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DECLARATION

I, **JACOB BAYAAMOGO JAMBADU** hereby declare that this thesis with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is exclusively my own original work. This work has not been submitted in either part or whole for any other degree elsewhere.

Signature: ……

Date: ……

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines for supervision of thesis as laid down by the University of Education, Winneba.

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DATE: ……..…..

DEDICATION

I dedicate this work to the Jambadu's family.

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LIST OF ABBREVIATIONS

Hod	Head of Department
DBI	Daffiama-Bussie-Issa
+ATR	Advanced Tongue Root
-ATR	Unadvanced Tongue Root
PL	plural
CxM	Construction Morphology
PST	past tense
DEF	definite
INDEF	indefinite
DET	determiner
PEF	perfective
IMPEF	imperfective
FOC	focus
NPs	noun phrases
N-A	Noun-Adjective
N-N	Noun-Noun
N-N-A	Noun-Noun-Adjective
V-V	verb-Verb
N-V-N	Noun-Verb- Noun
Lit.	literal
NEG	negative

P.A	place of articulation
CV	Consonant vowel
CVV	consonant vowel vowel

ABSTRACT

Words are the building blocks of language and "knowing the structure of words and their formation in a language empower speakers to form new words in the language without violating the morphotactics of that language" (Lawer 2017, p. 1). The morphology of Sɪsaalɪ is yet to receive the attention it deserves. Consequently, considering the importance of compounding as an interesting linguistic phenomenon, this study explores the phenomenon in Sɪsaalɪ to unravel the nature of compounding in the language and to distinguish compounds from other complex structures like NPs and derived nominals in the language. Data for the study is drawn from electronic media (radio discussions), interactions with speakers of Sɪsaalɪ, books and documents in Sɪsaalɪ. This was augmented by the native speaker intuition and introspection of the researcher. The study reveals that, the syntactic constituents of Sɪsaalɪ compounds include Noun-Noun, Noun-Adjective, Verb-Verb, Noun-Verb, Noun-Verb-Noun, Noun-Noun-Adjective. It is also observed that there exit personal names in Sɪsaalɪ that are compounds which constituents are a combination of different syntactic categories. It is revealed that, in Sɪsaalɪ, N-N compounds are nominal and the most prevalent forms of compounds. It is observed that, there exist both endocentric and exocentric compounds in Sɪsaalɪ. The endocentric compounds in Sɪsaalɪ could right-headed or co-ordinate despite the existence of a few left-headed ones. Using Construction Morphology, it is claimed that the semantic relation between the constituents of Sɪsaalɪ compounds are subjective to the syntactic constituents. The phonological processes that are involved the compounding is also looked at. It is observed that, some phonological processes that occur in Sɪsaalɪ compounding include: vowel harmony, homorganic nasal assimilation, vowel elision segment deletion and syllable deletion

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This thesis explores compounding in Sısaalı, a Mabia (Gur) language of northern Ghana. This chapter contains the introduction to the thesis, which includes the background to the study, the background to the language, the statement of the problem, research objectives, research questions, significance of the study, methodology, organization of the thesis and the conclusion of the chapter.

The principal objective of a linguistic theory is to find out what people know about a language they speak (Chomsky 1965: 4). Theories are not arrived at in a vacuum. It takes research to hypothesize and develop a theory. Hence, there is the need for research. Chomsky posits that, the person who knows a language perfectly has little or no conscious knowledge of the rules that he uses constantly in speaking or hearing, writing or reading, or internal monologue. Albeit, it is this system of rules that enables him to produce and interpret sentences that he has never encountered. It is an important fact, too often overlooked, that in normal everyday discourse, one understands and produces new utterances with no awareness of novelty or innovation, although these normal utterances are similar to those previously produced or encountered in that they are formed and interpreted by the same grammar, the same internalized system of rules Chomsky (1965: 4). Knowing the structure of words and their formation in a language empowers speakers to form new words in the language without violating the morphotactics of that language (Lawer 2017). Morphology, study of the internal structure of words and how the various constituents of the complex words are patterned enables one to understand how new words are formed.

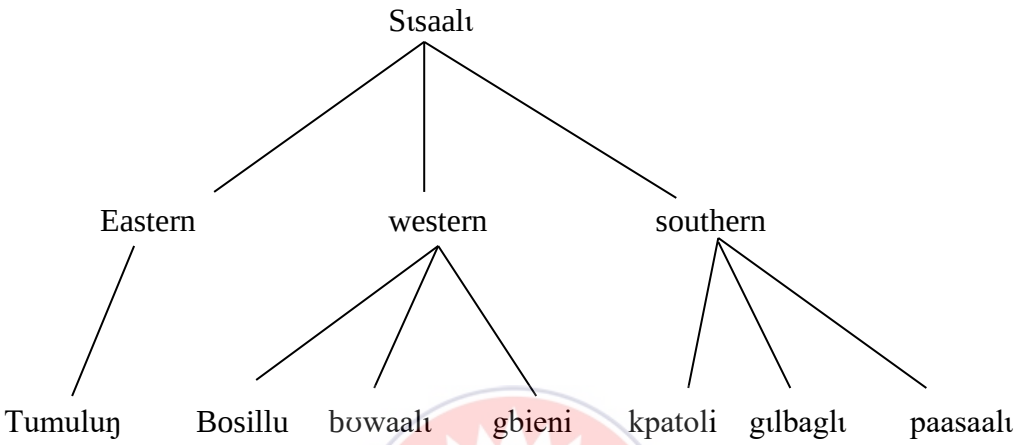
The constituents of complex words are called morphemes. There are two types of morphemes; free morpheme or bound morpheme. A morpheme is said to be free if it can stand alone as a word. For instance, 'nice' is a free morpheme, while a bound morpheme must attach itself to another word to be meaningful. For example, in the word, 'nicely' the *–ly* is a bound morpheme. Morphemes perform two primary functions; derivational function and inflectional function. Inflectional morphemes change already existing word into different forms and Derivational morphemes are those that form new words. When two free morphemes are put together to form a new word the process is referred to as compounding and the words formed are called compounds. Compounding is a linguistic phenomenon that might at first glance seem straight forward but a critical look at it proves otherwise. Bauer (2003: 40) defines a compound as 'the formation of a new lexeme by adjoining two or more lexemes'. This thesis seeks to take a serious look at the phenomenon in Sɪsaalɪ.

1.2 Background to the language

Sɪsaalɪ is a member of the Grusi language group of the Mabia (as proposed by Bodomo 1997) branch of the Niger-Congo language family (Swadesh 1966; Bendor-Samuel 1971; Naden 1988; Moran 2006; 2009 and Luri 2011). It is one of the major languages of the north-western parts of Ghana and extends into Burkina Faso. The immediate genetic relatives of Sɪsaalɪ are Vagle, Tampolɪnsi, Dɛgɪ/Mo, Chakale, Delo, Kabiye, Lama, Kasem and Tem. Contrary to earlier classification by Blass (1975) who indicates that Sɪsaalɪ has nine major dialects, and Naden (1988) who also classified Sɪsaalɪ into three major dialects known as Tumuluŋ, Debi and Pasaalɪ, Luri (2011) posit that, the language has seven dialects which include; Bosillu, Bʊwaalɪ, Gbieni, Gelbaglɪ, Kpatolie, Pasaalɪ and Tumuluŋ. I agree with Luri in this

classification but only to state that as a native speaker of the dialect, the dialect is known as Kpatoli and Kpatolie refers to the speakers of the Kpatoli dialect. Thus, Kpatoli is the dialect whiles the speakers are refered to as Kpatolie.

Figure 1. Dialects of Sɪsaalɪ



Luri (2011)

The language is bordered to the west by Dagaare, to the south by Mampurisi, and Vagla, to the east by Kasem and to the north, it extends into Burkina Faso. Dialects of this linguistic group are spoken in Burkina Faso in and around towns like Hamɪlɪ, Kieri, Hɪɛla, Bʊzʊʊ, Kedun, Bʊɔrɔɔ, Pɛnsɪɛka, Buro, Puzenkaalʊ and Tii. The major towns covered by the linguistic group in Ghana are Bosie (Lambussie), Hamɪlɪ, Piina, Samʊɔ, Ziŋii, Goluu, Jefiisi, Jawɪɛ, Sɔɔbɛlɛ, Pʊlɪma, Tumu, Bugibɛlɛ, Walɪmbɛlɛ, Nabulo, Fonsi, Kundugu, and Kojʊʊkpere.

Sɪsaalɪ is spoken in five administrative districts of the Upper West region, which are Sɪsaala West, Sɪsaala East, Lambussie, Wa East and Daffiama-Bussie-Issa (DBI) districts. Sɪsaala East and Sɪsaala West are exclusively Sɪsaalɪ speaking districts. In the Wa East district, Sɪsaali, Dagaare and Chakale (a close linguistic relative of Sɪsaalɪ) are spoken. Dagaare and Sɪsaalɪ are spoken in DBI while Dagara (a dialect of

Dagaare) and Sısaalı are used in Lambussie district. The 2021 population and housing census report from the Ghana statistical service indicate that 325,908 people speak Sısaalı in the Sısaalı speaking districts in Ghana.

This figure excludes those in Burkina Faso and other parts of the Ghana.

The language is not used at the basic level of education though the Non-formal education division of the Ghana education service has offices in Gollu, Tumu and Fonsi to facilitate the literacy of Sısaalı. It is however worth indicating that, the first batch of undergraduate students was admitted in January 2022 into the University of Education, Winneba to pursue a Bachelor of Art (BA) Degree in Sısaalı. This is the beginning of the journey to formalize the study of the language in the education system of Ghana.

Most Sısaala are multilingual as a result of their close interaction with other languages especially Dagaare. Dagaare is the major language and also the medium of instruction from KG 1 to primary three, as well as the Ghanaian language of study in all basic schools in the Upper West region. Consequently, children learn Dagaare and English as second languages. It is worth noting that every child in all the Kpatoli is speaking communities grows up as an ambilingual in Dagaare and Sısaalı owing to their proximity to the Dagaaba and intermarriage. Most men in those communities marry from the Dagaaba communities and because the women don't understand the Sısaalı, Dagaare is used to communicate with them until they also learn to speak Sısaalı. Because of that when they have children Dagaare is also used as a medium of communication between the children and their mother while the other family members speak Sısaalı with the children. Again, when they visit their maternal uncle homes, Dagaare is used. This makes the children acquire the two languages (Sısaalı

and Dagaare) together from childhood at the same proficiency level making them ambilinguals.

1.3 The Morphosyntax of the Language

The basic sentence structure of Sısaalı is subject verb object (SVO). Rowland (1966, p. 23) explains that "the noun in Sısaalı may be assigned to groups on the bases of the suffixes for singular and plural." Studies on the Sısaalı noun class system include: Rowland (1966) who groups the nouns into two classes. Available literature reveals five noun classes in the language (Fembeti, 2002; Moran, 2006; Dumah, 2017).

1.3.1 The people

The native speakers of Sısaalı are referred to as Sısaala/ lsaala or Sısaal /lsaal (singular). Luri (2011) stated that the available literature points to the fact that, the ancestors of the Sısaala are a splinter group from various tribes in Ghana and Burkina Faso. Principally the Kasem are said to be the origin of Sısaala people, even though some clans trace their origin from Mampurisi people. Some Sısaala al so claim their origin from Dagaaba or Waala. He argues that, rather than saying that the Sısaala are a splinter group from various tribes, it is more plausible to say that the Sısaala, the Kasem, and the oti/volta Language family of the Gur Language groups of the Niger/Congo phylum are all directly descended from a common ancestor.

The Sısaala (Isaala), Tampolema, Vagela, Mo, Chakale and Komkomba are believed to be the aborigines of northern Ghana (Rottray, 1932; Goody, 1954; Manoukian, 1951; Bin Salih, 2008). They were hitherto acephalous groups. War and the Samorian and Babatu slave raiders resulted in their split and migration to their present settlements. Bin Salih (2008, p. 20) tracing the origin and movement of the Waala records that, "from all indications the first group of autochthones of antiquity were the

Lobi, Isaala, Chakale, Kpatolie, Tampolema, Nome, and Vagela. These groups formed isolated family states with each group led by a family head whose authority was predicated on the fact that he was the most senior. Apart from the Lobi, the other groups formed a single linguistic and ethnic group which shared a common origin." They were the acephalous aborigine settlers of the middle Volta basin known commonly as the northern Ghana before the 15th century. He states that "apart from the commonality in dialects, the Chakale, Paasaala, Potule Vagela, Sısaala, mo, Nome and Tampolema have the same social set up and cultural similarities" Bin Salih, (2008, p. 31).

Manoukian (1951, p. 133) records that, "the area referred to as the Northern Territories was people some five hundred years ago occupied by ancestors of present day Tampolense, Vagela and certain Sisaala groups and some Komkomba groups in the east." These groups are believed to have migrated from northern direction and spread out making several settlements. It was upon that they are believed to the aborigines of the then Northern territory and present-day Northern Ghana. Acephalous as they were, gave room for invaders from Chad through Niger descended and apportioned the land among themselves and gave birth to the Mamprusi Dagomba and the Gonja kindoms.

Oral tradition has it that the Tampolema, Vagela, Sısaala, Kasena, Deg (Mo) and the Chakale were one people but separated due to a quarrel over a dog head. The dog was sacrificed and the Sısaala claimed the head but the other groups did not agree which led to a fight among them causing their split. As acephalous group they were further disintegrated due to the invasion of the slave raiders. This caused them to move to

their present settlements. There is still high degree of mutual intelligibility among these languages (Sısaalı, Tampolema, Mo, Vagela and Chakale).

These groups (Sısaalı, Tampolema, Mo, Vagela and Chakale) are believed to belong to the same clan who were originally found among the Mamprusi but maintained their distinct identity. Bin Salih (2008, pp. 38-41) postulates that, Sogler which is one of the oldest a Chakale communities in the Wa East district, traced their origin to Mampurugu in the Gambaga area. That is affirmation of Rottray (1932) who records that the Tampolema separated into three groups, one group settled at Walewale, another at Mankaregu and the last at Yagon. The Walewale group further moved to Langbinsi area and founded communities like Boyene, Singbini, Kanwabere, Sangua and Pinaba. The second group moved to present day Gonja land and seetled long before the arrival of Sumaila Ndiwura Jakpa to invade the land. They are the present Vagela and Chakale. The third group moved to Yigentu and Dolibizon (the present day Sısaala enclave) and from there some move further to present day Tumu. They spread over the land and are today known as Sısaala (Sısao). Splinter groups from the migration route of the Tampolema movement settled at Laribanga near Daboya. The Samorian and Babatu warrior invaders further splintered the group into those identified as Kpatolie, Paasaala, Chakale, Vagela and Mo.

Politically, the Sısaala have evolved a highly decentralised traditional system of government. Every Sısaalı village or group of villages is virtually autonomous as far as the day-to-day administration is concerned. The Tɔɔtına/Jɔhɔtına/Jantına/Bɔıtına (owner of the land) is the religious and political head at this level. In consultation with a council of elders, who are family or lineage heads in their own right, the Tɔɔtına

promulgates and administers law and order affecting cultural, religious, economic and all forms of social practices in the area under his jurisdiction (Luri, 2011).

The British policy of Indirect Rule between 1890 and 1957 has however, reformed this decentralised political structure of the Sɪsaala making them more cohered into various paramountcies or chiefdoms ruled by kuoro "chiefs" and nɪhɪasɪ "council of elders" (comprising family heads and sectional representative) who are seen as political heads of towns and villages. There are 11 paramountcies in sɪsɔʊ (the Sɪsaala land) including Kojʊʊkperi, Fosi, Kundugu, Bawiesibɛlɛ, Wɛlɪmbɛlɛ, tumu, Banʊ, Gollu, Pʊlima, Ziŋii, and Bissie. The head of each of the paramountcies is the 'kuoro' who exercise authority over divisional chiefs who are referred to as Kuoro but with difference (lower) in authority.

The people are mainly farmers and hunters. The major crops are millet, corn, guinea corn, beans and yam. Shea nuts picking is a major activity for the Sɪsaala woman. The nuts are extracted and sold as raw materials or processed into butter for sale or domestic consumption. They also rear cattle, goats, sheep and fowls. While farming is the main economic activity in Sɪsɔʊ (the traditional home of the Sɪsaala), charcoal processing (burning) and other manual labour (such as contract farming), are the main economic activities for the immigrant Sɪsaala in the Southern part of the country. Now the Sɪsaala are engaged in modern economic activities such as trading, mining, security services, and the tertiary sector jobs in public or civil service.

