occupied by an RPro, t

Spec-IP position does not map into a lower prosodic domain before p-raising, as has been noted earlier. So, it is immediately noted as a subsidiary P-FORM in the *I*. The succeeding *I* contains two ϕ-domains and the boundaries that result between them set off B-A. The application of B-A brings about the surface H tone in the onsetless initial syllable of the P-FORM in the succeeding ϕ-domain; i.e., LEFT-EDGE TONE (H). Similarly, the application of inserted-H spread at the left-edge of the succeeding *I* results in the surface H tone realized through the verb; i.e., LEFT-EDGE TONE (H-*SPREAD*).

It could be observed in (5.26), (5.27) and (5.28) that capturing domains of phrasal rules and phrasal rule applications in the AVM-styled p-structure enables clarity. That is, prosodic domains and edge sensitivity of phrasal tone rules are clearly shown.

5.4. P-structure and the 'antecedent-anaphor' relation

In chapter *one*; section *1.6*, following Feng (2003), Butt and King (1998), Zec and Inkelas (1990), etc., I have taken the position that syntax may make reference to phonology. This position has been explained with a case in Akan; i.e., intonation as one of the factors of distinguishing a *yes-no* question from a declarative sentence. I continue with this position in this section and explain that, in the 'antecedent-anaphor' relation that has been observed in topic, focus and Q-word fronting constructions in chapter *four*, the phonological form of the anaphor is dependent on the prosodic status of its antecedent. That is to say, a proper 'antecedent-anaphor' relation in Akan obtains with reference to phonological/prosodic information.

It has been noted that topic, focus and Q-word fronting constructions involve constituent dislocation to the specifier position of an extra-sentential projection (Spe

DF) and that, when an argument function is dislocated, its base position in the canonical clause is filled by a co-referential pronoun (noted as resumptive pronoun (RPro)); hence, the 'antecedent-anaphor' relation. So, as shown again in the constructions in (5.29) below, observe that the subject function that is dislocated into Spec-DF in each of the constructions is replaced by an RPro.

(5.29) a. *Topic*: [$_{\text{TOPP}}$ Kùsí$_i$, [$_{\text{IP}}$ ɔ̰$_i$- [$_{\text{VP}}$ rè-sɪ̀ɾɛ́ Kòfi]]]
Kusi, 3SG- PROG-beg Kofi
'(about) Kusi, he is begging Kofi.'

a. *Focus*: [$_{\text{FOCP}}$ Kùsí$_i$ nà [$_{\text{IP}}$ ɔ$_i$- [$_{\text{VP}}$ rè-sɪ̀ɾɛ́ Kòfi]]]
Kusi FOC 3SG- PROG-beg Kofi
'It is Kusi who is begging Kofi.'

c. *Q-word fronting*: [$_{\text{FOCP}}$ Hwáń$_i$ nà [$_{\text{IP}}$ ɔ$_i$- [$_{\text{VP}}$ rè-sɪ̀ɾɛ́ Kòfi]]]
who FOC 3SG- PROG-beg Kofi
'Who is begging Kofi?'

Once again, since focus and Q-word fronting constructions share a common c-structure, I will use only focus constructions to represent both of them.

In the anaphoric relation, a distinction is made between two kinds of antecedents. These are nouns (full NPs) and pronouns, which are described in this study as 'prosodically independent' and 'prosodically dependent/insufficient' respectively in the light of the constitution of a phonological/prosodic word (ω) (see (5.30)). This asymmetric distinction is based on the traditional notion of 'contentiveness' (i.e., the lexical/functional distinction), such that while full nouns are contentive (i.e., lexica

pronouns are not (hence, functional). From this distinction and in agreement with Zec and Inkelas (1990), Chen (1987), Selkirk (1996), etc., I suggest that unlike a noun, a pronoun does not constitute a ω. The domain of the ω in Akan, then, is given in (5.30).

(5.30) Domain of the prosodic word (ω):

Each contentive or lexical word (at a terminal node of c-structure) constitutes a phonological/prosodic word.

From the definition in (5.30), it is evident that there cannot always be a one-to-one correspondence between a syntactic word and a ω. Thus, as shown in (5.31) below, I explain that, in the syntax, each terminal node constitutes a syntactic word (indicated by *S*). However, in the p-structure, a constituent becomes a ω on the satisfaction of the ω-domain requirement in place; e.g., (5.30) for Akan. So, while *ɔ̀nó* 's/he' and *mè* 'I', for instance, are (morpho)syntactic words like *Kùsî* 'PN' and *Kòfî* 'PN', they need to be mapped with other constituents into a ω or a higher prosodic unit (e.g., see (5.11)).[35] As noted in chapter *one*; section *1.3*, I urge attention to the fact that, with the subscript $\bar{\omega}$, I only draw attention to the ω dependence/insufficiency status of functional words.

(5.31) a. $[_{\text{TOPP}}$ [Kùsî$_i$,]$_S$ [ɔ$_i$-]$_S$ [rèsɪ̀ɛ́]$_S$ [Kòfî]$_S$] *S*-domains

$[_{\text{TOPP}}$ [Kùsí$_i$,]$_\omega$ [ɔ$_i$-]$_{\bar{\omega}}$ [rèsɪ̀ɛ́]$_\omega$ [Kòfî]$_\omega$] ω-domains

'(About) Kusi, he is begging Kofi.'