The traditional staple food for the people is kʊl/kʊʊ/kʊlʊŋ, (T. Z. the abbreviation for tuo zaafi the Hausa name for the same food). They traditionally dress in daasichi (smock). The playing of xylophones, (gyenshi/zensi) to perform the gyeŋyɪla dance and drumming the tʊmpaani/tampaanniŋ for the fɪrɪkʊ or gʊachigi dance is a major

entertainment in towns and villages in Sɪsɔɔ and also in Sɪsaala communities in other towns. The Sɪsaala have been imparted in many ways by the Dagaaba who are their immediate western neighbours. Some of the church songs and even traditional dance songs used in some Sɪsaala communities are composed in Dagaare. There is also very high rate of inter-tribal marriages between the two ethnic groups which has created closed tides and harmony between them. In recent times many Sɪsaala cultural customary activities are acculturated by many ethnic groups especially the Dagaaba. There is ancestral play relationship between the Sɪsaala and their eastern neighbours, the Kasena. They mock each other and resolve any problem between them amicably no matter the gravity of the issue without resorting to violence or police intervention, unless for criminal issues. The story is told that once the Sɪsaala had a wind of an intended invasion of their territory by the Zabarema and their allies for slaves. They sent emissaries to alert and engage their neighbours, the Kasena on plans to avert or win the war. Unfortunately, the Kasena leaked the plan of the Sɪsaala to the Zabarema. The Sɪsaala however won the war without the support of the Kasana. The Zabarema turned round and descended on the Kasena and captured a lot of them into slavery. That makes the Sɪsaala tease them for their blander, referring to them as slaves.

1.4 Background to the Study

According to Scalise and Vogel (2010), the study of compounds is currently at the center of attention in all areas of linguistics – both theoretical and applied. The need and importance of researching into compounds is highlited in Greenberg (1963) cited in Scalise and Vogel (2010) that, there are probable no languages in the world without compounding and deravtion. Therefore, the research into compounding in languages

is ongoing to find out to what extent this claim by Greenberg is true. According to Appah (2013a, p.152), compounding is the process of word formation by concatenating two or more bases, each of which potentially occurs alone elsewhere in the grammar as a syntactic atom. Words formed by this process are called compounds or compound words. It is a word formation process which involves the combination of at least two potential free forms belonging to open word classes (Booij, 2007; Fabb, 2001; Ndimele, 1999). Bauer (2001, p. 695) opines that a compound as a lexical unit is made up of two or more elements, each of which can function as a lexeme independent of the other(s) in other contexts, and which shows some phonological and/or grammatical isolation from normal syntactic usage. Scalise & Vogel (2010, pp. 2-4) indicates that, compounds are interesting and controversial linguistic constructions in terms of their analysis in that they have syntagmatic and paradigmatic relations. That is, they connect several important linguistic and non-linguistic areas and they do not have a definite position within grammar.

Compound words attract the attention of researchers for several reasons. They exhibit a type of internal syntax which is somewhat not overt (Scalise & Vogel 2010a, p. 2). They build a relation between syntax and morphology in that a compound appears as the morphological construction that is very close to syntactic constructions (Appah 2013b). The interpretation of compounds needs both linguistic knowledge and pragmatic information, (Scalise and Vogel 2010a). They exhibit weak compositionality, where their meanings are not always predictable from their constituents.

1.5 Statement of the problem

Sɪsaalɪ is one of the languages that have received little linguistic attentions in terms of literature. Prominent among the few available works on the language include the; Orthography guide by SILDEP and Sɪsaala Union, Sɪsaala-English Dictionary by Blass and Frempong (1975, 2002) Nasaarɛ teŋ –jinna by GILLBT and SILDEP (2001), A Grammar of Sɪsaala – Paasale by Mcgill, et al (1999), Blass (1990), Tuopin (1995). The most recent ones include; Luri (2011), Gariba (2017), Duma (2017) and Mustapha (2018).

Despite these efforts, not much has been done in the area of morphology in the language. Even though Gariba (2017) has looked into the word formation processes in Sɪsaalɪ and stated compounding as one of the processes of word formation in the language; her work however could not provide extensive analysis of Sɪsaalɪ compounds. There is therefore the need to study the phenomenon of compounding in the language to ascertain how productive the process is in the formation of words as well as the nature of compound words and the morpho-phonological processes involved in Sɪsaalɪ compounding.

1.6 Purpose of Study

The purpose of this research is to explore the nature and processes of compounding in Sɪsaalɪ.

1.7 Objectives of the Study

The main objectives of this work are to:

i. Identify the grammatical categories of words that constitute a compound in Sɪsaalɪ.

ii. Study the nature of Headedness in Sɪsaalɪ compound.

iii. Describe the phonological processes that are triggered in the process of forming compounds in Sɪsaalɪ.

1.8 Research Questions

The research seeks to answer the broader question of what is the nature of Sɪsaalɪ compounds, and specifically, the following questions are going to be answered in the cause of the study.

i. What grammatical categories of words combine to form compounds in Sɪsaalɪ?

ii. What is the nature of headedness of Sɪsaalɪ compounds?

iii. What phonological processes occur in compound formation in Sɪsaalɪ?

1.9 Significance of Study

This research is relevant because it will serve as a comprehensive study of compounds in Sɪsaalɪ. Again, the study will supplement the existing literature on the typology of compounds formation of Mabia (Gur) languages. It will also serve as a basis and reference source for further research works in the language.

1.10 Delimitations of Study

Word formation is a broad phenomenon in morphology and there are several word formation processes in Sɪsaalɪ. This study however, focuses on compounding as a process of word formation in Sɪsaalɪ.

Sɪsaalɪ has seven dialects. However, data for this study will center much on Kpatolie and pasaali due to their high degree of mutual intelligibility.

1.11 Research design and methodology

This research is qualitative. Data is gathered from both primary and secondary sources. The primary sources include elicitation, electronic media on Radio programs (Radio progress, 98.1fm, Golu fm 97.1 Radford fm 107.5 and radio Upper west 90.1fm) where the discussing cut across all aspects of life including agriculture, politics, business, education health and family life. Secondary data is also taken from available written texts such as the Sɪsaalɪ Orthography Guide (2015), Sɪsaala-English/English-Sɪsaala Dictionary by Blass et al (1975, 2002), A grammar of Sɪsaala-paasaale by Mcgill et al (1999) and the translated version of the Old and New Testaments by the Ghana Institute of Linguistics, Literacy and Bible Translation (GILLBT) for analysis. Lastly, data is generated through native speaker competence and introspection and personal interaction. Six language consultants are engaged to play dual role in the study. Data is elicited from them and they also authenticated the data gathered from other sources. Data generated through self-introspection is presented to other native speakers (language consultants) for authentication. The data is transcribed and presented in Sɪsaalɪ orthography and translation into English with glossing. The data is then analysed using the construction morphology framework for the lexical relationship and authosegmental phonology for the phonological processes that are involved in compounding.

1.12 Organization of the Study

This research is organized in six chapters. Chapter one discusses the general overview of the thesis. Chapter two reviews literature on the phenomenon of compounding and

Construction Morphology, the main framework for the study. It shows that Construction Morphology is adequate in handling most of the complex issues of word formation. Regarding the review of current studies on the phenomenon of compounding in some languages, I reviewed literature on the definition of compound, typology of compounds, headedness, distinction between compounds and other constructions and phonological processes in compounding. Chapter three discusses the methodology and data gathering procedure. The nature of compounding is discussed in chapter four, including the constituents and their relationship. It also analyses the syntactic categories of compounds and headedness of Sɪsaalɪ compounds. Chapter five discusses some notable phonological processes that take place during the process of compounding in Sɪsaalɪ. Processes such as vowel deletion, homorganic nasal assimilation, vowel harmony and are discussed. The final chapter provides summary of findings, conclusion of the thesis and some recommendations for future studies on the phenomenon of compounding in Sɪsaalɪ.

1.13 Conclusion

This chapter serves as an introduction to the study and it provided a discussion on the Sɪsaalɪ language. I have discussed the background of the study and established the need for the study to be conducted. The research objectives and the questions the study seeks to answer are stated. Finally, the methodology of the study and the significance of the study to learners of the language as well as the research community is also discussed.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature about the major issues of the study and discusses the theoretical framework. The major issues are discussed under the following sub-headings; Issues about compounds in 2.2, definition of compounding in section 2.2.1, typology of compounds in section 2.2.2, section 2.2.3 discusses headedness, while 2.2.4 deals with distinction between compounds and other constructions, phonological processes in compounding are discussed in section 2.2.5. Construction morphology which is the major theoretical underpinning of the work is discussed in section 2.3 and section 2.4 concludes the chapter.

2.2 Issues about compounds

There are many interesting issues about compounds that attract the attention of linguists. One of such issues is the difficulty in getting a cross-linguistically universal definition of a compound. Lieber and Stekauer suggest two reasons for this challenge; "On the one hand, the elements that make up compounds in some languages are not free-standing words, but rather stems or roots. On the other, we cannot always make a clean distinction between compound words on the one hand and derived words or phrases on the other," Lieber and Stekauer (2009, p. 2).

Another issue about compounds which is worth discussing is that of interpretation. Fabb (2008) suggests that, the meaning of a compound is usually to some extent compositional, though it is often not predictable. A case in point, popcorn is a kind of corn which pops; once you know the meaning, it is possible to see how the parts contribute to the whole, but if you do not know the meaning of the whole, you are not

certain to guess it by looking at the meaning of the parts. This lack of predictability arises mainly from two characteristics of compounds: (a) compounds are subject to processes of semantic drift, which can include metonymy; (b) there are many possible semantic relations between the parts in a compound (Fabb 1998: 66). Scalise and Vogel (2010a: 1) record that, compounds exhibit a kind of internal syntax which is somewhat covert. Compounds also "present a contact point between crucial linguistic and non-linguistic notions". These notions include (a) syntagmatic and paradigmatic relationships, (b) relationship between syntax and morphology and (c) linguistic knowledge and pragmatic knowledge. In effect, the composition of compounds is syntactically and morphologically arranged and their meaning based on pragmatic knowledge.

In syntagmatic and paradigmatic relation, Scarlise and Vogel (2010) notes that, compounds contain headwords that serve as a source of attraction to other elements that result in the formation of similar compounds. For instance, the compound taxi driver, the relationship between the constituents is that of predicate-argument relation, so we can say the verb selects its own pairing that must be of a particular kind. The verb driver attracts other elements to form compounds as bus driver, screw driver, track driver etc.

With regard to the relations between syntax and morphology, the major issue according to Appah (2013b) is that, compound appears as the morphological construction that is very close to syntactic constructions. Hence there is no general agreement on which component of grammar should be considered responsible for the formation of compounds (cf. Scalise & Vogel 2010b).

Again the interpretation of compounds needs both linguistic knowledge and pragmatic information. Some compounds cannot be interpreted without recourse to pragmatic information. Scalise and Vogel (2010a) observe that, to interpret the compound bike girl 'a girl who left the bike in the vestibule' for instance, we do not only need linguistic information but also pragmatic information to enable us exclude other possible meanings.

The issue of compositionality is another one. Due to the fixed order of the constituents and the lexical flexibility of compounds, Kavka (2009: 38–40) compares them to idiomatic expressions and concludes that they are not compositional because attributive determinations (or modifications) only apply to the entire compound rather than just one or more individual constituents. For instance, if words like sunrise, common sense, bitter-sweet, deaf and dumb, forget-me-not, etc. don't appear in the expected order will either be nonsense words or, in some situations, have a different meaning.

2.2.1 Definition of compound

Morphologists have proposed different definitions to the concept of compounding. Bauer (1988: 239) says that, it is "the formation of new lexemes by adjoining two or more lexemes." Words formed out of compounding are referred to as compounds or compound words. Bauer (1988, p. 102) describes compounds as "sequences of lexemes". By Bauer's definition, compounds result from the combination or arrangement of uninflected parts of a word (stems and roots). For Bauer (2001: 695) a compound is a lexical unit made up of two or more elements, each of which can function as a lexeme independent of the other(s) in other contexts, and which shows some phonological and/or grammatical isolation from normal syntactic usage. For

Bauer (2001), a compound consists of the combination of lexemes into larger words. Lieber and Stekauer (2009b: 3) agree with Bauer's definition that it is the safe way to go as the term lexeme is specific enough to exclude affixes but broad enough to encompass the roots, stems, and free words that can make up compounds in typologically diverse languages. Katamba and Stonham (2006) see a compound as a word which contains more than one root. In simple cases, compounding consists of the combination of two words, in which one word modifies the meaning of the other, the head (Booij 2005, p. 75).

Donalies (2004, p. 76) attempts to define compounds by combining a number of criteria, that compounds are identified (a) complex, (b) formed without word-formation affixes, (c) spelled together, (d) right headed, (e) inflected as a whole, (f) syntactically inseparable, (g) syntacto-semantic islands, and (h) conceptual units.

Lieber & Stekauer (2009a) however, assert that even such a long list of properties by Donalies fails to define compounds indisputably. They argue that compounds may contain affixes, e.g. blue eyed. Compounds are not also always right headed, that of roman languages are left headed. Again, that compounds may exhibit plural inflection on one of the constituents yet be singular. Linguists have referred to the constituents of a compound as roots, stems, lexemes, bases or words. Commonly accepted terms such as "root", "affix", "lexeme", "paradigm", and the concept of "word" itself are difficult to describe in a cross-linguistically valid manner.

According to Plag (2003, p. 150), "Some linguists (e.g. Katamba) avoid the problem of the root-stem distinction by using bases (a cover term for stem and roots)." But then again using a cover term only gives the problem a new name since the sub-terms still remain unexplained. According to Katamba and Stonham (2006, p.18), a word

refers to a particular physical realisation of that lexeme in speech or writing. E.g. come, came, coming, comes are different words of the lexeme COME. They further posit that, a word can be seen as a lexeme that is associated with a certain morphosyntactic properties, e.g. noun, verb, adjective, tense, gender and number. Root is the "irreducible core of a word with absolutely nothing attached to it." The root is considered to be the part of the complex word that is left after all affixes are stripped off. Stems however, are the parts the word that exist before any inflectional affixes is added. Roots or bases are the morphemes that carry the principal or basic concept, idea or meaning in a word. They generally constitute the nuclei or cores of words, Katamba and Stoneham (2006, p. 46).

Roots in general are of two kinds: free and bound roots. When roots are free morphemes, Katamba and Stoneham (2006) postilates that, they can form content and function words on their own, such as book, dog, house, carry, quick, early, and so on however, when roots are bound morphemes, they form components such as *-ceive* in perceive, *-tain* in maintain, *-sume* in presume, and so on. Ndimele (1999) seems to restrict the description of the compound members to only independent or free roots while Katamba and Stonham (2006) provide some level of motivation to consider bound roots, arguing that words that are formed from two bound roots could be considered as compounds. Though it has been established that most compound are generated by the phrase structure rule, some compound defy this principle. They further posit that some compounds are formed by a combination of a bound root to a base as in the compound cranberry. The constituent *cran-* is a bound root since it does not exist as a free word in English language. Fabb (2001) supports this assertion by explaining that bound morphemes of this kind are neither words nor affixes and that

might have informed Ajiboye (2014, p. 14) to conclude that "these morphemes have lexical rather than grammatical meanings", and therefore cannot be categorized among affixes but words. Katamba and Stonham (2006) referred to the cranberry words as neoclassical compounds. The syntactic constituents of some compounds though analysable are permanently inbeded in their lexicon. Katamba and Stonham referred to them as the cranberry words because most of them contain the form –*berry*. E.g. cranberry, Huckleberry, strawberry, blackberry, blueberry etc. their meanings are not transparent because it is not clear whether the form that occur with the berry is the form that occur elsewhere, Katamba and Stonham (2006, p. 334). Again, Katamba and Stonham (2006) argue that beside the cranberry words, some other words straddle the borderline between compounding and affixation. Most of these words contain part of them borrowed from Greek or Latin. Adams (1973) and Bauer (1983) referred to them as neoclassical compounds. It is unclear whether the Latin forms *multi* and the Greek forms *theo and hydro* are prefixes or bases. Hence whether words like multi-media, multi-lateral, hydropower, hydrometer, theology, theocracy etc are compounds or not. Speakers who do not know Greek or Latin would regard them as unanalysable words or words with bound bases of indeterminate meaning like the cranberry words, Katamba and Stonham (2006, p. 336).

The problem with the definition of a word appears to stimulate the definition of what constitute a compound, even by the same author. For instance, Bauer (1998a, p. 404) uses the term "stems" while "lexemes" is used in Bauer (2005, p. 105). The difficulty of linguists defining a word and an appropriate terminology for describing the components of compounds informed Bauer's (2005, p. 106) argument that: "Giving the difficulty that has been for many years in defining a word, it is not surprising that

there should be difficulty with the borderline of compounding. Items which fit poorly into the category of word should also fit poorly in the category of possible compound element"

In an attempt to attain a more comprehensive and probably universal definition for a compound, Scalise and Vogel (2010b) posit that the items referred to as stems, roots and words must be identified differently in different languages. They observe that, for instance, in Greek, stems are bound forms whiles in English they are free forms. Moreover, words in some languages (eg. Mandarin Chinese) tend to be mono-morphemic whereas in languages like Swahili, they may multi-morphemic. This therefore necessitates the need for what constitutes a compound and a compound constituent in a language to be defined and described based on the morphology of the language.

From a different perspective, a later definition of compounds has been proposed by Guevara and Scalise (2009) in an attempt to propose a definition devoid of all the inconsistencies the earlier definitions have enclosed, according to which a compound is defined in categorial terms as [X r Y] Z. Where X, Y and Z are lexical categories and 'r' is the (hidden) grammatical relation between the two constituents. This definition assumes that the constituents of a compound (roots, stems, lexemes or words) have a lexical category. Z may be in the same category as X or Y or different from both, which gives rise to the following three patterns:

a. [X r Y] Y is a compound with the head to the right

b. [X r Y] X is a compound with the head to the left

c. [X r Y] Z is an exocentric compound

2.2.2 Taxonomy of compounds

As there is no single unified definition of compound so there is no unified classification for the concept as Scalise and Vogel (2010b) assert, "Classifying compounds also presents a number of challenges. In fact, every textbook of morphology seems to propose its own classification." Different authors have classified compounds based on various criteria. Scalise and Bisetto (2009, p. 35) outline three main reasons why the classification of compounds that appear in current linguistic literature lack inter-linguistic homogeneity. (a) Terminology is often associated with a single language and thus not valid from an inter-linguistic point of view. As shown by Bauer (2001b, p. 700) that, the use of the term bahuvrīhi as a generic label for exocentric compounds is an incorrect extension; bahuvrīhi in fact refers to a specific subclass of exocentric compounds, i.e. possessive compounds. (b) Current research, but also less recent works. Scalise and Bisetto (2009, p. 51) posit that, "the Anglo-Saxon linguistics focused traditionally – and almost exclusively – on two types of formations: root (or primary) compounds and synthetic (or secondary) compounds. These two conceptions could not be appropriately extended to languages such as Romance languages, where terminology like root or synthetic did not appear to apply readily. The notion of "root compound" used for formations such as *steamboat* or *coffee cup* has not been extended to Romance languages because the lexemes in these languages, when they are nouns, end in a vowel that bears "grammatical information" and does not belong to the root." 'Root compound' and 'synthetic compound' are therefore language specific terms and, as such, can only refer to specific compounds of some but not all languages, unless the meaning of the terms be extended or modified. (c) Classifications have often been built upon

inconsistent criteria and therefore the different types of compounds are not easy to compare.

Prominent among the criteria for classifying compounds are based on; the constituents of the compounds, the category of the resultant compound and the presence or absence of head constituents. Caesar (2018) also proposed other criteria for classifying compounds as base on form, semantic and syntactic criteria. Gavranović (2015, p. 59) rather put them as, semantic and syntactic criteria, parts of speech of elements of the compound and the compound as a whole, grammatical relation between its constituents, and headedness.

Caesar (2018) in her classification of Dangbe compounds dichotomised compounds into three forms: closed/solid form, hyphenated form and the open/spaced form. The closed/solid is the form of compound she described as words that are welded together. Hyphenated compounds are normally written with a hyphen between the words that form the compounds. Spaced/open compounds she said, are made up of two or three words which are not usually longer words written separately but when read together, a new meaning is found.

2.2.2.1 Classification of compounds based on syntactic category of constituents

Caesar (2018) identifies noun-noun, noun-verb, noun-adjective, noun–postposition, verb-noun, and noun-verb compounds in Dangme. She posits that there are compounds in Dangme that have agglutinated clause structure and the resultant compound is always a noun. Akrofi-Ansah (2012) also identifies noun-noun, noun-verb and noun-adjective compounds in Lɛtɛ. Anderson (2013), Appah (2013b), and Dolphyne (1988) identify noun-noun, noun-adjective, verb-noun, and verb-verb compounds in Akan with all of them resulting in nominal compounds.

Abakah (2006), includes de-verbal nouns, phrasal verbs and nominalization as types of compounds in Akan. Appah (2013a, p.74) however argues that, the "variation in number [of Akan compounds] results from the unsystematic application of criteria, leading to the separation of types that belong together". According to him, most of those who discussed compounding in Akan include adjective-noun compounds. However, such a category does not exist because the supposed adjectives in such combinations are rather nouns. He explains that the supposed adjective stems in the compounds bear prefixes which they do not bear when they occur in isolation and therefore posits that the "prefixes nominalize the adjectives which then must occur as left-hand nominal modifiers in noun-noun compounds which are predominantly right-headed in Akan" (Appah, 2013a, p. 74). English allows Noun + Noun, Adjective + Noun, Verb + Noun, Noun + Verb, Noun + Adjective, Adjective + Adjective (Haspelmath & Sim 2010).

Aliero (2013) identifies only noun-noun, noun-adjective and verb-noun in C'lela a language spoken in Nigeria. The resultant compound is a noun as in the case of Dangme and Lɛtɛ, with noun-noun compounds being the commonest and most productive. Gariba (2017) also identifies Noun-Noun, Noun-Adjective, Noun-Verb, Verb-Verb, Noun-Adjective-Adjective and Verb-Verb-Verb compounds in Sɪsaalɩ.

2.2.2.2 Classification of compounds based on headedness

Headedness relates to whether one of the constituents of the complex word shares semantic properties with the whole compound. Andreou (2014, p. 12) suggests that, the head of a complex construction is the most important in the structure and it dominates the whole complex word. There are two classifications of compounds by headedness: headed compounds and headless compounds. Headed compounds are

referred to as endocentric compound and headless as exocentric compounds, Bauer (2010). The endocentric compound as a whole is a hyponym of its head (Bauer 2010, p. 1). For example, traffic-light is a hyponym of light, but not a hyponym of traffic and blackboard denotes a board which has the colour black. Black is the modifier to the head board. The head of the compound may be either of the constituents (right-headed or left-headed) or both (co-ordinate).

The taxonomy of heads has been delved into by linguists and are classified into types. The types of heads available in the literature include semantic head, syntactic head, formal head and morphological head. For Dressler (2006), the compound pickpocket has no semantic head because the meaning of the compound is not traceable to any of its constituents. However, the constituent pick is the syntactic head since it is the constituent that selects pocket as its internal argument. He suggests that the morphological head of the compound is the constituent that takes the inflectional morpheme, hence in the compound pickpockets, pocket is the morphological head since the plural inflection is marked on it. Appah (2013b, p. 156) in reaction to Dressler (2006) argues that "the use of plural marking in this manner to distinguish between a morphological head and a syntactic head can be misleading since the position of a plural marker may be the default pattern in a language." The major distinction in the classification is between the semantic head and the formal head depending on which of the constituents of the compound shares what property with the compound. Appah (2013b) also argues that, though these categorisations exist, both semantic and formal head may coincide on one constituent.

Scalise and Guevara (2006, p. 190) assert that "the semantic head is the constituent that shares its lexical conceptual information with the whole compound." This implies

that the class of elements that the compound denotes is a subset of the class of elements that the semantic head denotes. They further argue that the formal head "is the constituent of the compound that has the same formal features, including lexical categories, as the compound and has the same distributional properties with the compound".

Exocentric compounds are usually defined as the class that is left after endocentric compounds have been removed (cf. Scalise and Guevara 2006, p. 192). Endocentric compounds are very common cross linguistically, whereas exocentric are less common. Bauer (2008, p. 71) opines that "in very few languages is the formation of exocentric compounds a productive method of word-formation". However, Bauer (2010 p. 144) argues that the most productive type of compounding in Italian is exocentric. Gariba (2017, p. 80) identifies some exocentric compounds in Sısaalı. Hɔɔŋ (metal) + jaaba (horse) = hɔɔŋjaaba 'metal horse' bicycle, duoŋ (rain) + sıa (knife) = duonsıa (rain knife) rainbow. Gurenɛ also has some exocentric compounds as identified by A-Ingkonge (2020 p. 79). E.g. Deo (house) + bia (child) = dee-bia 'cat', naba (chief) + bia (child) na-bia 'chief elder', bugum (fire) + dɔɔ (stick) = bugudɔɔ 'gun'.

Even though, the compound words in Gurenɛ above seem right headed, they are not endocentric; deo 'room' does not modify bia 'child', naba 'chief' does not modify bia 'child', bugum 'fire' does not modify dɔɔ 'wood', A-Ingkonge (2020, p. 79).

2.2.2.3 Types of Exocentric Compounds

Bauer (2008, 2010) classifies exocentric compounds into what he terms major types and sub-types. The major types he says are; Bahuvrihi, Synthetic, Transpositional, Exocentric co-compounds, and Metaphorical. Bahuvrihi is a Sanskrit compound

phrase, which exemplifies the type. The elements are bahu-vrihi 'much rice' and it means "having much rice" or "one who/which has much rice". Bauer (2010, p. 169) posits that typical bahuvrihis are made up a noun (the possessed noun) and its modifiers, where the modifier may be an adjective, a quantifier, a verb or a noun, and where the whole may be interpreted as a noun or as an adjective. For example, red-eye, overnight flight, cheap whisky.

Appah (2016c) proposes two subclasses of bahuvrihi compounds: possessive and non-possessive. A possessive bahuvrihi compounds refer to those whose meaning is the possessor of the compositional meaning of the compound and may thus be schematized as "entity which possesses X" where X is the compositional meaning of the compound (Appah 2016c, p. 108). The meaning of the compound is the possessor of the compositional meaning of the constituents of the compound. For instance, in Kayardild (Indo-European, Indo-Iranian), the form kirr-maku [lit. face +woman] means 'an effeminate looking man' (Evans 1995, p. 197). Non-possessive type of bahuvrihi compounds may include the agent or causer type which refers to the entity which causes the compositional meaning of the compound to undergo a particular effect.

The synthetic type according to Bauer (2010) "is usually restricted to those compounds where the head contains a verb and the modifier contains an argument of that verb; typically, in agentive instances, the head word also contains a morph which denotes the external argument of the verb". An example is bus-driver, where the head element contains the verb drive plus a morph denoting the external argument of the verb, *-er*. In that case, the meaning of the compound as a whole can be deduced from the meaning of the verb, its argument and the unexpressed agent or action.

A similar situation arises for the transpositional type of compound. Nonetheless, it is only the word-class of the finished compound that is not overt; there is no semantic feature such as 'agentive' or 'action' involved in the interpretation. For instance, the Akan compound gyédí 'faith' [receive + eat] is made up of two verbal constituents resulting in a nominal category (Appah 2017a).

Co-compounds are very controversial types in terms of headedness. Bauer (2008, 2009, 2010 and Haspelmath (2002) describe them as generally exocentric. The most frequent exocentric examples of co-compound are singer-songwriter, scientist-explorer, poet-translator, hero-martyr. They could be said to have two semantic heads, none of them being subordinate to the other. Given that no member is semantically prominent, but both members equally contribute to the meaning of the compound.

The last major classification of compound according to Bauer (2010) is the metaphorical type. "It arises when a compound fails the hyponymy test which is supposed to define endocentrics because the head element of the compound or the compound as a whole has a metaphorical interpretation." Søgaard (2004) stated that dust bowl is an example of metaphorical exocentric compound which Bauer (2010) affirms that it is unimpeachable. He argues that if bowl is a "deep dish" and dust bowl as "an area with no vegetation", then a dust bowl is not a bowl, and there is no hyponymy. Therefore, it is undeniably exocentric.

2.2.3 Compounding and other constructions

Haspelmath (2002) argues that, there are close parallels between compounds and syntactic phrases in many cases. In syntactic phrases, the semantic criterion may serve to identify the head as in compounds. Haspelmath and Sims (2010, 190) asserts that

"in many cases, compounds are easy to tell apart from phrases with two content words. For instance, compounds may consist of two (or more) lexeme stems that are juxtaposed in a single word-form, and, when a language does not allow phrases consisting of two juxtaposed lexemes of those same word-classes, the combination must be a compound." They however, agree that there are also a great many cases in which compounds are quite similar to phrases with a similar meaning, and then we have to take a closer look in order to distinguish the two patterns.

Noonan (1992, pp. 115-157) identifies some expressions in Lango that look like compounds at first blush, e.g. wàŋ ɔ̀t [eye house] 'window', dɔ́g bɔ́ŋɔ́ [mouth dress] 'hem'. Their most outstanding property is that they are idiomatic. That is, their meaning cannot be determined from the meaning of their constituents. Haspelmath and Sims (2010 p. 191) agree that idiomaticity is a typical property of compounds; however, it is neither a necessary nor a sufficient criterion for identifying a compound. They maintain that, all languages with productive compounding have some compounds with compositional meaning but not all idioms are compounds.

The big question then is, how can one distinguish a compound from a syntactic phrase when ambiguity sets in? Lieber & Štekauer (2009b), identify two fundamental reasons why researchers on compounding find it difficult to provide satisfying and universally applicable definition or features for determining compoundhood. They argue that "on one hand, the elements that make up compounds in some languages are not free-standing words, but rather stems or roots. On the other hand, we cannot always make a clean distinction between compound words and derived words or phrases," (Lieber & Štekauer, 2009b, p. 3). Omachonu and Onogu (2012) observe that, the fundamental distinction between compounds and derived words in most languages is that

compounds consist of free-standing lexemes whereas derived words, in most cases, contain affixes. Booij (2007, p. 85) also posits that "a lexeme may develop into a derivational morpheme." For instance, in the words un-faith-ful-ness and seablue, we find that whereas the forms in unfaithfulness do not occur as free forms in English with the exception of faith, the forms in seablue are free forms. Thus, the formation of the complex words, unfaithfulness in English is by affixal derivation, while that of seablue is compounding.

Haspelmath & Sims (2010, p. 191) in an attempt to provide a solution to the problem posit that, "a semantic property of almost all compounds is that, a dependent noun does not denote a particular referent but the entire class; in other words, a dependent noun in a compound is not referential but generic." For example, in the compound piano-tuner, the element piano cannot refer to a particular piano, but must refer to pianos in general. Thus, "generic meaning is a general feature of dependent nouns in verb-headed N–V compounds."

That notwithstanding, generic interpretation is not a sufficient criterion by itself. Consequently, we cannot conclude that the expression is a compound just because a dependent noun is generic. Therefore, since the typical semantic properties of compounds are not unique to compounds, we need additional phonological, morphological and syntactic properties to identify compounds when they and phrase patterns are formally similar. Haspelmath & Sims (2010) hints that in general terms, compounds exhibit greater phonological, morphological and syntactic cohesion than phrases.

A well-known phonological criterion in English for distinguishing compounds from phrases is stress pattern. This systematic difference is captured in the nuclear stress

rule (‘phrasal stress is on the last word of the phrase’) and the compound stress rule (‘stress is on the left-hand member of a compound’), formalized in Chomsky and Halle (1968, p.17). Plag (2003) observes that the systematic distinction between stress assignment in a noun phrase and a compound headed by noun may result in a minimal pair, where the stress pattern alone distinguishes between the nominal compound and the noun phrase in terms of their interpretations. So, main stress on only one member of a compound-like expression suggests that it is a word. Stress patterns for compounds and noun phrases are seen in the example (1) below.

1.	Nominal compound	Noun phrase
	a. ′blackboard	a black ′board
	‘board for writing’	‘a board that is black’
	b. ′greenhouse	a green ′house
	‘a glass building for growing plants’	‘a house that is green’

(Plag, 2003, p. 173)

Though the compound stress rule makes correct predictions for the infinite majority of nominal compounds, it has been pointed out by (Liberman and Sproat 1992, Bauer 1998b, Olson 2000) that there are also numerous exceptions to the rule.