[35] Recall that the 'third person' singular pronoun, *ɔ̀nó*, is represented as /ɔ̀-/ (or /ò-/, based on [±ATR] specification) in the subject position (see (5.31a)) and *nó* in the object position.

b. $[_{TOPP}\ [mé_{i,}]_S\ [mè_i\text{-}]_S\ [rèsɪ̀ré]_S\ [Kòfɪ̀]_S\ ]$ *S*-domains

$[_{TOPP}\ [mé_{i,}]_{\bar{\omega}}\ [mè_i\text{-}]_{\bar{\omega}}\ [rèsɪ̀ré]_{\omega}\ [Kòfɪ̀]_{\omega}]$ ω-domains

'(About) me, I am begging Kofi.'

The definition of ω-domain is necessary here because the ω status of an antecedent we may have in the topic and focus constructions determines the phonological form of its anaphor in Akan. Specifically, a focused or a topicalized argument function is replaced in the canonical base position by the 'third person' pronoun, *ɔ̀nó* (if singular) or *wɔ́ń* (if plural), where this argument function is also a ω and, for that matter, prosodically sufficient. The suggestion that follows is that, a focused or topicalized ω must correspond to a different (phonological) constituent in the canonical clause position. I describe this 'antecedent-anaphor' correspondence as *function-base diversity* (i.e., the base position of an argument function at Spec-DF is resumed by a different word). As could be observed in (5.32) and (5.33), therefore, in both focus and topic constructions, function-base diversity is realized.

(5.32) Focus construction: <u>Full Noun</u>

$[_{IP}$ Kòfɪ̀ $[_{VP}$ rè-wàré Ésɪ̂]]

Kofi PROG-marry Esi

'Kofi is marrying Esi.'

⇒ Subject: $[_{FOCP}\ [\underline{Kòfɪ̀}_i]_{\omega}$ nà $[_{IP}\ \underline{ɔ̀}_i\text{-}\ [_{VP}$ ré-wáré Ésɪ̂]]]

Kofi FOC 3SG- PROG-marry Esi

'It is Kofi who is marrying Esi.'

⇒ Object: $[_{FOCP}\ [\underline{Ésí}_i]_\omega$ nà $[_{IP}$ Kòfí $[_{VP}$ ré-wáré $[_{NP}\ \underline{nó}_i]]]]$

Esi FOC Kofi PROG-marry 3SG

'It is Esi who Kofi is marrying.'

(5.33) Topic construction: Full Noun

$[_{IP}$ m̀máá $[_{VP}$ hwɛ́ ǹkwàdàá]]]

woman.PL look.HAB child.PL

'Women take care of children.'

⇒ Subject: $[_{TOPP}\ [\underline{m̀máá}_i]_\omega, [_{IP}\ \underline{wɔ́ń}_i$- $[_{VP}$ hwɛ́ ǹkwàdàá]]]

woman.PL 3PL- look.HAB child.PL

'(About) women, they take care of children.'

⇒ Object: $[_{TOPP}\ [\underline{ǹkwàdàá}_i]_\omega, [_{IP}$ m̀máá $[_{VP}$ hwɛ́ $[_{NP}\ \underline{wɔ̀ǹ}_i]]]]$

child.PL woman.PL look.HAB 3PL

'(About) children, women take care of them.'

As the postulation in (5.30) predicts, pronouns fall short of a ω, hence their description as prosodically dependent (noted as, $\bar{\omega}$). Since only a focused or topicalized argument function that is also ω corresponds to a different phonological form in the canonical clause position, a pronoun must realize some other phonological form in the 'antecedent-anaphor' relation. What realizes with pronominal argument functions is that the same phonological form, as in Spec-DF, is maintained in the canonical position. Thus, as shown in both constructions in (5.34) and (5.35), an antecedent and its anaphor are identical. I refer to this 'antecedent-anaphor' correspondence as *function-base sameness* (i.e., the base position of an argument function is resumed by the same word)

(5.34) Focus construction: Pronoun

[$_{IP}$ wó- [$_{VP}$ rè-wàré mé]]

2SG- PROG-marry 1SG

'You are marrying me.'

⇒ Subject: [$_{FOCP}$ [wó$_i$]$_{\bar{\omega}}$ nà [$_{IP}$ wó$_i$- [$_{VP}$ ré-wáré mé]]]

2SG FOC 3SG- PROG-marry 1SG

'It is you who is marrying me.'

⇒ Object: [$_{FOCP}$ [mé$_i$]$_{\bar{\omega}}$ nà [$_{IP}$ wó- [$_{VP}$ ré-wáré [$_{NP}$ mé$_i$]]]]

1SG FOC 2SG- PROG-marry 2SG

'It is me who you are marrying.'

(5.35) Topic construction: Pronoun

[$_{IP}$ mó [$_{VP}$ hwɛ̀-ɛ̀ yɛ̀n]]]

2PL look-PAST 1PL

'You took care of us.'

⇒ Subject: [$_{TOPP}$ [mó$_i$]$_{\bar{\omega}}$, [$_{IP}$ mó$_i$- [$_{VP}$ hwɛ̀-ɛ̀ yɛ̀n]]]

2PL 2PL- look-PAST 1PL

'(About) you, you took care of us.'

⇒ Object: [$_{TOPP}$ [yɛ́ń$_i$]$_{\bar{\omega}}$, [$_{IP}$ mó- [$_{VP}$ hwɛ̀-ɛ̀ [$_{NP}$ yɛ̀n$_i$]]]]

1PL 2PL look-PAST 1PL

'(About) us, you took care of us.'