In the examples (1) above, the shift of stress causes a change in meaning. Placing the stress on the first word as found in those in left column, forms a compound. However, when the stress is placed on the second word as found in right column, a phrase is formed. Plag (2003, p. 178) maintains that “[c]ounter examples to this generalisation exist, but in their majority there seem to be systematic exceptions that correlate with

certain types of semantic interpretation or that are based on the analogy to existing compounds". During speech, it is possible that these stress patterns may change depending on the intentions of the speaker.

Another way compounds can be distinguished from phrases is by internal modification. For instance, the nominal compound blackbird cannot allow an adjective to be inserted between the constituents so that the adjective modifies the right-hand constituent as in *black ugly bird but the adjective has to modify the whole nominal compound as in ugly blackbird. However, the adjective ugly can mediate between black and bird if the construction is considered a phrase, as in black ugly bird.

Bauer (1998b, p. 77) observes that a construction like blackbird may be considered a compound if the second member of the structure cannot be replaced with a pro-form. Thus, in the structure black ˈbird, the noun bird can be replaced with one, as in the black one, because it is a phrase. However, we cannot replace bird in the compound ˈblackbird, which is a type of bird, to give us *ˈblackone.

Another phonological cohesion comes from the (+ ATR) and (– ATR) vowel harmony. In some language such as Sɪsaalɪ, compounding creates a single domain for vowel harmony. Within a compound, the vowels must either all belong to the (+ATR) vowel set [i], [e], [u], [o], [æ] or to the (-ATR) vowel set [ɛ], [ʊ], [ɪ], [a] [ɔ]. Vowel harmony never applies across word boundaries, so when harmony does affect both lexemes, we can conclude that the expression is a compound.

In some other cases, morphological cohesion can give us decisive criteria for word status. In such cases a morphological pattern clearly takes the whole compound in its

domain rather than just the head. Consider the English word sister-in-law, which for many speakers has the plural form sister-in-laws. The older form sisters-in-law, which has the plural suffix on the head noun, could be either a phrase or a compound noun (with the head serving as the morphosyntactic locus) but sister-in-laws can only be a compound. The plural suffix *–s* is semantically associated with the entire unit, and not only with law (it indicates multiple sisters, not multiple laws). And since the plural marker normally attaches only to words, not to phrases, sister-in-law must be a compound, Haspelmath and Sims (2010, p. 193).

Haspelmath and Sims (2010, p. 193) point out that, where phonological and morphological criteria are not decisive enough, criteria of syntactic cohesion can differentiate between compounds and phrases. Most obviously, syntactic phrases and compounds differ with regard to separability: phrases are often separable, whereas compounds are inseparable. This means that other words cannot intervene between compound members. For example, Haspelmath and Sims (2010, p. 193) postelate that, Hausa N-N compounds resemble phrasal possessive constructions in that they show head dependent order and relation markers (n) masculine / (r) feminine. e.g. gida-n-sauroo (mosquito net). However, when an adjective modifies these expressions, it becomes clear that the compound is inseparable but the phrase is separable.

Gida-n-sauroo (mosquito net) gida babba na sauroo (big mosquito net).

Gida-n Muusaa (Muusaa's house) gida babba na muusaa (muusaa's big house).

Finally, phrases can exhibit coordination ellipsis; this means that one of two identical elements in coordinated phrases can be optionally omitted whereas a compound

member generally cannot be deleted in this way; compare (b) to (d). Flying fish must be a compound.

(2) a. Large fish and small fish were mistakenly placed in the same tank.

b. Large Ø and small fish were mistakenly placed in the same tank.

c. Flying fish and small fish were mistakenly placed in the same tank.

d. *Flying Ø and small fish were mistakenly placed in the same tank.

2.2.4 Phonological processes in Compounding

"Phonological processes refer to the changes that take place in sounds when segments are juxtaposed" Kuubezelle (2013, p. 74). According to Wolfgang (1984, p. 31) "phonological processes serve the communicative function of language by serving their proper functions: pronounceability and perceptibility." Phonological processes are universal and phonetically motivated based on articulatory and auditory systems. These universal processes may apply in all languages; nonetheless, each linguistic community 'selects a set of processes.

Phonological requirements in a language can alter the shape that individual morphemes take in different contexts. Morphologically conditioned phonology arises when phonological alternations are not fully general in the language but are instead specific to particular morphological constructions, such as compounding, truncation, affixation, or reduplication, Inkelas (2014). The phonological processes that are triggered during compounding are assimilation, segment deletion, segment insertion and prosodic alterations.

Dolphyne (1988) observes some phonological processes that occur in Akan compounds as homorganic nasal assimilation, affix vowel deletion, vowel harmony, tonal changes and nasalisation of voiced stops. According to her, these phonological processes do not occur in phrases, thereby dichotomising compounds from phrasal constructions. Anderson (2013, p. 91) affirms this claim by Dolphyne that, vowel harmony in Akan "is triggered by a [+ATR] vowel and spreads regressively to the preceding syllable in compounds, although, in non-compounds all vowels within a word must harmonise". Anderson further assets that, homorganic nasal assimilation occur at morpheme boundaries. Therefore, when a nasal consonant precedes a stop, it takes the place of articulation of the adjacent stop. As in examples 4.

4. a. sɔ́ + ɛɥɛ́ → ǹsɔ́ɛɥɛ́, 'temptation'

b. àsɛ́ḿ + bìsá → àsèm̀mìsá 'a question'

c. àsɛ́ḿ + húnú → àsèǹhúnú 'senseless argument'

(Anderson, 2013, p. 91)

The alveolar nasal /n/ that precedes the compound maintains its form because the adjacent sound is also an alveolar. However, in (c), the final sound of the first constituent /m/ changes to [n] because the consonant it precedes is not bilabial. In (b), the bilabial stop /b/ that begins the right-hand constituent bìsá 'ask' assimilates to the manner of articulation of the bilabial nasal /m/ that ends the left-land constituent àsɛ́m̃to become [m]. However, it is not always that these changes do occur. For instance, one would have expected that in the compound àsɛ́ḿpá (àsɛ́ḿ + pá) 'good news', the bilabial stop /p/ would have changed to [m].

In most Gur languages, Kusaal, Buli and Dagaare, in particular and other African languages in general, the process of segment nasalization is a common phenomenon. In Kusaal and Buli, oral vowels only become nasalized when they are found in contiguous position to a nasal consonant (cf. Agoswin 2010 and Akanlig-Pare 2005; 1994 respectively). Kuubezelle (2013, p. 96) postulates however that, in the Dagara dialect of Dagaare, nasalization process strictly involves two voiced oral stops (/b/ and /g/), when they are in contiguous position to a nasal segment. Consonant nasalization is induced by a morphological process, for example, when two stems or a stem and a suffix are put together to form a compound word. When the first stem ends in a nasal and the second stem or the suffix begins with a voiced bilabial oral stop /b/ or voiced velar stop /g/, the nasal feature in the first stem spreads on to assimilate the voiced oral stop. The process is a total assimilation in a progressive direction as shown in 5.

Consonant Nasalization in Dagara

5. a. /zʊm + -bíl-í / → [zùmmílí]

‘fish ‘ small.PL ‘small fishes’

b. /sɛn + -bɛ/ → [sɛnmɛ]

‘girlfriend.PL ‘girl friends’

c. /ĩaŋ + gán/ → [ĩáŋŋán]

‘body skin’ ‘skin (human)’

Kuubezelle (2013, p. 96)

In Dagara, homorganic nasal assimilation process operates during word formation processes. When two stems are brought together; the first stem ending in a nasal consonant and the second beginning with an oral plosive or even another nasal to form a compound word, the nasal consonant in the first stem, inherits the place of articulation of the initial consonant of the second stem, whether oral or another nasal consonant. As shown in 6.

Homoganic nsal assimilation in Dagara

6. a. /tanɛ/ + /bog/ + / kpɛɛ / ⟶ [tambogkpɛɛ]

‘earth ‘hole’ ‘big lake’

b. /gan/ + / pɛl / ⟶ [gampɛl]

‘skin’ ‘sheet ‘ ‘a sheet of paper’

c. / gaŋ / + / mimir/ ⟶ [gammimir]

‘cloth’ ‘eye’ ‘attractive cloth’

Kuubezelle (2013, p. 98)

Adongo and Nsoh (2018) record that, in the Gurenɛ dialect of Farefari language, only vowels of the same quality or features can co-occur in a word. This phenomenon is not different in Dagaare and Sısaalı. In other words, words in which [+ATR] vowels are, [-ATR] vowels do not occur together in the same word and vice versa as shown in the following data in 7;

Vowel harmony in Gurenɛ

7. a. [+ATR] gloss	b. [-ATR] gloss
[pirəge] ‘to cut open’	[pʊrəgɛ] ‘to untwist/untie’

[pugəlum] ‘to create filth’ [pʊgəlʊm] ‘to appear as a boil on part of the body’

[koləgo] ‘personal shrine’ [kɔləgɔ] ‘a local spice’

Adongo & Nsoh (2018, p. 109)

They further assert that, nouns and adjectives do not permit the occurrence of the high front vowels [ɪ, i] in final position while verbs do not allow [ʊ, u, ɔ] in that same position. This also occurs in multisyllabic words, all the vowels agree in the feature [±ATR] and other features with medial vowels occurring as neutral vowels. Adongo & Nsoh (2018) further postulate that, vowel harmony is observed in Gurenɛ compounds. Vowels of both constituents of the compound agree in [±ATR] feature. This is shown in Example 9 below.

9. a, [+ATR]

/deo/ + bia → [deobia] ‘cat’

/duŋa/ + fole → [dunfole] ‘grazing land’

/fuo/ + nifo → [funifo] ‘pocket’

b. [-ATR]

/nɛra + saala/ → [nɛrəsaala] ‘human being’

/ma’anɛ + kɛ’ɛŋa/ → [ma’ankɛ’ɛŋa] ‘dried okro’

/bʊa + tɪla/ → [bʊtɪla] ‘billy goat’

Adongo & Nsoh (2018)

Tonal change is another phonological process that occurs during compounding. Dolphyne (1988) identifies two different tonal patterns of Akan compounds. The first is compounds in which every syllables of the first stem is said on low tone irrespective of the tone pattern of the stem in isolation and the second being those in which the syllables of the first stems are not said on low tone. The situation where all the tones of the first stem change to low tones has been described as H-Deletion (cf. Marfo, 2004). According to Anderson (2013, p. 91), "this process reflects a common phenomenon called tonal compactness in West African languages, whereby the tones of the first stem neutralise."

In C'lela compounds, Aliero (2013) mentions segment metathesis, (final-vowel deletion, vowel lowering, and nasal insertion) as probable when compounding occurs. Illustrated in the data in 10;

10. a. ə̀rmə́ + gyə̀zó

[man + red] → ə̀rə́m gyə̀zó 'brave man'

b. d'bà + kàrgà

[place + gathering] → bàd gàrkà 'assembly hall'

c. k'kùrú + s'tə̀

[room + soup] → kùr-k s'tò 'vegetable'

(Aliero 2015, p. 37).

It is observed that the sequence of the sounds / a / and /m/ in the constituent ə̀rma' has been changed in the process of combining it with gyə̀zó, a process he calls segment metathesis. Non-adjacent metathesis is found in C'lela, where the prefix of the first constituent in a compoundtransposes to the final position of that constituent. Example (10b) illustrates this.

Aliero (2013) again observe that, compounding in C'lela may trigger deletion of the final vowel of the first disyllabic compound member. This occurs when the final vowel of the first stem has a preceding sonorant. For example, the deletion of the final vowel /-u/ in example (10c) may be perceived as the consequence of the occurrence of the stem-final liquid-vowel sequence in a compound construction (Aliero 2013, p. 37).

Kuubezelle (2013) also observes that a vowel can be elided in two instances during Dagara compounding. In the first instance, final vowel of CV or CVV syllable shape of an initial stem is elided before the second stem is added in order to form a compound word. This is because the morphology of the now is made up of the root and a number maker. Thus in compounding, the number marker is droped leaving the root. This scenario is exemplified in 11 below.

11.	**Stem1**	**stem2**	**Compound word**
	a. / pɛrʊ / +	/ pʊla / →	[pɛrpʊla]
	'sheep	'white	'white sheep
	b. / samɛ / +	/ yaga / →	[samyaga]
	'guest	'many	'many guest
	c. / bie / +	/ dɛb / →	[bidɛb]
	'child	'male'	'son

Kuubezelle (2013)

Kuubezelle (2013) posits that, Dagara compounding processes or fast speech often result in vowel elision, while the tone is maintained. In the event of such syllable structure process, the stranded tone re-associates with the nearest vowel to the left or right as in the data in 12.

12. Stem1 stem2 compound

a. /gárú / + /vùla/ → [gâr -vùla]

'herbal concoction' 'good' 'good herbal concoction

b. / gáà/ + / wùle / → [gă-wùle]

'ebony 'branch 'ebony branch

c. / kpàrú / + / faa / → [kpăr-faa]

'shirt 'bad 'bad shirt

Kuubezelle (2013)

Instances of these phenomena are observed in Sısaalı. Chapter five of this work examines the kind of morpho-phonological processes that occure in Sısaalı compounds.

2.3 Theoretical framework: Construction Morphology

According to Booij (2010) Construction Morphology (CxM) is word-based morphology. That is, Complex words are viewed as separate meaningful units within which specific subcomponents (morphemes) can be recognized based on paradigmatic relationships with other words, rather than as a concatenation of morphemes. CxM is an approach to the grammar of words which seeks to account for the proper characterization of the internal composition of complex words. It is a theory of morphology that builds on understandings from Construction Grammar (CxG) in the early 2000s. The theory deals with the structure, formation and meaning of words. Booij (2010) outlines the following features of the constructional approach that are of high relevance to CxM: Pieces of syntactic structure can be listed in the lexicon with

associated meanings, just as individual words are; these are the meaningful constructions of the language. CxM assumes that complex words, (i.e. the outputs of morphological operations), can be listed in the lexicon. The notion construction (defined as a pairing of form and meaning) is a traditional notion used by many linguists.

Booij (2010c, p. 543) argues that, CxM "aims at a better understanding of the relation between syntax, morphology, and the lexicon, and of the semantic properties of complex words". Booij (2018, p. 5) indicates that, "morphological schemas characterize the 'Gestalt' of complex words and their holistic properties." CxM, therefore, provides a framework within which both the similarities and the discrepancies of word level and phrase level constructs can be accounted for (Booij 2010b).

CxM is justified by Booij that, Constructional schemas for complex words generalize over sets of existing complex words. They can account for holistic properties of morphological constructions, properties that cannot be derived from those of their constituents. These morphological schemas have two functions: they express predictable properties of existing complex words and indicate how new ones can be coined. The fact that schemas are output-oriented is a second essential feature. They define output forms, and language users generalize based on these output forms. This is critical for understanding how morphology and phonology interact. The issue is that words contained in compounds may have meanings that they do not have when employed as individual words. Booij's CxM is encapsulated by three basic ideas. They are as follows: the theory of word structure, the theory of the concept 'construction,' and the theory of the lexicon.

2.3.1 The Theory of Word Structure

There are two main approaches to morphological analysis of complex words: morpheme-based articulated in such work as Bloomfield (1933) and Hockett (1947; 1954; 1958) who distinguished between Item and Process (IP) and Item and Arrangement (IA). And echoed in (Halle 1973; Kiparsky 1982; Siegel 1974) and word-based (Aronoff 1976; Anderson 1992).

Morpheme-based morphology assumes that word formation rules operate over morphemes. In the morpheme-based approach, a morphologically complex word is seen as a concatenation of morphemes. Booij (2010b, p.1) postulates that, this approach to morphological analysis may be understood as "syntax of morphemes". Appah (2013b, p. 47) posits that the "morpheme-based approaches isolate recurrent bases and exponents within a system and encapsulate each in a rule or entry that represents its grammatical properties."

In morpheme-based approaches, the primary purpose of morphology is to account for the relationship between a word and its constituents. Appah (2013b, p. 47) states that "morphological analysis in this approach therefore involves morphotactics (a process of segmentation and classification) and allomorphy (responsible for the shape of the morphemes in complex words)." Taking the word singer, we would infer that it is produced by the concatenation of verbal morpheme sing with the nominalising suffix –er that encodes the meaning 'agent'. According to Booij (2010b, p. 2), "morpheme-based approach sees morphologically complex words as the result of morpheme manipulation that occurs in the syntax." According to Gurevich (2006, p. 36), the hypothesis of morpheme-based approach is that "variation in form is determined by variation in meaning: smallest elements of form correspond to smallest elements of

meaning, and when one changes, so does the other" The morpheme base approach however is deficient in many ways, giving birth to the word-based approach to morphological analysis which considers the word as the basic unit of analysis (Blevins 2006; Booij 2005; Gurevich 2006).

In the word-based approach, rules are applied to already existing words to form new ones. Both the novel word and the already existing word from which it was formed are members of major lexical categories. (cf. Booij 1977; Scalise 1984). (Booij 2010b) presents that the implication of the word-based approach is that each word is a linguistic sign, form and meaning pair.

According to Lawer (2017, p. 55), "the holistic property of a construction can be observed from the fact that bound morphemes do not have any meaning of their own." For example, the suffix *-ion* in the words *correction* and *creation* does not carry a meaning of its own when it occurs in isolation. Therefore, it is the constructional schema as a whole which consists of the combination of the base verbs and the suffix *-ion* that evokes the meaning of what is 'corrected' and what is 'created' respectively. The understanding that *-ion* as well as other affixes like *–er* does not occur all by themselves come from the fact that CxM is not morpheme based but word based.

The word as a minimal linguistic sign, a form and meaning pair, is central to CxM's theory of word structure. As a result, a word's structure is made up of its phonological form and its morphosyntactic properties. As a result, a word is associated with three sorts of information: PHON(ological), SYN(tactic), and SEM(antic), and as Booij (2010d, p. 5) argues, "any morphological system or grammar of words must deal with the systematic relation between all three components." CxM's theory of word

structure then depicts a word as a complicated piece of information that relates a specific sequence of sounds to a certain meaning, as represented in figures 1 and 2.

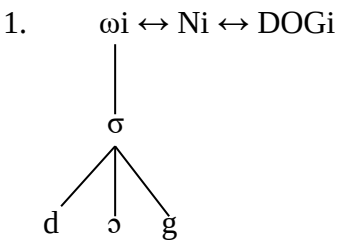


Figure 1: Lexical representation of dog (Booij, 2010b, p. 7)

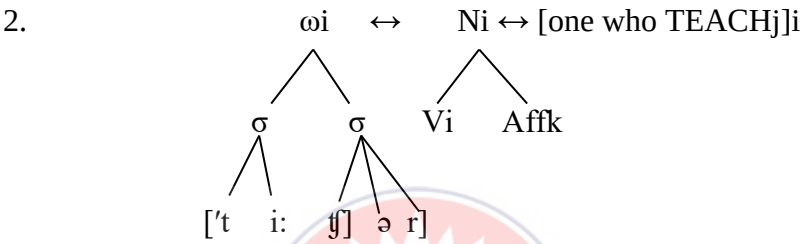


Figure 2: Lexical representation of teacher (Booij 2010b, p. 7)

The first piece of information in Figures 1 & 2 is the phonological properties of the words (ω) that consist of the one syllable in Figure 1 and two syllables in Figure 2. The phonological word bears the same syntactic information (N) and is co-indexed with the semantic information. According to Booij (2010b, p. 7) "co-indexation is used to specify the correspondence between the three kinds of information involved in knowing a word and thereby reflecting the tripartite parallel structure."

Booij (2016) upholds that the phonological representation of a complex word may not necessarily be isomorphic with its morphosyntactic representation. For example, the word teacher in Figure 2 has the morphosyntactic structure [[teach]V -er]N, and is a phonological word that is disyllabic, with primary stress on the first syllable ('ti:• ʧər)ω. The dot in the transcribed form of the word marks syllable boundary whiles the symbol ω stands for 'phonological word'. It must be noted that the word-internal

syllable boundary does not coincide with the word-internal morphological boundary, which is located after the sound / ʧ /, as in / 'ti:ʧ •-ər/. The suffix -er forms one domain of syllabification with its verbal stem which means that the morpheme boundary is ignored in the syllabification (Booij 2016).

Despite the fact that the internal phonological border of the word does not correlate with the morpheme boundary, the boundary of English compounds coincides with syllable boundaries. For example, Booij (2016, p. 432) observes that "in the compound dance-act [dæns.ækt], the sound /s/ is not syllabified as the onset of the second syllable, because the compound is made up of two phonological words, dance (dæns)ω and act (ækt)ω". The varied interfaces revealed in the words instructor and dance act highlight the need for two distinct schemas: one for cohering suffixes and another for compounds.

Construction and schemas

A schema is characterized as a cognitive representation comprising a generalisation over perceived similarities among instances of usage, which emerges from repeated activation of a set of co-occurring properties (Barlow & Kemmer 2000: xxiii). CxM assumes that language speakers can map meanings to internal word structures if there is a systematic association between form and meaning based on comparison of sets of related word forms (Booij 2016). For example, the following English complex words with the suffix *-less* are in paradigmatic connection with their basic nouns: *home, end, dread, sense,* and *hope*.

systematic association between form and meaning

13. *A* *B*

i. home *homeless*

ii. end *endless*

iii. fear *fearless*

iv. sense *senseless*

v. hope *hopeless*

(booij 2016)

The suffix *-less* in the examples denotes the property of being without something (Booij 2016). The words in the data can be assigned internal structure as shown in.

a. [[home]N less]A

b. [[end]N less]A

c. [[fear]N less]A.

(Booij 2016)

The form–meaning correspondences as observed from the complex words in the data above can be illustrated in constructional schemas that serve as template representations of the complex morphological constructions as shown in (14).

14. <[X]Ni fewer]Aj ↔ [Property of not having SEMi]j >

(Booij 2016, p. 425).

The double arrow in the schemas (14) indicates the relationship between word form and meaning. Co-indexation specifies the systematic relationship between form and meaning. In the cases, the index i denotes that the meaning of the base word (SEM)

recurs in the meaning of the associated complex term (Booij 2016). The index j, on the other hand, demonstrates that the overall meaning of the construction correlates with the overall form of the complicated word. The angled bracket (<, >) delineates the construction's borders. In these schemas, the variable X represents the phonological content of the word's base and hence indicates an unoccupied slot which must be filled with a concrete base.

Compounding is one of the domains of languages where CxM has been widely employed (Appah 2013, 2015, 2017; Booij 2005, 2010b, 2013, 2016). Accounting for the meaning of exocentric compounds, for example, necessitates a framework that views construction meanings as constructional features. Appah (2015, p. 110) shows that the compounds ksó and kàyé, which are constructed from the bases k + só (fetch + water) and k + àyé (attend + funeral), respectively, designate one who collects water and one who attends funeral.y. However, the meaning one who designates the agent is not inherited from the elements of the compounds and may thus be regarded as a holistic attribute of the complete construction. As a results, meaning is not connected with individual parts of a complex word as a whole.

Constructional schemas of complicated words allow us to generalize about subcategories of constructions by using subschemas in between the most general schemas and particular words. The essence of schemas is exemplified by the right-headed endocentric compounds in Akan as illustrated in (15).

15. < [[a]Xi [b]Yj]Nk ↔ [SEMj with relation ℜ to SEMi]k >

(Appah 2013b, p. 70)

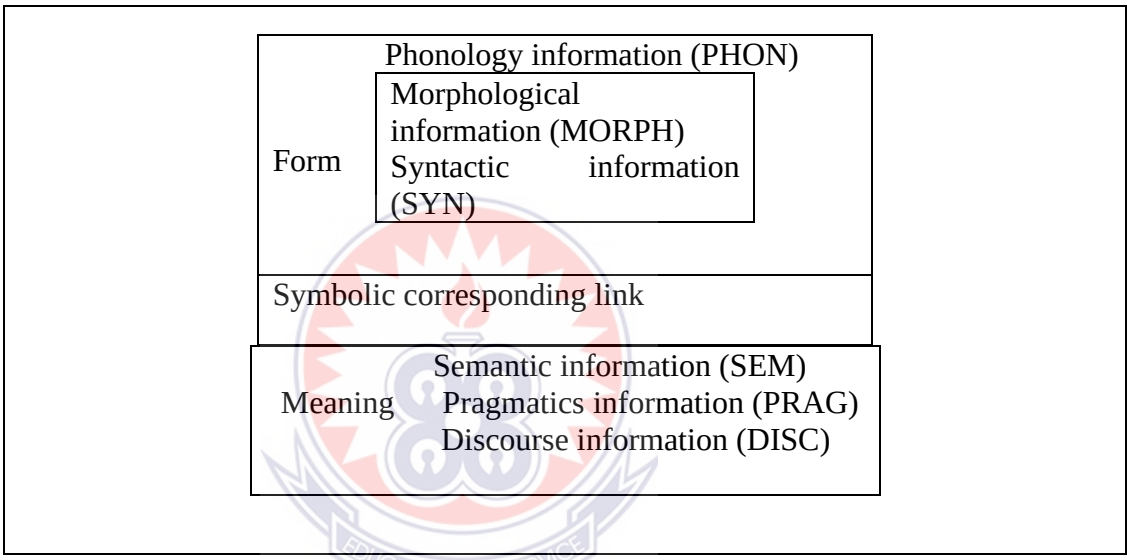
The double arrow represents the relationship between a specific form and a specific meaning in this schema. Uppercase variables X and Y represent the major lexical categories (nouns, verbs, adjectives, and adverbs). Variables a and b represent arbitrary sound sequences. The variables i, j, and k represent lexical indices on phonological (PHON), syntactic (SYN), and semantic (SEM) aspects of words (Appah 2013b, p. 70).

The schema in (15) is for a right-headed compound of the type blackboard, where X is instantiated as black and Y as board, with the relation R written out as "is". That is, a blackboard is a black board (see Booij 2010a, 2013, 2016). CxM is a branch of CxG that regards the basic unit of linguistic analysis as a construction rather than a single morpheme (Booij 2010b, p. 2). "A pairing of form and meaning" is characterized as idea creation. Analyzing words in terms of construction improves understanding of complicated word features (Appah 2013b, 2016b; Booij, 2010b, 2013, 2016 Wulff 2013). According to Jackendoff (2008), "pieces of syntactic structure can be listed in the lexicon with associated meanings, just as individual words are; and these are the meaningful constructions in the language." CxG, from which CxM arose, does not distinguish between words and rules.

According to constructionists, "basic units stored in the lexicon are constructions, which are individual schemas consisting of pairs of forms and meanings, and they are used to organize the existing forms in the lexicon and create new forms" (Fábregas & Scalise 2012, p. 38). Meaning is thus connected with the word as a whole rather than with individual elements of a complicated word.

Language users are believed to make generalizations about the predictable qualities of current complex words that are captured in templates known as schemas in CxM

(Booij 2013, 2016; Wulff 2013). There is a phonological, syntactic, morphological, and semantic link between morphological schemas and lexical objects. On the phonological level, lexical items may be distinguished by the starting segment, rhyming, stress pattern, or number of sylables. On the syntactic level, they might be marked by categorial membership (e.g., noun or verb). On the semantic level, they might be identified by being analogous or contrasting in meaning, or by belonging to the same semantic field (Appah 2013b, p. 75) as shown in Figure 3



A construction in CxM (Booij 2016)

2.3.2 The Lexicon in CxM

Booij (2010) defines the term 'lexicon' as the component of the grammar that minimally contains a specification of the lexical units of a particular language. The set of lexical units is larger than the set of words. The term LEXICON has been used to refer to a synchronic component of the language faculty or a component of the grammar of a language which minimally contains a specification of the lexical units of that language (Appah 2013b; Bloomfield 1933; Kiparsky 1982). According to Booij (2005, p. 17), it as the "repository of all information concerning the established

words and other established expressions of a language". According to Booij (2005, p. 17), "the lexicon is an abstract linguistic entity, to be distinguished from the notion dictionary, which refers to practical sources of lexical information for language users in some material (paper or electronic) form." According to Booij (2010), the set of words to be registered in the lexicon is the set of established terms that are used by more than one native speaker on more than one occasion. The rules that define the language's lexical conventions can be altered, allowing for the addition of new terms. Spencer (1991, p. 47) states that "the lexicon must contain any idiosyncratic information about its entries (lexemes)." Speakers of any language have an intuitive sense of what constitutes a word or a potential word in their language. Thus, speakers of a language are able to tell (a) what a word in their language is, (b) what the components of words are, and (c) which combinations of those components are acceptable and which are not (Appah 2013b; Spencer 1991). For example, an English speaker knows that, (i) boy is an English word, but *nyubal* ĩs not, (ii) certain words have internal structure (e.g. un-faith-ful-ness), and (iii) word-internal structure must occur in a certain order of arrangement of the constituents, so that the arrangement of the constituents in un-faith-ful-ness is acceptable but, *un-ful-ness-faith and *faith-un-ness-ful are not (Appah 2013b; Spencer 1991). The lexicon is sometimes called mental lexicon to emphasize the fact that it should be seen as a cognitive concept. Lexicon contains words and complex structures whose meanings need to be memorised. Thus, any conventionalised or lexicalised structure needs to be stored in the lexicon with its meaning. As a result, the lexicon is thought to have form-meaning correspondences (constructions). The arbitrariness of the relationship between the form and meaning of transmission 'a portion of an automobile' and bookworm 'someone who likes reading', for example, means that both constructions must be

preserved in the lexicon independently of their elements (Appah 2013b; Lieber 1992). According to Di Sciullo and Williams (1987, p. 3), "[t]o the extent that an object does not have the form or interpretation specified by the recursive definition of the language's objects, that object and its properties must be memorized." They refer to the memorized lexicon elements as 'listemes,' and the quality of being memorized as 'listedness' (Di Sciullo & Williams 1987, p. 3). However, the lexicon does not only contain irregularities and arbitrary facts. From the lexicalist perspective, the lexicon is the component of grammar that houses the vocabulary and word formation rules of a language. Therefore Appah (2013b, p. 89) opines that, “lexicon emerges as an active component of the grammar”

Lexemes are the items kept in the lexicon. To the extent that they are established conventionalised units, these lexemes, both simplex and complex, are enumerated in the lexicon. The lexicon describes each word's meaning, phonetic form, and morhological and syntactic features. The basic structure of lexical entries for the lexemes SWIM and SWIMMER is shown in (14).

16.

/swim/	/swim er/
[x]V	[[x]V er]N
SWIM ACTIVITY	PERSON PERFORMING SWIM ACTIVITY

(Booij 2005, p. 17).

The phonological form of these lexemes, the sequence of sound segments between slashes, is specified in the first line of these lexical entries in 16. The second line specifies the categorial information as well as the internal morphological structure. The meaning of the lexeme is stated on the third line. Thus, any lexicon entry

"expresses a correspondence between phonological, syntactic, and semantic pieces of information, just like morphological rules or templates, which do the same at a more abstract level, in a more generalised fashion, with variables taking the place of the individual properties of lexemes" (Booij 2005, p. 17). When a new word is created, it becomes established in the language as an accepted word. As a result, more than one native speaker of the language uses it, and it is used on different occasions. The established word becomes part of the lexical conventions of the language.

According to Booij (2005, p. 18), "the lexicon as the set of established lexical units of a language may have a blocking effect on the creation of new words." Hence, the fact that money machine is not used in English to refer to a machine that dispenses cash is because there is another word, automatic teller machine (ATM) blocking it (cf. Aronoff 1976; Katamba & Stonham 2006; Kiparsky 1982).

2.4 Summary of Chapter

The chapter generally reviewed the literature on the phenomenon of compounding. The available literature on compounding reveals that linguists have varying views on the definition of compound, a situation attributed to the lack of uniformity in the choice of terminology in describing the constituents or members of compounds. The status quo is however understandable, given the fact that languages are not the same and what constitutes a root, stem or word in one language may be different in another language.

It has also been observed that the syntactic combinations including noun-noun, noun-adjective, noun-verb and verb-nouns exist in languages. It is shown in Akan and Lɛtɛ, all compounds are nominals irrespective of the categories of the constituents.

The phonological processes that are triggered by compounding as revealed in the literature include vowel harmony, homorganic nasal assimilation, tone pattern changes and vowel deletion, which is very pervasive in these languages.

Finally, the chapters examined construction morphology (CxM), the theoretical framework for this study. Complex words are considered as constructions at the word level in CxM, where construction is defined as a coupling of form and meaning in the lexicon, which is expected to contain both simplex and complex terms. I have demonstrated with examples that CxM is an adequate theory for dealing with complex morphological constructions because it can account for constructions whose meaning and syntactic properties are not traceable to any of their constituents, making it the ideal theory for the data analysis in this study.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The systematic procedure of collecting and analysing data for a research work is referred to as methodology. This chapter discusses the data collection procedure and how it (the data) is analysed. This chapter has two sections. The first section looks at the research design, sampling techniques and data collection strategies. The second part looks at how the data is analysed.