Now, with the 'antecedent-anaphor' relation distinction made between nominal (i.e., a prosodically sufficient) and pronominal (i.e., a prosodically insufficient) argume

functions, note that where a nominal argument function is replaced in the canonical clause through function-base sameness representation, structural ill-formedness realizes, as shown in (5.36). Indeed, the ungrammaticality of the constructions in (5.36) is also explained in terms of Principle C of the binding theory (Chomsky 1981; Bresnan 2001; etc.), which says that an R-expression/nominal must be free (everywhere). In (5.36), being coindexed in the canonical clause positions to antecedents, the full NPs (R-expressions/nominals) are not free, hence the ungrammaticality.

(5.36) a. Subject: * $[_{FOCP}\ [\underline{Kòfi}_i]_\omega$ nà $[_{IP}\ \underline{Kòfi}_i\ [_{VP}$ ré-wáré Ésí]]]

Kofi FOC Kofi PROG-marry Esi

'It is Kofi who is marrying Esi.'

b. Object: * $[_{TOPP}\ [\underline{ǹkwàdàá}_i]_\omega$, $[_{IP}$ mmáá $[_{VP}$ hwɛ́ $[_{NP}\ \underline{ǹkwàdàà}_i]]]]$

child.PL woman.PL look.HAB child.PL

'(About) children, women take care of them.'

Indeed, it is possible to analyze this anaphoric situation in Akan and the associated dichotomous distinction we have established so far directly in the syntax by simply saying that a focused or topicalized nominal argument function is replaced by a different constituent (i.e., a pronoun) in a canonical base position and a pronominal argument function is replaced by the same pronoun. However, there is one issue with the distinction that direct-syntax analysis may fall short of accounting for and integrating into such a generalization. This is where a focused or topicalized pronominal argument function does not occur in isolation, but rather conjoined with another pronoun or a noun; i.e., 'pronoun-in-conjunction'.

In the 'pronoun-in-conjunction' cases, as shown in (5.37) and (5.38), the focused or topicalized constituents are represented by a different pronoun in the base position. This different pronoun identifies with one of the antecedents in person, just as we realized with full nouns and 'third person' in (5.32) and (5.33), and the whole antecedent (of two syntactic constituents) identifies with the pronoun in number (i.e., plural). Also shown in (5.39) is the emphasis that, once a fronted pronominal argument function is in conjunction, a different pronoun must be in the canonical base position. Otherwise, the construction becomes ungrammatical.

(5.37) Focused pronominal subject-in-conjunction:

Pro+Pro: $[_{IP}\ [_{NP}$ mè né wó] $[_{VP}$ rèsɪ̀rɛ́ Kòfi]]

⇒ $[_{FOCP}$ mè né wó$_i$ nà $[_{IP}$ yè$_i$- $[_{VP}$ ré-sɪ́rɛ́ Kòfi]]]

1SG and 2SG FOC 1PL- PROG-beg Kofi

'It is you and me who are begging Kofi.'

(5.38) Topicalized pronominal object-in-conjunction:

Pro+Noun: $[_{IP}$ Kòfi $[_{VP}$ rè-sɪ̀rɛ́ $[_{NP}$ Àdú né wó]]]

⇒ $[_{TOCP}$ Àdú né wó$_i$, $[_{IP}$ Kòfi rè-sɪ̀rɛ́ $[_{NP}$ mó$_i$]]]

Adu and 2SG Kofi PROG-beg 2PL

'(about) Adu and you, Kofi is begging you.'

(5.39) *$[_{FOCP}$ mè né wó$_i$ nà $[_{IP}$ mè né wó$_i$-ré-sɪ́rɛ́ Kòfi]]

1SG and 2SG FOC 1SG and 2SG-PROG-beg Kofi

'It is you and me who are begging Kofi.'

The prosodic account to a 'pronoun-in-conjunction' case and its function-base diversity representation in the 'antecedent-anaphor' relation is based on a domain subcategorization frame that a pronoun sets up to attain ω status. Recall that a case of subcategorization frame, resulting in ϕ-recursion, have been observed in chapter *three*. In the present case, I explain that since a pronominal argument function is prosodically insufficient and unable to constitute a ω or a higher prosodic domain by itself, it creates a ω subcategorization frame, as schematized in (5.40), with which it attains the status of a ω with another NP-internal constituent (Marfo, to appear). As could be observed in (5.37) and (5.38) above, the other constituent could be a full noun or a pronoun.

(5.40) $[[\text{Pro}]_{\bar{\omega}}\ \_\_\ ]_{\omega}$ or $[\ \_\_\ [\text{Pro}]_{\bar{\omega}}\ ]_{\omega}$

Indeed, domain-wise, one may analyze 'pronoun-in-conjunction' cases as constituting a domain higher than a ω, considering the fact that the constituent a pronoun may conjoin with may already be a ω. With regards to the Strict Layer Hypothesis (SLH) (e.g., Selkirk 1984) of domain mapping, however, it is important to note that a pronoun must subcategorize into a ω (in the NP) first, before it could map/project into a higher unit.

Following the attainment of ω status through subcategorization, a focused or topicalized pronominal argument function (in-conjunction) has to be replaced in a canonical clause position with a different pronoun; hence, the realization of function-base diversity in the constructions in (5.37) and (5.38), repeated below as (5.41) and (5.42) with ω-description of the Spec-DF constituents (i.e., focus and topic). It is important to observe from (5.41) and (5.42) that it is through the conjunction-based ω subcategorization frame(s) that a pronoun is mandated to rise to the status of ω.

(5.41) Focused pronominal subject-in-conjunction:

Pro+Pro: $[_{IP}\ [_{NP}$ mè né wó$]\ [_{VP}$ rèsɪ̀ré Kòfi$]]$

⇒ $[_{FOCP}\ [[\underline{\text{mè}}]_{\bar{\omega}}\ \underline{\text{né wó}}]_{\boldsymbol{\omega_i}}$ nà $[_{IP}\ \underline{\text{yɛ̀}}_i$- $[_{VP}$ ré-sɪ́ré Kòfi$]]]$

1SG and 2SG FOC 1PL- PROG-beg Kofi

'It is you and me who are begging Kofi.'

(5.42) Topicalized pronominal object-in-conjunction:

Pro+Noun: $[_{IP}$ Kòfi $[_{VP}$ rè-sɪ̀ré $[_{NP}$ Àdú né wó$]]]$

⇒ $[_{TOCP}\ [\underline{\text{Àdú né}}\ [\underline{\text{wó}}]_{\bar{\omega}}\ ]_{\boldsymbol{\omega_i}}, [_{IP}$ Kòfi rè-sɪ̀ré $[_{NP}\ \underline{\text{mó}}_i]]]$

Adu and 2SG Kofi PROG-beg 2PL

'(about) Adu and you, Kofi is begging you.'

Following the observations made, the motivation for the prosodic analysis of the 'antecedent-anaphor' relation in Akan is clear. Specifically, the three cases – i.e., nouns, pronouns-in-isolation and pronouns-in-conjunction – are wholly explained with a statement as follows: Only prosodically sufficient (ω) constituent in topic or focus manifests function-base diversity. To put it differently, a fronted ω uses a different phonological form in its canonical base position, but a fronted $\bar{\omega}$ (prosodically insufficient) constituent uses the same phonological form in its canonical base position. This affirms the thesis that the prosodic status of a constituent exerts some influence in the syntactic representation of 'antecedent-anaphor' relation in Akan.

5.5 Summary

Phrasal rules that apply in simple clauses, topic and focus constructions have be discussed in this chapter. From the exploration of all the occurring rules, t

significance of the p-structure has again been observed. The rules that have been identified and explained are B-A (boundary assimilation), Inserted-H spread and Reg-TS (regressive tone sharing). It has been shown considerably that the p-structure of the grammar provides a convenient platform for a thorough and consistent explanation to all of the rules, instead of analyzing them directly in the syntax. As was also evident in chapter *three*, the resourcefulness of the p-structure has been observed in areas where a rule applies in isolation and, more importantly, in places where a rule applies concurrently with other rules. These go a long way to affirm the claim that domains of rule applications are well-defined within the p-structure and, for that matter, rule applications are well explained with prosodic considerations.

It has been realized that variations in syntactic structures (e.g., from canonical structure to focus structure or topic structure) could result in changes and or additions in phrasal rules, but the rules could still be appropriately explained in the p-structure. Particularly, considering the tonal rules that come to bear in a focus construction (i.e., Inserted-H spread, B-A and Reg-TS), as against the tonal rule that applies in a related simple clause or a topic construction (i.e., B-A), it has been explained that the c-structure configuration of focus (and the focus information) could only induce a restructuring in the p-structure. The emphasis then has been that, with a well-defined p-structure (i.e., one that considers all available and necessary grammatical information), domains and domain properties of rule applications are appropriately identified. Consequently, why a rule applies or does not apply in the same or a similar syntactic environment could be properly explained. To give sufficient account to surface tone structures that obtain with tone rule applications, tone rule domains have been presented in AVM-fashioned (attribute-value matrix) p-structure to some appreciable extent.

The ‘antecedent-anaphor’ relation in Akan topic, focus and Q-word fronting constructions has also been analyzed with prosodic consideration in this chapter. In this respect, it has been explained that a proper ‘antecedent-anaphor’ relation obtains with reference to phonological information. It has been shown that the phonological form of an anaphor is dependent on the prosodic status of its antecedent.

CHAPTER SIX

CONCLUDING REMARKS

In this dissertation, an attempt has been made to explain some pertinent issues relating to the interface between phonology and syntax in the course of discussing some phrasal rules and syntactic representations in a number of constructions in Akan. The issues that have been explained are i) how phonology interfaces with syntax in the analysis of phrasal rules, ii) how syntax (and other grammatical structures) map to phonology, iii) why it is desirable to explain phrasal rules in the perspective of phonology-syntax interface, and iv) how information reference between phonology and syntax is directed (i.e., is it mono-directional or bidirectional?).

Primarily, a few constructions in Akan have constituted the database of the investigation. Besides the identification and explanation of phrasal rules in them, either briefly or extensively, the individual structures of these constructions have been syntactically, discourse-contextually and/or semantically discussed within the framework of Lexical-Functional Grammar (LFG).