3.1 The Research Design

The research is a qualitative study employing a descriptive approach. It does not involve numerical data. This involves collection of natural empirical data and interpreting it to describe and report a phenomenon. Dörnyei (2007, p. 129) asserts that, this type of design "involves data collection procedures that result primarily in open-ended, non-numerical data which is then analyzed primarily by non-statistical methods". Interview, discussion, observation and elicitation, are some Common data collection techniques used in this kind of study. The data collected is analysed descriptively according to how the speakers of the language combine two or more words or stems to form new words in the language.

3.2 Research Site

This research is carried out in four major towns in the Upper West region; Kojʊʊkpere in the Daffiama-Bussie-Issa district, Fonsi and Kundugu in the Wa East district and Goluu in the Sısaala West distric. My choice of these towns is informed by the dialects in which the data for the study is sourced from (Kpatoli, Pasaalı and Gbieni). The three dialects are considered out of the seven dialects because of time

constrains for the research. It is not feasible to cover all the seven dialects of Sɪsaalɪ in Ghana considering the time available for the research. Again, the researcher is a native speaker of the Kpatolie dialect and has the prime interest of researching into his dialect which he is more comfortable and feasible working with. However, Pasaalɪ and Gbieni dialects are also very close to the Kpatolie dialect in terms of structure and lexical items. Also, the Gbieni dialect seems central to all the other dialects because its sounds are more dominant and related to all the dialects in Sɪsaalɪ than the rest are to each other. Thus the Gbieni dialect is better understood by speakers of all the other dialects. The towns considered are the major places in which those dialects are spoken. The Kpatolie dialect is spoken in and around Kojʊʊkpere, Pasaalɪ dialect is spoken in Fonsi and Kundugu and their surrounding communities while the Gbieni dialect is spoken in Goluu and its environs.

3.3 Sampling Techniques

Six language consultants were engaged to play a dual role in this work. One male and one female were selected for each dialect. These consultants are all native speakers of the selected dialects and are age 45 and above. Since the researcher has no interest in the phonetic variation in the language, age 45 and above is ideal because they are anticipated to be more competent in the language than the younger ones. All the consultants have attained formal education. This made the data elicitation easier and devoid of influence by the researcher.

3.4 Sources of Data

Data for the study is basically from two main sources; primary and secondary sources.

Primary data

The primary sources are from electronic media (radio discussions), elicitation and self-generated data base on my native speaker intuition and introspection.

3.4.1 Electronic Media

This type of data was sourced from radio programs and radio discussions from the following radio stations; Radio Progress 98.1fm, 'Hot issues' in Sɪsaalɪ (every Thursday from 12:00pm – 1:00pm), Radio Upper West 90.1fm Sɪsaala morning show (every Friday from 7:00am - 10:00am). The other programs are 'Nibilli weri' morning show (from 9:00am - 10:00am: and 'Wʊberi mini wa tɔɔ la' 'what is happening in your community' (from 4:00pm – 5:00pm) on Goluu fm 97.1fm. On Radford fm 107.5 in Tumu. The following programs were also recorded; Haalaa dʊnɪɛ 'women's world' (every Thursday from 11:00am – 12:00noon), Waafɛlɛ wɪa 'youth issues' (every Sunday from 1:30pm to 2:30pm), Nɪnyusuŋ bʊɔŋ 'time for key people', Ma sie 'good morning', Sʊnsɔgʊlɔ bʊɔŋ 'story telling time' is a daily program (from 8:00pm – 9:00pm) and Pɛrɪŋ bʊɔŋ 'farming time' is on every Wednesday from 9:00am – 10:00am.

Following all protocols, permission was gotten from the management of each of the radio stations, who after listening to my purpose were very happy to have me. They lead me to get permission from their guest and help me with the recording using their recorders which are better than my phone. These programs were recorded over a period of one month.

The discussions are usually centered on various aspects of the Sɪsaala socio-cultural life, education, agriculture and national politics. During the discussions I targeted panel members who spoke any of the three dialects (Gbieni, Kpatolie and Pasaale)

and recorded that voice. After which I played the recording and wrote out the compound words that are identified for analysis.

3.4.2 Elicitation

The researcher contacted the consultants individually with list of words asking them for the Sɪsaalɪ version. He mentions the word in English and the respondent gives the Sɪsaalɪ form of it for the researcher to write. After he has exhausted his list, he allows the consultant to provide him with more compound words which are not in the researcher's list. After that the data was presented to the language consultants for authentication.

3.4.3 Self-generated Data

As a native speaker who is competent in the language, I am able to generate some data using my own intuition and introspection. This data was also presented to the consultants for authentication.

3.4.4 Secondary Data

The Sɪsaalɪ orthography Guide by Sɪsaalɪ Literacy and Development Program (SILDEP), the translated version of the Old and New Testaments by the Ghana Institute of Linguistics, Literacy and Bible Translation (GILLBT) and the Sɪsaala-English/English-Sɪsaala Dictionary by Blass et. al (1975, 2002) and the grammar of Sɪsaalɪ-pasaalɪ by Mcgill, Fembeti and Toupin (1999) are the major documents from which data was also sourced for the study.

It must be noted however that, some of the works I sourced the data from were written at the time there was no unified orthography for the Sɪsaalɪ language. Thus, different organizations such as Non-formal Education Division (NFED), SILDEP and GILLBT

and individuals who earlier researched into the language had different writing systems. The new Orthography Guide was put forward in 2015 by SILDEP and the Sɪsaala union. For the purpose of this study however, all the examples taken from the existing documents are written in conformity with the rules of the new orthography prescribed by the Orthography Guide.

3.5. Data Analysis

The data was analysed using the construction morphology framework. The phonological processes in compounding were described using auto-segmental phonology theory.

CHAPTER FOUR

THE NATURE OF COMPOUNDS IN SIsAALI

4.1 Introduction

Based on the requirement for language-specific descriptions of compounds, this chapter examines the characteristics of Sısaalı lexical items that meet the definition of compound words. The chapter also discussed Sısaalı compound classification based on the constituent elements, grammatical categories and relationship between the components of the compounds and their headedness.

In Ssaal, I show how formal (syntactic and phonological) and semantic criteria can be used to distinguish compounds from other grammatical structures such as noun phrases and derived complex words. Noun-noun (N-N), noun-adjective (N-A), noun-verb-noun (N-V-N), verb-verb (V-V), and noun-noun-adjective (N-N-A) combinations have been acknowledged as viable syntactic category combinations in the classification of Sısaalı compounds based on the syntactic categories of the elements. Personal name compounds are another type of compound covered in this chapter. These types of compounds are interesting because they are usually independent clauses that are fut together as a single grammatical unit. In section 4.2, I also looked at the characteristics of Sısaalı compounds by defining what a compound is in the language and outlining the standards by which we can determine whether a word is a compound in Sısaalı. In section 4.3, I explain the Sısaalı compounds using the constituents' syntactic categories. Some of the relationships that exist between the compound members are also covered in this section. In section 4.4, I discussed personal name compounds in Sısaalı. Section 4.5 summarises the chapter.

4.2 Determining Compoundhood in Sısaalı

Despite the volume of literature on compounds in the world languages, there are barely available universally accepted criteria for determining compounds. Close analysis of the available literature on the phenomenon reveals that the definition and criteria for determining compounhood requires “language specific and cross-linguistic investigations for dependable linguistic generalisations” (Omachonu & Onogu 2012, p. 93).

4.2.1 Properties of compound in Sısaalı

Compounds differ from derived words in that they are formed out of free standing words, whereas derived words contain affixes, according to Lieber and Stekauer (2009b). However, according to Booij (2007, p. 85), this difference may not be applicable to all languages because "a lexeme may develop into a derivational morpheme" and the pieces that make up compounds in different languages around the world may be bound roots or stems. Nonetheless, Lieber and Stekauer (2009b, p. 2) believe that the term lexeme is "specific enough to exclude affixes while being broad enough to encompass the roots, stems, and free words that make up compounds in typologically diverse languages." The words in the table below are compounds since the bases are free forms.

Table 1: Properties of compound in Sɪsaalɪ

	Base 1	Base 2	Compound	Translation	Type
a.	kuori	mɪa	kuorimɪa	maize	N-N
	'chief'	'guinea corn'			
b.	bee	Bie	Beebie	indigene	N-N
	'home'	'child'			
c.	taahi	Bii	Taahibii	germ	N-N
	'illness'	'seed'			
d.	tɪa	pɔllɪ	tɪpɔlʊŋ	happiness	N-A
	'inside'	'white'			
e.	sɪɪ	sɔŋ	sɪsɔŋ	kindness	N-A
	'eye'	'wet'			
f.	pɛ	jʊʊ	pɛjʊʊl	neighbour	V-V
	'add'	'live'			
g.	sɪɪ	polli	sɪpolli	wisdom	N-V
	'eye'	'open'			
h.	baal	laalɪ	balaalɪ	amore	N-V
	'man'	'ware'			
i.	laa	Di	Laadi	believe	V-V
	'collect'	'eat'			

In table 1, all the forms in base 1 and base 2 can stand alone as illustrated in examples 2 and 3.

Example 1

a. ʊ palɪ kuorimɪa rɛ.

He/she cultivate.PF maize DEF

'He/she has cultivated maize'

b. A nɪhʊalɪ rɛ ba laadi gɛhɪ a beebie.

DET stranger DEF they belive than DET indigene

'They believe the stranger than the indigene'

c. Luri kaŋ sɪsɔŋ nɛ yʊga.

Luri has kindness DEF more

'Luri is too kind'

d. Doma rɛ kaŋ sɪpolli gɛhɪ ʊ pɛjʊʊl.

Doma DEF has wisdom than his neighbour

'Doma is wiser than his neighbour'

Other compounds are formed from the combination of free forms and affixation in the language. The suffixes *–ni, -lɪ/rʊ, -ɪɪ,* "agent" are nominal affixes that are added to forms to form compounds.

Table 2: Affixation in Compound

Base1	Base 2	Affix	Compound	Translation	Type
bɔgɔ	Daa	lɪ	dɔgɪdaalɪ	Farmer	N-V
'farm'	'follow'				
Teŋ	jʊma	nɪ	teŋjʊnnɪ	Literate	N-V
'book'	'know'				
sɪɪ	jʊʊ	ɪ	sɪjʊʊɪ	Disrespect	N-V
'eye'	'enter'				
dɪa	yuo	lii	dɪɪyuolii	mud-house	N-V
'house'	'throw'				
nɪɪ	nyʊa	lɪɪ	nɪɪnyʊalɪɪ	drinking water	N-V
'water'	'drink'				
sɪŋ	nyʊa	lɪ	sɪnyʊalɪ	Drunkard	N-V
'alcohol'	'drink'				

In table 2, the third constituents of the words are affixes because they cannot stand alone as free words in a syntactic construction unless they are attached to other forms.

Another criterion for determining compoundhood in Sɪsaalɪ is segment elision. Segment elision is dominant feature in Sɪsaalɪ compounds. When two words are fused together in Sɪsaalɪ, the first constituent truncates a segment or some of its segments to accept the other constituent. When this does not happen, the elemnts can best be described as a phrase instead of a compound. Example 2 and 3 illustrates the distinction between Sɪsaalɪ compound and a noun phrase.

Example 2

a. Haaŋ + wɪa → hawɪa

woman + issues menstruation

hanɪhɪɛhɪ bee yaa hawɪa

old women not do menstruation

'old women do not menstruate'

b. duoŋ + nɪ → duonɪ

rain water rainwater

duonɪ tuu taŋŋa rɛ weliŋ

rain water down soil DEF well

'rain entered the soil well'

c. baal + kɪna → bakɪna

man things weapons

yuo saŋa rɛ ba aa laalɪ bakɪna

war time DEF they INPEF wear armor

'it in times of war they wear armor'

d. baal+a+ yɛllɪ + kɪna → bayɛlkɪna

man.PL sell things merchandise

Wa rɛ ʊ mʊ yɔɔ bayɛlkɪna

Wa is s/he go.PF buy.PF merchandise

'It is Wa s/he went and bought merchandise'

Example 3

a. Ba mʊʊ ba marɪ haaŋ wɪa

They go.INPEF to prepare woman matter.

'They went to dowry a woman'

b. Duoŋ nɪɪ rɛ fɪala gɛhɪ pɔmpɪ nɪɪ

Rain water DEF cold than pipe water

'Rain water is colder than pipe water'

c. Haaŋ kɪna abee baal kina be dɔmɔ kie

Woman things and man things not other like

'Woman things and man things are not alike'

d. gyɪnaŋ baala aa yallɪ kɪna rɛ

'Today men do sell things DEF'

Today men sell things

It's been observed, in example 2ai *hawɪa* [haaŋ + wɪa], *donɪɪ* [duoŋ + nɪɪ] and *bayalkɪna* [baal + yallɪ + kɪna] that the final syllable of the first constituents haaŋ, duoŋ, baal and yallɪ are dropped to enable them compound with the second constituents. But in example 3 *haaŋ wɪa*, *duoŋ nɪɪ*, and *baala yallɪ kɪna* are phrases. Hence the words for each phrase remain full forms.

Another technique to identify compounds from noun phrases is by syntactic inseparability. Inseparability means that another element (s) cannot be placed between the two parts of a morphologically complicated form that is understood as a compound (rather than a phrase) (cf. Lieber & tekauer 2009a; Omachonu & Onogu, 2012). As illustrated in Example 4.

a. Ba laa ʊ nʊa mɔlbie rɛ.

They take.PEF her mouth money DEF

'They took her bride price'

b. Batɔŋ nɛ yɔɔ a nʊteŋ

Batɔŋ FOC buy.PEF DET cow skin.

'Batɔŋ bought the cow skin'

c. * Ba laa ba nʊʊhɪ mɔlbie

They take.PF their mouth.PL money.

'They took their bribe prices'

d. *Batɔŋ nɛ yɔɔ a nʊhɪ teŋ

Batɔŋ FOC buy.PF DET cow.PL skin

'Batɔŋ bought the cows skin'

It is grammatically correct to say 4(a) and 4(b), but not 4(c) and 4(d), because *nʊamɔlbie* [bride price] and *nʊteŋ* [cow skin] are valid compounds in Sɪsaalɪ, whereas **nʊʊhimɔlbie* [bride's price] and **nʊhɪteŋ* [cows skin] are not. The plural marker of the compound is added to the complete word on the final ingredient but not on the first constituent in Sɪsaalɪ compounding. As a result, the plural form of *nʊamɔlbie* remains *nʊamɔlbie* because the compound's final ingredient, *mɔlbie* [money], is already in its plural form. The plural form of *nʊteŋ* [cow skin] is *nʊtenni*, because the plural form of the compound *teŋ* [skin] is *tenni* [skins].

Compounds are also distinguished from noun phrases by their internal alterations. While a noun phrase can be internally modified by introducing an adjective between the constituents of the noun phrase, no internal alteration can be made between the constituents of a compound. In English, for example, a non-head initial part of a compound does not normally allow modification, although in NPs, non-head modification is feasible. While it is possible to have a very dark board for NP in English, it is not appropriate to change the non-head constituent, black in the nominal compound blackboard. As a result, while a very black board is an acceptable noun phrase, *very blackbird as a nominal compound is unacceptable (cf. Omachonu & Onogu 2012). As in example 4(a) nɒaməlbie is a compound and cannot be internally modified with an adjective as in *haarɪ 'exorbitant'.

Determining headedness in Sɪsaalɪ compounds is not different from as it is in English. Compounds are broadly categorized into two types; headed (endocentric) and headless (exocentric) compounds. The head of a compound is the constituent that is a hyponym of the compound. For example, vabie [lit. dog child] 'poppy' is a compound from vaha +bie is a hyponym of vaha 'dog'. Dindaaŋ [lit. fire wood] 'fire wood' is a hyponym of daaŋ 'wood'. Thus vaha and daaŋ are the semantic heads of vabie and dindaaŋ respectively. Headless compounds on the other hand are those whose semantic head cannot be determined from its constituents. As in jʊʊna [lit. enter see] 'ladle', tɪpɒlʊŋ [lit.stomach white] 'righteousness' and sɪjʊʊɪ [lit. eye enter] 'disrespect'. Neither of the compounds jʊʊna, tɪpɒlʊŋ and sɪjʊʊɪ is a hyponym of its components. Hence, jʊʊna, tɪpɒlʊŋ and sɪjʊʊɪ are exocentric compounds.