6.1 Positions, proposals and findings

Indirect reference hypothesis (in its absolute sense) has been adopted and used accordingly (as against alternative approaches, some of which have also been explor to some extent) with regards to how the phonology interfaces with syntax. In this wis

phrasal rules identified in selected constructions of Akan have been discussed with considerations established in the theory of prosodic phonology. The major finding has been that phrasal rules are adequately and consistently explained in the prosodic structure (p-structure). Concerning the mapping of syntax (and other structures) to phonology, Compositional Mapping Theory (CMT) has been proposed for Akan and, with it, it has been affirmed that any grammatical information that may become necessary is taken into account in sentence prosodization. As to why it is desirable to explain phrasal rules in the perspective of phonology-syntax interface, it has been shown that it is because phrasal rules apply at post-lexical level and that syntax contributes significantly to the input base on which domains of phrasal rule applications (in the p-structure) are parsed. Last, but not the least, with regards to information reference between phonology and syntax, it has been shown with a particular case in Akan – i.e., antecedent-anaphor relation (in chapter *five*; section *5.4*) – that (some) syntactic representations may refer to phonological information through the p-structure, just as phrasal rules make reference to aspects of syntax through the p-structure.

6.2 Overview of the various chapters

We may now go through what has been done in this thesis chapter by chapter. In chapter *one*, I have explored the nature of the phonology-syntax interface and the constitution of the p-structure, which has been explained as the medium through which syntactic (and other grammatical) information become accessible to phonological applications. Giving recognition to some proposed principles in the literature, it has been explained that the syntactic structure constitutes the primary input base for the parsing of the p-structure and that a phrasal rule (in Akan) is adequately explained within the p-structure.

Issues relating to syntax have also been discussed in chapter *two*; in particular, the framework of LFG, with which quite detailed syntactic (and other grammatical) analyses of constructions in this work are done. The mapping between phonology and syntax has been explored and the appropriateness of the c-structure, as the primary input base for the parsing of p-structure, has also been explained. The structure of the grammar has also been sketched and it emphasizes that other grammatical information may be necessary besides the c-structure for the parsing of a resourceful p-structure. I have explored some widely used mapping criteria for parsing domains of p-structure and explained why they are inadequate in the explanation of a working rule in Akan, boundary assimilation (B-A). Consequently, CMT, as an alternative and dynamic mapping theory that enables holistic and consistent explanation of B-A and other phrasal rules, has been proposed. CMT has been sketched on the basis of the simple clause (IP) as in (6.1), but it has also been noted that it consistently evaluates grammatical information that become necessary in other constructions.

(6.1) *Compositional Mapping Theory*

i. *Default phrasing*: Spec-IP lexical constituent(s) constitutes one ϕ while the sentential head maps into a separate ϕ with its immediate complement.

$\Rightarrow [_{IP}$ NP $[_{VP}$ V NP]] is mapped as $[NP]_{\phi}$ $[V\ NP]_{\phi}$

ii. Within the basic maximal projections:

d. A disyllabic verb-stem phrases separately from its lexical complement.
e. A tonally prominent lexical complement of a branching NP primarily maps into one ϕ (prominence is indicated by lexical H tone maintenance).
f. A succeeding number-marked NP-internal constituent also constitutes a separate ϕ.

Getting down to individual constructions, in chapter *three*, N-N and N-Adj compounds and rules that occur in them have been analyzed. In the analysis of the rules, it has been shown that determination of rule domains and comprehensive explanation of rule applications are adequately done in the p-structure of the grammar. That is, when and where a particular rule should apply is properly established in the p-structure. It has been shown that the rules, H-Deletion, In-Seg-Deletion (initial segment deletion) and V-Short (vocalic sequence shortening), are ϕ-internal. Two types of compound domains have been established and these domains have been represented in terms of attribute-value matrices (AVMs), along with the boundary tone structure each of them predicts. In view of the quite exhaustive account of the rules with prosodic considerations, it has been demonstrated that the p-structure is appropriate for rule analysis.

In chapter *four*, I concentrated on information structuring in topic, focus and Q-word fronting (of *wh*-questions) constructions. The configuration of these constructions in Akan has been observed. Discourse information distinctions between topic and focus functions and, especially, between focus and (fronted) Q-word functions in Akan have also been identified. More importantly, attention has been drawn to the individual semantic content of Q-word fronting construction and focus construction relative to the individual discourse-contextual information that obtains in Q-word *in-situ* construction and canonical clause counterparts. It has been explained that, unlike in a focus construction, the discourse-contextual information that is expressed in a Q-word fronting construction is the same one that obtains in a Q-word *in-situ* counterpart.

Following in chapter *five*, phrasal rules that occur in simple clauses, topic constructions and focus/Q-word fronting constructions have been discussed. Pursuing the indirect reference hypothesis, it has been shown again that the p-structure is t

appropriate platform for thorough and consistent explanation to all the rules identified in the constructions, particularly where different rules apply concurrently. It has also been shown with tonal rules occurring in focus constructions, vis-à-vis the tonal rule that realizes in simple clauses and topic constructions, that varied syntactic structures may only demand a restructuring in the p-structure. So, phrasal rules are still prosodically explained. It has also been shown that, in the syntactic representation of 'antecedent-anaphor' relation in focus and topic constructions, the prosodic status of an antecedent determines the phonological form of its anaphor. That is to say, proper 'antecedent-anaphor' relation is realized with reference to phonological information.

6.3 Some future research areas

A number of issues have been addressed and some proposals have been made in this thesis, which will contribute to the literature on the phonology/prosody-syntax interface. But some of these issues and proposals raise some questions that would need further research to resolve. One of them is the analysis of Akan compounds and their internal rules as phrasal phenomena and in the perspective of the phonology-syntax interface. As noted in chapter *three*, considering the fact that a compound may be seen as any other syntactic word on the basis of lexical integrity, perhaps, we need to discuss compounds and their internal rules at some level before syntax (e.g., strictly in the morphology), which would then interface with phonology. But, then again, the fact still remains that compounds in Akan are composed of lexical or free constituents (i.e., syntactic words) and reflect the syntactic phrase they obtain from, especially in the f-structure; hence, syntax must be involved. These directions of analysis of compounds (in Akan) could still constitute an attractive research area.

Another issue in this study that could provoke further research is the analysis of some phrasal rules as prosodic domain sensitive, even though they could be explained directly in the syntax as well. One such rule that has been observed in this study is the inserted-H spread rule in Akan focus constructions. Since it has been shown that, indeed, inserted-H spread could also be explained directly in the syntax, as a research area, it would be interesting to develop a theory (or reasoning) of rule application directly in the syntax by which all the rules that have been identified in the various constructions in this thesis could be conclusively accounted for.

Also, the fundamental issues relating to phonology-syntax interface as a general research area still remain contentious; for instance, choosing between the direct reference and indirect reference hypotheses of phrasal rule explanation; the issue of phonological information involvement in (some) syntactic representations; among others. Nevertheless, all these issues make phonology-syntax interface analysis of phrasal phenomena in Akan and other natural languages an attractive research area, which could provide some insights to the understanding of grammar.

APPENDIX

I. Other compounds in Akan

There are also Verb-Verb (V-V), Verb-Noun (V-N), Adjective-Noun (Adj-N) and Noun-Verb (N-V) compounds besides N-N and N-Adj compounds As Dolphyne (1988) and Anyidoho (1990) note. Examples are as given in (A), (B), (C) and (D).

(A)	V—V		Compound	
i.	gyé, dî	'to take, to eat'	» gyédî(é)	'faith / trust'
ii.	sú, frɛ̀	'to cry, to call'	» súfrɛ́	'appeal'
iii.	hòmè, gyé	'to breath, to take'	» àhòmègyé(ɛ́)	'a rest'
v.	sɔ́, hwɛ́	'to try, to see'	» ǹsɔ́hwɛ́	'tribulation'
iv.	dɔ́, dî	'to weed, to eat'	» dɔ́dî(é) / ǹnɔ́dî(é)	'subsistence'

(B)	V—N		Compound	
i.	bɔ́, èdîń	'to call, name	» àbɔ́dîń	'a title'
ii.	gyé, ǹkwá	'to take, life'	» àgyèǹkwá	'savior'
iii.	tú, àbóá	'to fly, animal'	» àtúbóá	'a fly'
iv.	dî, àbórɔ́	'to eat, malice'	» dîàbórɔ́	'malicious person'
v.	kɔ́, àyîé	'to go, funeral'	» kɔ́àyîé	'regular funeral participant'

(C)	Adj—N		Compound	
i.	kɛ̀sɛ́ɛ́, àsɛ́mń	'big, story'	» àkɛ̀sɛ̀sɛ́mń	'show off'
ii.	fɛ̀ɛ̀fɛ́, àdɛ́ɛ́	'beautiful, thing'	» àfɛ̀ɛ̀fɛ́dɛ́ɛ́	'a beautiful thing'

(D)	N——V		Compound	
i.	ɛ̀kwáń, hyìà	'road, to meet'	» ɛ̀kwàǹhyìá	'accident'
ii.	àkwáń, kyèrɛ̀	'roads, to show'	» àkwáńkyérɛ́	'direction'
iii.	òsé, bɔ́	'out-cry, to make'	» òsé!bɔ́	'jubilation'
iv.	àsɛ́mń, ká	'story, to say'	» àsɛ́ǹ!ká	'evangelism'

In most of the V-V, V-N and (all of) Adj-N compounds, as could be seen in (A2), (B2) and (C2) respectively, the first member (i.e., V or Adj) is nominalized before entering into the compounds.

(A2)	V——V	→	V_{Nom}——V		Compound
i.	hòmè, gyé to breath, to take	»	à-hó!mé, gyé breathing, to take	»	àhòmègyé(ɛ́) 'resting'
ii.	dɔ́, dǐ to weed, to eat	»	à-dɔ́, dǐ weeding, to eat	»	àdɔ́dǐ(é) / ǹnɔ́dǐ(é) 'subsistent farming'
iii.	sɔ́, hwɛ́ to try, to see	»	ǹ-sɔ́, hwɛ́ trying, to see	»	ǹsɔ́hwɛ́ 'tribulation / test'

(B2)	V——N	→	V_{Nom}——N		Compound
i.	bɔ́, èdǐń to call, name	»	à-bɔ́, èdǐń calling, name	»	àbɔ́dǐń 'a title'
ii.	gyé, ǹkwá to take, life	»	à-gyé, ǹkwá act of taking, life	»	àgyèǹkwá 'savior'
iii.	tú, àbóá to fly, animal	»	à-tú, àbóá flying, animal	»	àtúbóá 'a fly'