4.2.2 Semantic Properties of Sısaalı Compound

To account for the compoundhood of morphological constructs, a semantic criterion has been developed. According to Nwaozuzu (1991), as quoted in Omachonu and Onogu (2012), any complement-head structure (e.g. N+N combination) that satisfies any three of these four semantic characteristics may be classified as a nominal compound (In Ìgbò): (i) concept unity, (ii) semantic specialization (iii) permanent aspect, and (iv) notion unitary representation.

As a semantic criterion for determining compoundhood of structures in Sısaalı, unity of concept means that a compound must denote a single new idea rather than a combination of the ideas carried by the constituents of that structure. As a result, the compound structure must name a new referent or concept that is distinct from the constituents.

Example 6

a. hɔgı + jaagʊ = hɔgʊjaagʊ [lit. metal + horse] ‘bicycle’

b. baal + kina = bakına [lit. men + things] ‘weapons’

c. bee + bie = beebie [home + child] ‘indigene’

It is observed that, the compound means something different from their constituents. The meanings of the compounds are not totally inherent in the individual constituents.

The meanings of the constituents of compound words are not always "directly predictable from the meanings of the constituents because the meanings of these constituents may have depleted through various semantic extensions and associations" (Omachonu & Onogu 2012, p. 102). A Sısaalı compound is thus a concatenation of

words with distinct meanings in the language, allowing it to be described as lexicalised and semantically specialised. As a result, the specific meanings, denotations, or connotations of the compound members may no longer be directly accessible in the compound of which they are a part.

Example 7

a. Haŋyee + ta + lɪ = haŋyetaalɪ

   dirge + allow +suffix (agent) 'dirge singer'

b. Nyuu + guluŋ = nyuguluŋ

   head + round 'illiterate'

It is observed that, the right constituent ta 'to allow something' of *haŋyetaal* has been lexicalised to be sing but not 'allow something' for others as in the sense of it usage. Again in *nyuguluŋ*, the right constituent *guluŋ* 'round' is lexicalised to mean inability to read and write but not associated with the left-hand constituent in the sense that the right-hand constituent of the compound is not describing the physical state (roundedness) of the left-hand constituent but its ability or inability to perform a task, (reading and writing).

Another semantic criterion for defining compoundhood in Sɪsaalɪ is the existence of a semantic tie between the components that comprise the compounds in the language. According to Omachonu and Onogu (2012, p. 103), this link must "be intimate, irreversible, and permanent and not just a casual association." For instance, in the Sɪsaalɪ compound *sɪbii* 'eyeball', the constituent bii 'seed' is a permanent part of the

sʊ ‘eye’. In the compound *dɪatɪɪna* ‘landlord’, the dɪa house belongs to the tɪɪna ‘owner’ hence a permanent relationship is between the constituents.

In Sɪsaalɪ, unitary representation of concept means that, none of the elements composing a compound can semantically and totally stand in for the compound as a single word in the language's grammar, unlike NPs, where the head-word alone can take the place of the complete phrase. Compounds that fail the hyponymy test can thus be used to demonstrate this requirement. In the compound *pɛjʊʊl* ‘neighbour’ for example, neither pɛ 'help' nor jʊʊl 'live' cannot replace the compound in clauses to encode the same meaning as the compound evokes. In contrast to (8a), the phrases in examples (8b) and (8c) are ungrammatical since.

Example 8

a. Pɛjʊʊla aa giri gaala rɛ ba bee gaa dɪa kɪna.

help.live.PL do.IMPEF prevent thief.PL DEF they not steal house thing.PL

‘Neighbours do prevent thieves from stealing house properties’.

b. *pɛ aa giri gala rɛ ba bee gaa dɪa kɪna

Help do.IMPEF prevent thiefe.PL DEF they not steal house thing.PL

‘Help do prevent thieves from stealing house properties’.

c. *jʊʊla aa giri gala rɛ ba bee aa dɪa kɪna

Live do.IMPEF prevent thiefe.PL DEF they not steal house thing.PL

'Live prevent thieves from stealing house properties'.

It has been shown that, a Sısaalı compound may be separated from derivatives and NPs using syntactic, phonological, and semantic criteria. In terms of phonology, I have demonstrated that there exist word combinations that can be regarded compounds but not NPs because segments can be eliminated in the compound but maintained in the same combination in NPs. It is also established that internal alteration, particularly of non-head parts in NPs, is feasible; nevertheless, we cannot edit the non-head constituent in compounds. Semantically, I have demonstrated that Sısaalı linguistic structures are compounds when they exhibit some of the following characteristics: unity of concept, semantic specialisation, persistent aspect, and unitary representation of concept.

While each of these factors is necessary in and of itself, they all work together to help us define compoundhood in Sısaalı. Therefore, in order to determine the compoundhood of a construction in Sısaalı, we need to integrate more than one of these factors.

4.3 Classification of compounds in Sısaalı

The taxonomy of Sısaalı compounds is discussed in this section. Using the syntactic category of the compounds' constituents as a guide, I classified the compounds in Sısaalı into Noun-Noun, Noun-Adjective, Verb-Verb, Noun-Verb, Noun-Verb-Noun, Noun-Noun-Adjective and personal name compounds. I also discussed the relationships that exist between the components of the compounds. I examined the headedness of Sısaalı compounds and, based on that, I divided Sısaalı compounds into two groups: endocentric and exocentric compounds.

4.3.1 Classification of Sısaalı Compound by Syntactic Category

Words that are combined to produce a compound may belong to the same or different word classes. Examples include noun-noun (N-N), noun-adjective (N-A), verb-verb (V-V), and noun-verb (N-V). There are two dimensions along which compounds are categorized in terms of syntactic category. The first dimension is that, compounds are categorized according to the output's syntactic category. This means that when words of the same or different word classes are put together to form a compound, the resultant compound also belongs to the word classes of either of the constituents or a different word class from either of them. This classification results in classes of compounds that are nominal, verbs, or adjectives. The other dimension is determined by the compound elements' syntactic category. That is the syntactic category of words that form a compound. In accordance with this latter classification, Sısaalı compounds' elements consist of noun-nouns (N-N), noun-verb (N-V), noun-adjective (N-A) and verb-verbs (V-V). The table below exemplifies the categorization of Sısaalı compounds based on syntactic categories of the elements and the syntactic category of the resultant compound.

Table 3: Classification of Sısaalı Compound by Syntactic Category

Base1	**Base2**	**Compound**	**Translation**	**Syntactic groups of elements**	**Syntactic group of compound**
gyʊʊ	Na	gyʊʊna	ladle	V-V	noun
'enter'	'see'				
sıı	sɔŋ	sısɔŋ	kindness	N-A	Noun
'eye'	'wet'				
sıı	polli	sıpolli	wisdom	N-V	Noun
'eye'	'open'				
loho	haaŋ	lohaaŋ	widow	N-N	Noun
'funeral'	'woman'				
nyuu	guluŋ	nyuguluŋ	illiterate	N-A	Noun
'head'	'round'				

Based on the syntactic category of the elements, this section focuses on the several sorts of compounds that can be found in Sısaalı. I therefore examine the word categories (N-N, N-V, N-A, V-V N-N-A and N-V-N) that combine to form the compounds, the category of the compounds, and the relationships between the compounds and their component words as well as the relationships between the compound members themselves. I again examine some personal name compounds that are in the form of clauses.

4.3.2 Noun- Noun Compound in Sısaalı

The existence of N-N compounds is the only aspect of compounding that can be claimed to be a near-universal. Nearly all languages that use compounding as a method of word formation include N-N as one of the categories (see Akrofi-Ansah 2012; Andreou 2014; Bauer 2001; Booij 2010; Dolphyne 1988; Omachonu & Onogu 2012; Scalise & Vogel 2010b). In Sısaalı, N-N compounds are the most prevalent forms of compounds. Such compounds are created by merging nouns with different semantic kinds. The nouns can be concrete, abstract, count, non-count, animate, inanimate or relational. The resultant compound noun can either be exocentric (headless) or endocentric (have heads).

Table 4: Noun-Noun compounds in Sısaalı

Base1	**Base 2**	**Compound**	**Translation**	**Headedness**
duoŋ	sie	duosie	rainbow	exocentric
'rain'	'knife'			
badɛrı	tuna	badɛtuna	crafty person	right-headed
'spider'	'owner'			
dıa	toluu	dıatoluu	sister	right-headed
'house'	'daughter'			
fuo	naaŋ	fuonaaŋ	valley	exocentric
'stream'	'leg'			
haaŋ	wıa	hawıa	menstruation	exocentric
'woman'	'things'			

baal	yoŋ	bayoŋ	personal name	exocentric
'man'	'slave'			
hɔgɪ	jaagʊ	hɔgɪjaagʊ	bicycle	exocentric
'metal'	'horse'			
sʊʊ	daga	sʊʊdaga	coffin	right-headed
'death'	'box'			
taahɪ	bii	taahɪbii	germ	exocentric
sickness'	'seed'			
batuu	naachigi	batuunaachigi	elephantiasis	exocentric
'elephant'	'footprint'			
nɛl	dʊma	nʊdoma	ghost	exocentric
'person'	'ghost'			
salɪŋ	bʊa	salimbʊa	goldmines	right-headed
'gold'	'hole'			
nɪɪ	nʊhʊ	nɪɪnʊhʊ	hippopotamus	right-headed
'water'	'cow'			
vaha	bie	vabie	puppy	left- headed
'dog'	'child'			
baal	fɪɪ	bafɪɪ	sperms	exocentric
'man'	'urine'			
loho	haaŋ	lohaaŋ	widow	right-headed
'funeral'	'woman'			

dɪhɪ	paapori	dɪpaapori	vegetable	right-headed
'soup'	'leaf'			
wɪhɪ	dɪa	wɪhɪdɪa	church building	right-headed
'god'	'house'			
nonii	fɪl	nonifɪl	fingernail	right-headed
'finger'	'nail'			

It is observed that, there exist both endocentric and exocentric N-N compounds in Sɪsaalɪ. It is also noticed that N-N compounds in the language are nominal. The meanings of most endocentric compounds are determined by the right hand constituents and are hyponyms of the right hand constituent making the right constituents the semantic heads. Hence most endocentric compounds in Sɪsaalɪ are right-headed despite the existence of a few left-headed ones.

The constituents of Sɪsaalɪ N-N compound are simplex in structure. A nominal based constituent is considered simplex if the constituent is not derived or a compound in itself. The data indicates that none of the bases are derived or compounds themselves.

4.3.3 Semantic Relations between Constituents of N-N Compounds

Though the combination of N-N compounds seems arbitrary and flexible in terms of sematic properties, nonetheless, there appears to be some relationship between the constituents. Bauer and Tarasova (2013, p. 2) observe that "though a sleeping pill is supposed to encourage sleeping, a sea-sickness pill is not supposed to encourage sea-sickness". They noted in compounds such as firehouse, framehouse, glasshouse,

henhouse, and townhouse that different relations are exhibited between the left-hand constituent of the compounds and house, the right-hand constituent.

Using library book as an example, Bauer and Tarasova (2013) describe the semantic relation between the constituents of N-N compounds in agreement with Guevara & Scalise (2009, p. 108) proposition that, the relationship between the constituents of a compound is [X ℜ Y]Z where X, Y and Z are labels for major syntactic categories and ℜ represents an implicit relationship between them. Thus, to interpret any compound the nature of ℜ for that particular compound needs to be established. Bauer & Tarasova (2013, p. 3) observe that, "the morphosyntactic structure provides minimal semantic information (compatible with all compounds); most information on interpretation comes from the context of use." There is the need to identify the semantic information that is available in the constituents and the morphosyntactic structure in which they occur. We therefore need pragmatics to determine the ℜ in order to adequately interpret any given compound. Hence, one may reconstruct ℜ, as library CONTAIN book in order to interpret library book as a compound word (Bauer & Tarasova 2013).

In Sısaalı endocentric N-N compounds, the modifying constituents have meaning relation with their head constituents. For exocentric compounds, there are varying constraints that limit the relationship between the constituents. Considering the compound *ŋmanyuu* 'migrine' [lit. monkey head], it is seen that the constraints do not allow the compound to be interpreted as the head of a monkey.

In endocentric compounds, the recurrence of a particular relationship in different N-N compounds establishes the fact that the constituents of Sısaalı N-N compound are related. The relation between elements in N-N compounds sometimes requires

pragmatics to ensure their full interpretation. As Bauer & Tarasova (2013, p. 3) observe, "the morphosyntactic structure provides minimal semantic information (compatible with all compounds); most information on interpretation comes from the context of use." Thus, in order to interpret N-N compounds, we need to identify the semantic information that is available in the constituents and the morphosyntactic structure in which they occur (Bauer 1983). Table 4 shows some relations between some N-N compounds in Sısaalı.

From the data it appears every N-N compound in Sısaalı has different relation with its elements. This affirms the observation of Bauer and Tarasova (2013) that pragmatics is required to fully interpret the relation between the elements of Sısaalı compounds. The table below presents some possible relations between the elements of some N-N compounds in Sısaalı.

Table 5: Relations between Sɪsaalɩ N-N compounds

Base	Relation	Base	Example	Translation
N2	Part of	N1	Sɪbii	Eyeball
N2	lives in	N1	bɔgnʊhʊ	Bush cow
N2	Cause of	N1	taahɪbii	Sickness
N1	Made for	N2	sʊʊdaga	Death box 'coffen'
N2	Nature of	N1	badɛtɪna	Spider owner 'crafty person'
N2	Gotten from	N1	Donɪ	Rain water
N2	Used for	N1	dɪpaapori	Soup leaf 'vegetable'
N2	Done by	N1	hawɪa	Woman matter 'menstration'

The relation 'member of' implies that, the second Noun is a member of the first noun as in *sakuubie* [lit. school child] member of *sakuu* 'school' and *bie* 'child'. This is represented in the schema below.

< [[N]i [N]j]Nk ↔ [SEMi is member of SEMj]k >

[[sakuu] Ni[bie]Nj]Nk [bie is member of sakuuj]k

sakuu 'school' bie 'child' > 'pupil or student'

Another relation observed between the N-N compounds is the 'part of' relation. As seen in *sibii* [lit. eye seed], *sɪɪ* 'eye' and bii 'seed'. The eyeball is a permanent part of the eye. Represented in the schema

< [[N]i [N]j]Nk ↔ [SEMi is part of SEMj]k >

[[sɪɪ] Ni[bii]Nj]Nk [bii is part of sɪɪ j]k

sɪɪ 'eye' bii 'seed' > 'eye ball'

The 'lives/found in' relation is another N-N relation observed in Sɪsaalɪ. Example is the compound *bɔgnʊhʊ* 'buffalo' [lit.bush cow], *bɔgɔ* 'farm/bush'and *nʊhʊ* 'cow'. The second constituent *nʊhʊ* 'cow' lives in or is found in the first constituent *bɔgɔ* 'bush'. The schema representation is shown below.

< [[N]i [N]j]Nk ↔ [SEMi lives in SEMj]k >

[[bɔgɔ]Ni[nʊhʊ]Nj]Nk [nʊhʊ lives in bɔgɔ j]k

bɔgɔ 'farm' nʊhʊ 'cow' > 'buffalo'

Another relation is 'caused by' relation. Example is *taahɪbii* 'germ' [lit. sickness seed], *taahɪ* 'sickness' and *bii* 'seed'. The left-hand constituent *taahɪ'* sickness is caused by the right-hand constituent *bii* 'seed'. The schema below represents the 'caused by' in N-N compounds in sɪsaalɪ.

< [[N]i [N]j]Nk ↔ [SEMi is caused by SEMj]k >

[[taahɪ] Ni[bii]Nj]Nk [taahɪ is caused by bii j]k

taahɪ 'sickness' bii 'seed'> 'germ'

'Nature of' relation is another N-N relation seen in the data. This relation reveals one constituent possessing some characteristic of the other constituent. For instance, in *batɛtɪna* 'crafty person' [lit. spider owner] formed from *badɛrɪ* 'spider' and *tɪna* 'owner'. It is observed that, the tɪna 'owner' the right-hand constituent is not the owner of the left-hand constituent badɛrɪ 'spider', but possesses some characteristics of it. Therefore, the right-hand constituent has the nature of the left-hand constituent.

'Used for' is yet another relation observed from N-N compounds in Sɪsaalɪ. Example is seen in dɪpaapori 'vegetable' [lit. soup leaf] from the combination of dɪhɪ 'soup' and paapori 'leaf'. The right-hand constituent Paapori 'leaf' is used for the left-hand constituent dɪhɪ 'soup'. The representation of this relation is in the schema.