(C2)	Adj——N	→	Adj_{Nom}——N		Compound
i.	kɛ̀sɛ́ɛ́, àsɛ́ḿ big, story	»	àkɛ̀sɛ́ɛ́, àsɛ́ḿ big ones, story	»	àkɛ̀sɛ̀sɛ́ḿ 'a show off'
ii.	fɛ̀ɛ̀fɛ́, àdɛ́ɛ́ beautiful, thing	»	àfɛ̀ɛ̀fɛ́, àdɛ́ɛ́ beautiful ones, thing	»	àfɛ̀ɛ̀fɛ́dɛ́ɛ́ 'a beautiful thing'

Anyidoho (1990) also notes that, with N-V compounds, the verb is nominalized in the construction. According to her, this explains why an initial H tone in the verb may be downstepped. As shown in (D2) below, the L tone in the deleted nominalizing prefix in the compounds (through the application of In-Seg-Deletion) reduces the pitch of the verb's (now, N2) stem-initial H tone. As has been observed, this applies in cases whe

H-Deletion does not apply in the N1 and, for that matter, B-A has to apply in the succeeding compound member.

(D2)	N—V	→	N———V_{Nom}		Phrasal word
i.	òsé, bɔ́ out-cry, to make	»	òsé, ɛ̀-bɔ́ out-cry, making	»	òsé!bɔ́ jubilation
ii.	àsɛ́mɔ́, ká story, to say	»	àsɛ́mɔ́, ɛ̀-ká story, saying	»	àsɛ́ɔ́!ká evangelism
iii.	ɛ̀ká, dáɔ́ debt, to demand	»	ɛ̀ká, ɛ̀-dáɔ́ debt, demanding	»	ɛ̀ká!dáɔ́ debt collection

II. Noun Classes in Akan

Classes	**Singular Form**		**Stem**	**Plural Form**	
1 :	***V-***			***N-***	
a. *O-/N-*	ɔ̀báá	'female'	-báá	m̀máá	'females'
	òdwɑ́ɔ́	'sheep'	-dwɑ́ɔ́	ǹnwɑ́ɔ́	'flock of'
b. *A- / N-*	àtààdé	'cloth'	-tààdé	ǹtààdé	'clothes'
	àbòfŕá	'child'	-bòfŕá	m̀mòfŕá	'children'
c. *(V-)/ N-*	ɔ̀kŕámáɔ́	'dog'	-kŕámáɔ́	ǹkŕámáɔ́	'dogs'
	ɛ̀bŕɛ́	'time'	-bŕɛ́	m̀mŕɛ́	'times'
2 :	***Ø-***			***N-***	
	bépɔ́	'mountain'	-bépɔ́	mmépɔ́	'mountains'
	kàsɛ̀ɛ́	'bone'	-kàsɛ̀ɛ́	ǹkàsɛ̀ɛ́	'bones'
3 :	***V-***			***A-***	
a. *O- / A-*	ɔ̀súnú	'elephant'	-súnú	àsúnú	'elephants'
	òpúró	'squirrel'	-púró	ɑ̀púró	'squirrels'
b. *(V-) / A-*	ɔ̀pɛ́!tɛ́	'vulture'	-pɛ́!tɛ́	àpɛ́!tɛ́	'vultures'
	ɛ̀kúó	'group'	-kúó	ɑ̀kúó	'groups'

4	**:**	***Ø-***			***A-***	
		kú!dʊ́ɔ́	‘canoe’	-kú!dʊ́ɔ́	àkú!dʊ́ɔ́	‘canoes’
		dèǹsù	‘whale’	-dèǹsù	ɑ̀dèǹsù	‘whales’

5	**: +**kinship	***V- / Ø-***			***A- / Ø- _ -nʊm***	
	a. *V- / A-*	ònùá	‘sibling’	-nùá-	ɑ̀nùánʊ́mʹ	‘siblings’
		ɔ̀yírí	‘wife’	-yírí-	àyírínʊ́mʹ	‘wives’
	b. *Ø- / Ø-*	nànáʹ	‘grand...’	-nànáʹ-	nànánʊ́mʹ	‘grand...s’
		wɔ̀fà	‘uncle’	-wɔ̀fà-	wɔ̀fànʊ́mʹ	‘uncles’

6	**:**	***(O)- _ -ni***			***A- _ -fʊɔ***	
	a. *O- / A-*	òsĭkànî	‘the rich’	-sĭká-	ɑ̀sĭkàfʊ́ɔ́	‘rich people’
Identity/ occupational		òkr̀ístònî	‘christian’	-kr̀ístò-	ɑ̀kr̀ístòfʊ́ɔ́	‘christians’
	b. *Ø- / A-*	tíkyànî	‘teacher’	-tíkyà-	ɑtíkyàfʊ́ɔ́	‘teachers’
Identity/ occupational		sógyànî	‘soldier’	-sógyà-	ɑsógyàfʊ́ɔ́	‘soldiers’

7	**:**	***(O)- _ -ni /-Ø***			***N- _ -fʊɔ***	
	a. *-ni / N-*	òkr̀èmòni	‘moslem’	-kr̀èmó-	nkr̀èmòfʊ́ɔ́	‘moslems’
		òdèdùàni	‘prisoner’	-dèdùà-	nnèdùàfʊ́ɔ́	‘prisoners’
	b. *-Ø / N-*	ɔsá!máńʹ	‘ghost’	-sá!máń-	ǹsàmàǹfʊ́ɔ́	‘ghost’
		ɔpànîńʹ	‘elder’	-pànîń-	m̀pànyĭn̄fʊ́ɔ́	‘elders’

8	**:**	***A-***			No plural	
		àdɔ́	‘farming’	-dɔ́		
	(derived) no plural	àgʊ́rɔ́	‘game’	-gʊ́rɔ́		
		ɑ̀yî́é	‘funeral’	-yî́é		

9	**:** Mass	No singular			***N-/V-***	
	a. */ N-*			-fr̀àmá	m̄fr̀àmá	‘air’
				-sórómá	ǹsórómá	‘stars’
	b. *- / V-*			-wóɔ́	ɛ̀wóɔ́	‘honey’
				-sî́kyĭré	ɑ̀sî́kyĭré	‘sugar’

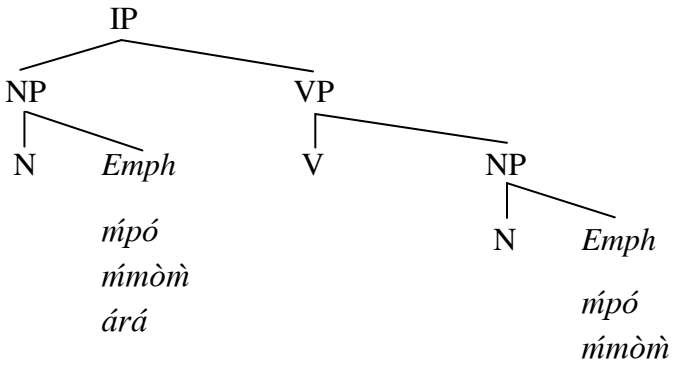
III. Other FOC-like morphemes

In addition to "*deɛ*" and "*na*", the other morphemes that are noted without illustration and referred to as 'emphatics' in Boadi (1974) are:

i. *mpó* 'even'
ii. *mmòǹ* 'rather or conversely' and
iii. *árá* 'self'

These morphemes do put emphasis on a constituent to which they follow. However, unlike "*deɛ*" and "*na*", the occurrence of any of these morphemes is not limited to extra-sentential clauses. Indeed, as the c-structure in (1) and the data in (2) show, the 'emphatics' morphemes (*Emph*) only occur as adjuncts to argument functions in the canonical IP clauses.

(1)

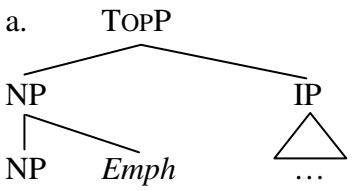


(2)

	Adjunction to the subject	*Adjunction to the object*
a.	Kòfí *mpó* rè-bòá Á!má Kofi even PROG-help Ama 'Even Kofi is helping Ama.'	Kòfí rè-bòá Á!má *mpó* Kofi PROG-help Ama even 'Kofi is helping even Ama.'
b.	Kòfí *mmòǹ* rè-bòá Á!má Kofi rather PROG-help Ama 'Kofi (rather than *X*) is helping Ama.'	Kòfí rè-bòá Á!má *mmòǹ* Kofi PROG-help Ama rather 'Kofi is helping Ama (rather than *X*).'
c.	Kòfí (nó) *árá* rè-bòá Á!má Kofi self PROG-help Ama 'Kofi is helping Ama himself.'	

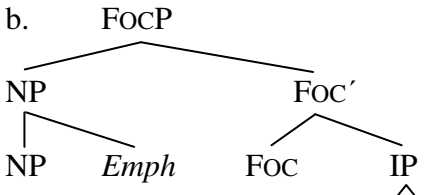
Even in extra-sentential clauses, the 'emphatic' morphemes do not take the head position of the functional phrase. As shown in the c-structures in (3), they still adjoin to the constituent in focus or in topic. That is, as adjuncts to argument functions, they are rather dislocated along with the argument functions to the specifier position of the functional phrase.

(3) a.



mípó
mímòǹ
árá

b.



mípó
mímòǹ
árá

As adjuncts, each of the 'emphatic' morphemes only plays a complementary role within a topic or a focus NP and cannot be described as an alternative to "*na*", as the data in (4) illustrate. Recall that FOC is only invoked at the head position of the projected focus function.

(4) (a) *Topic construction*

i. Kòfi$_i$ *mípó*, ɔ$_i$-ré-bóá Á!má
Kofi even 3SG-PROG-help Ama
'Kofi, even he is helping Ama.'

ii. Kòfi$_i$ *mímòǹ*, ɔ$_i$-ré-bóá Á!má
Kofi rather 3SG-PROG-help Ama
'Kofi, he (rather than *X*) is helping Ama.'

iii. Kòfi$_i$ (nó) *árá*, ɔ$_i$-ré-bóá Á!má
Kofi (DEF) self 3SG-PROG-help Ama
'Kofi, he himself is helping Ama.'

(b) *Focus construction*

i. Kòfi$_i$ *mípó* nà ɔ$_i$-ré-bóá Á!má
Kofi even FOC 3SG-PROG-help Ama
'Even it is Kofi who is helping Ama.'

ii. Kòfi$_{ị}$ *mímòmì* nà ɔ$_{ị}$-ré-bóá Á!má
Kofi rather FOC 3SG-PROG-help Ama
'It is Kofi rather (than *X*) who is helping Ama.'

iii. *Kòfi$_{ị}$ (nó) árá* nà ɔ$_{ị}$-ré-bóá Á!má
Kofi (DEF) self FOC 3SG-PROG-help Ama
'It is Kofi himself who is helping Ama.'

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