< [[N]i [N]j]Nk ↔ [SEMi is used for SEMj]k >

[[dɪhɪ] Ni [paapori]Nj]Nk [paapori is used for dɪhɪ j]k

dɪhɪ 'soup' paaporo 'leaf' > 'vegetable'

The semantic relations in the N-N compounds provide clearer understanding of the compounds in Sɪsaalɪ. As indicated earlier, the interpretation of the relationship between the constituents may be subject to pragmatic interpretation and to some extent the individual nouns involved or their semantic information may be required in determining the more precise relationship that exists between a given set of compound constituents.

4.3.3 Noun-Verb compounds in Sɪsaalɪ

N-V compounding is another prominent phenomenon in Sɪsaalɪ. In the formation of N-V compounds, action verbs usually combine with nouns to form nominal compound. The noun is always the left hand constituent while the verb is placed at the

right side. A nominalising or agentive affix *-lı/rı (singular,) la/ra (plural)* or its variants *ı, (singular) nı (plural)* is then added to the verb and the resultant is a nominal compound. This is consistent with Adongo (2018) assertion that, Gurenɛ N-V compounds combination involves a noun stem + a verb + a nominalising morpheme. In the cases where the nominalising affix is not attached to the verb, the resultant compound remains a verb in its finite form. The table below presents the N-V compounds in Sısaalı. The nouns are in the singular form.

Table 6: N-V compounds in Sısaalı

Base1	**Base2**	**Affix**	**Compound**	**Translation**	**Headedness**
bɔgɔ 'farm'	daa 'follow'	lı	bɔgıdaalı	farmer	Synthetic compound
teŋ 'book'	jʊma 'to know'	nı	teŋjʊnnı	literate	Synthetic copmpound
teŋ 'book'	karımı 'read'	ı	teŋkarımıı	reading book	Synthetic compound
pɛ 'add'	jʊʊ 'live'	lı	pɛjʊʊlı	neighbour	Synthetic compound
nʊhʊ 'cow'	daa 'follow'	lı	nʊdaalı	cowboy	Synthetic compound
sıı 'eye'	jʊʊ 'enter'	ı	sıjʊʊı	disrespect	exocentric
pıı	wɛhı	ı	pıwɛhıı	roasted yarm	right-headed

‘yam’	‘roast’				
sɯŋ	chɔ	lɪ	sɪchɔɔlɪ	pito brewer	righ-headed
‘alcohol’	‘boil’				
sɯ	polli		sɪpolli	wisdom	exocentric
‘eye’	‘open’				
wɯ	jʊma		wɪjʊma	wisdom	synthetic compound
‘matter’	‘to know’				
dɪa	yuo	lii	dɪɪyuolii	mud house	left-headed
‘house’	‘throw’				
gal	piliŋ	mii	gapilimii	cover clothe	left-headed
‘clothe’	‘cover’				
gɪrɪma	di	li	gɪrɪmadi	fraud	synthetic compound
‘unfairness’	‘eat’				
haaŋ	chaga	lɪ	hachagɪli	midwife	synthetic compound
‘woman’	‘to receive’				
hɛŋ	sʊ	lɪɪ	hɛnsʊʊlɪɪ	poisoned arrow	left-headed
‘arrow’	‘to poison’				
nɯ	nyʊa	lɪɪ	nɯnyʊalɪɪ	drinking water	left-headed
‘water’	‘drink’				
wɯhɪ	chʊalɪ	lɪ	wɯchʊalɪ	worshiper	synthetic compound
‘god’	‘greet’				
vii	mɔ	lɪ	viimɔɔlɪ	potter	synthetic

'pot'	'mold'				compound
namıa	yallı		namıyallı	butcher	synthetic compound
'meat'	'to sell'				
bie	nɔgɔ	lı	biinɔgılı	babysitter	right-headed
'child'	'to hold by your side'				
nyuu	marı	ri	nyumarrı	barber/hairdresser	right-headed
'head'	'make'				
sıı	laa	lı	sılaalı	leader	right-headed
'eye'	'collect'				
lee	siŋ	nıı	lısınıı	position	left-headed
'place'	'stand'				
hal	tiŋa	nı	hatınnı	follower	right-headed
'back'	'follow'				

From the data, the semantic relationship between the noun and the verb describes '*one who'* (agent). The compound remains an infinite verb without the normilalising affix. As in *sıŋ* (pito) + *chɔ* (boil) = *sıchɔ* "to brew or brewing", *pɛ* (add) + *jʊʊ* (live) = *pɛjʊʊ* "to live together" In relation to headedness, it is also observed that Sısaalı N-V compounds include synthetic and endocentric types with both right headed and left headed identified. Synthetic compounds are those that are formed by combining a noun and verb base with a derivational suffix which changes the synytactic category of the word. As in *viimɔɔlı* 'potter', the second part of the compound is derived from

the verb *mɔ* ‘mold’ is a verb and the noniminalising suffix *-lɪ* and the first part is the entity related to the action.

4.3.4 Noun-Adjective Compound in Sɪsaalɪ

Nouns can combine with adjectives to form compounds in Sɪsaalɪ. N-A compounds have been discussed considerably in the literature, with the main concerns of the researchers being the nature of the modification relation between the constituents of the compounds (cf. Appah 2016c) and the nature of the morphology-syntax interface (cf. Giegerich 2005) and how to distinguish between N-A compounds and noun-adjective phrases.

Unlike in English language where the noun appears at the right side of the compound and the adjective to the left modifying the noun, in Sɪsaalɪ and some other mabia languages, the noun is placed at the left side while the adjective is to the right. However, available data suggest that both left-headed and coordinate compounds are produced in the N-A compounding in Sɪsaalɪ. For instance, a combination of vaha ‘dog’ and biŋ ‘black’ is vabiŋ ‘black dog’. The left side constituent is the head. While in teŋjagɪ ‘envy/pain’ formed from teŋ ‘body’ and jagɪ ‘irritate/ pain’, it is seen that both left and right constituent contribute to the meaning of the compound, thus a coordinate compound. The table below exemplifies N-A compounds in Sɪsaalɪ.

Table 7: N-A compounds in Sɪsaalɪ

Base 1	Base 2	Compound	Translation	Syntactic category	Headedness
bie 'child'	mulo 'ínfant'	biimulo	new born	noun	left-headed
haaŋ 'woman	fɛlɪ 'new'	hafɛlɪ	bride	noun	left-headed
vaha ' dog'	bal 'big'	vabal	big dog	noun	left-headed
tɔɔ 'town'	bili 'black'	tɔbine	night	noun	left-headed
tɔɔ 'town'	pʊllɪ 'white'	tɔpʊllɪ	day	noun	left-headed
tɪa 'inside'	pʊlʊŋ 'white'	tɪpʊllʊŋ	righteousness	noun	Left-headed
wɪɪhɪ 'sun'	hɛhɛ 'bitter'	wɪɪhaa	afternoon	noun	left-headed
tɪa 'inside'	hɛhɛ 'bitter'	tɪhaa	wickedness	noun	left-headed
wɪɪ 'issue'	magɪsɪ 'describe	wɪmagɪsɪ	example	noun	left-headed
wɪɪ 'issue'	tɪɪ 'self'	wɪtɪɪ	truth	noun	left-headed
teŋ 'body'	jagɪ 'discomfort'	teŋjagɪ	envy/pain	noun	left headed
teŋ 'body'	wɪɪ 'pain'	teŋwɪɪ	laziness	noun	left headed
haaŋ 'woman'	fɪaŋ 'red'	hafɪaŋ	fair woman	noun	left-headed
baal 'man'	dolii 'tall'	badolii	tall man	noun	left-headed

namıa	pʊa	namıpʊa	rotten meat	noun	left-headed
'meat'	'rotten'				
sıŋ	fıaŋ	sıfıaŋ	pito	noun	left-headed
'alcohol'	'red'				
sıı	fıaŋ	sıfıaŋ	seriousness	noun	Left-headed
'eye'	'red'				
sıı	sɔŋ	sısɔŋ	kindness	noun	Left-headed
'eye'	'wet'				
kɔhʊʊ	Biŋ	kɔhıbiŋ	Tuberculosis	noun	Left-headed
'cough'	'black'				
bie	pʊa	biipʊa	Spoiled child	noun	Left-headed
'child'	'rotten				
mıa	pʊllı	mıpʊlıma	Millet	noun	Left-headed
'guinea corn'	'white'				
gɔbaa	hıɛʊ	gɔɔhıɛʊ	Specialist	noun	Left-headed
'talented'	'old'				

As in N-A compounds in Akan (cf. Appah 2016c) the modifier role in the compounds is performed by underived adjectives of different semantic properties. Sısaalı N-A compounds are not different in this regard. They often do not encode actual properties of the nouns they modify. This is consistent with the observation about Danish A-N compounds (e.g. hvid-vin 'white wine') in which the "modifying adjectives always have a classifying function rather than the function of a genuine attributive modifier." (Bauer 2009a, p. 403).

Discussing why the German compound Rotwein 'red wine' could be the name of a kind of wine that is not necessarily red, Spencer (2011, p. 503) maintains that the adjective red is not actually in the compound red wine because it does not contain its

meaning. Making a similar observation about the compound blackbird, Plag (2003, p. 151) argues that "stating that X is a blackbird does not imply that the particular bird is indeed black." In consonance with the argument of Spencer (2011) and Plag (2003), the Sɪsaalɪ N-A compound bʊʊbiŋ 'a grave for mass burial' [lit. black hole] is not a hole that is black as the adjective biŋ 'black' in a NP will ascribe to the head noun.

Following the suggestion of Spencer (2011, p. 501), some N-A compounds in Sɪsaalɪ are 'semantically opaque'. This means that the meaning of the compound cannot be inferred from the individual meaning of its constituents. For example, the English compound black sheep means a person who is regarded as a disgrace to the family. The meaning of the compound cannot be inferred from the individual meanings of the elements as a sheep that is black. This view of the semantics of Sɪsaalɪ N-A compounds implies that relying on compositionality to interpret these N-A compounds in Sɪsaalɪ is sometimes problematic. As argued about compounds in general Libben (2014, p. 22) maintains that "it seems rare that we can say that the meaning of a compound is determined by the meanings of its constituents. At best, constituent semantics enable good guesses at the whole word meaning." In the compound *gɔɔhɪɛʊ* 'specialist' [lit. talented old], composed of *gɔbaa* 'talented' and *hɪɛʊ* 'old', the adjective hɪɛʊ 'old' is not describing the age of gɔbaa 'talented' (not how old the talented person is) but the degree of experience or skill or talent. The interpretation of Sɪsaalɪ N-A compounds is therefore not completely straightforward, because the adjective members of the compounds may sometimes not preserve their pure adjectival meaning in the compounds. They however express semantic properties such as colour e g *fiaŋ* 'red', *pʊlʊŋ* 'white', *biŋ* 'black' etc. dimension e g dolii 'tall', kuu 'short', guluŋ 'round' etc and physical property e g *sɔŋ* 'wet', *bal* 'big',

nyaranyara ‘rough’. With regards to headedness, it is observed that, only left-headed N-A compound exist in Sısaalı in affirmation to the proclaimation of Gariba (2018).

Constituents of Sısaalı N-A compounds are mostly simplex. Thought there are some that are compounds themselves, as in *kidiwelee* ‘good food’ [lit. things eat good], *naatɔɔfɛlɛɛ* ‘new footwear’ [lit. feet cover new]. Kidilee [lit. things eat] ‘food’ and *naatɔbɔ* [feet cover] ‘foot ware’ are compounds already that are combined with the adjectives welee ‘good and fɛlɛɛ ‘new’ respectively to form the N-A compounds *kidiwelee* and *naatɔɔfɛlɛɛ*. For Sısaalı N-A compounds, it is the right constituents that are inflected to take plurality and number. For instance, if we attempt to inflect *haaŋ* ‘woman’ in the compound *hapıl* ‘barren woman’ for plurality, the word becomes unacceptable as in **haana pıl*. The plural maker is attached to the right element *pıl* to form *hapılllı* ‘barren women’ This confirms the general characteristic about compounds that internal modification is usually unacceptable.

4.3.6 Interpretation of N-A compounds in Sısaalı

Based on their interpretation, Appah (2016c) identifies transparent and lexicalised N-A compounds in Akan. A transparent N-A compound is the one in which the compound is usually in a hyponymy relation with the nominal head constituents and the adjective constituents merely express the actual property of the head nouns. In these N-A compounds, the meanings of the whole compounds may be worked out from the meanings of the constituents. Transparent N-A compounds in Sısaalı include *nɔbiŋ* ‘black cow’, *kidiwelee* ‘good food’, *daakuu* ‘short tree’ and *tɔbal* ‘big town’. The adjective constituents of the compounds in transparent N-A compounds retain their core semantic properties (cf. Appah 2016c).

Appah (2016c) notes that, N-A compounds constituents exhibit some semantic relation between them. Lawer (2013) upholds this observation true for Dangme N-A compounds as well. This relationship is tied to the type of adjective. Dixon (1977a 1982) cited in Nsoh (2010) classified adjectives by their semantic properties. Thus, seven types of adjectives are identified; dimensional, physical property, colour, human propensity, value and speed. Accordingly, Sısaalı nouns compound with these types of adjectives in appropriate sense. For instance, for Sısaalı N-A compounds, the adjective combines with the noun that has dimension, colour, value or physical property in appropriate sense. Thus, *nyubal* [lit. head big], *daasɔŋ* [lit. tree wet] and *taŋhı fıaŋ* [lit. soil red] *ŋmɛdolii* [lit. long roap] are possible N-A compounds in Sısaalı, whiles **besɔŋ* [lit. town wet], **nyukuu* [lit. head short] and **taŋhıbal* [lit. soil big] do not seem to be acceptable N-A compounds in Sısaalı. The schema below instantiates the transparent N-A endocentric compound in Sısaalı.

< [[N]i [A]j]Nk ↔ [SEMi is SEMj]k >

< [[taŋha] Ni[fıaŋ]Aj]Nk ↔ [SEMi which has propertyj]k >

taŋha ‘soil’ fıaŋ ‘red’ > ‘red soil’

Lexicalised compounds however are compounds whose meanings cannot be fully worked out from the meanings of their constituents. Appah (2016c) notes that some of the adjective constituents in these compounds do not retain their core meanings in the compounds and this makes such compounds somehow opaque. Some Sısaalı N-A compounds fit into this category because they have meanings that are not absolutely transparent. For example, the adjective *hĩɛʊ* ‘old’ cannot be interpreted literally in the

compounds *gɔɔhĩɛʊ* ‘old person’ [lit. talented old] because this compound does not mean a person who is talented and old but describes the dagree of skillfulness.

The interpretation of the transparent type of N-A compounds, as have been discussed, is quite direct as they tend to be compositional. On the other hand, the lexicalised types have to be interpreted by means of metaphor or metonymy because the adjectival constituents of the compounds may not preserve their core meanings, or there may be some additional meaning components that are not in the constituents and therefore demands that the compound be interpreted holistically.

4.4. Complex compounds in Sısaalı

Another pervasive phenomenon in Sısaalı compounding is compounds formed from more than two constituents belonbing to different syntactic categories. Gariba (2017) describes such compounds as complex compounds. Examples of such compounds are Noun-Noun-adjective compounds Noun-Verb-Noun componds and personal-Name compounds which are discussed below.

4.4.1 Noun-Verb-Noun compounds

Another category of compounds in Sısaalı are formed from N-V-N. The resultant word is nominal compounds. The final constituent is always the head of the compound. The first noun constituent and the medial verb co-describe the last noun. The table below present Sısaalı N-V-N compounds.

Table 8: N-V-N compounds

Base1	Base2	Base3	Compound	Translation	Headedness
baal	yallı	kına	bayalkına	merchandise	right-headed
'man'	'sell'	'things'			
haal	di	yıla	hadiyıla	women dirges	right-headed
'woman'	'eat'	'songs'			
nıı	fo	bogiti	niifobogiti	bathing bucket	riht-headed
'water'	'barth'	'bucket'			
maŋ	gaa	bie	maŋgaabii	bustard	right-headed
'vagina'	'steal'	'child'			
nıı	duori	gboro	niiduorigboro	canoe	riht-headed
'water'	'swim'	'canoe'			
nɔhɔ	daa	pɛlɛ	nɔdaapɛlɛ	grazing field	right-headed
'cow'	'follow'	'valley'			
wıihı	chɔal	teŋ	wıichɔalıteŋ	skin used for praying	right-headed
'god'	'pray'	'skin'			
kʊʊ	di	hɛnɛ	kʊʊdihɛnɛ	bowl for eating	right-headed
'tz'	'eat'	'bowl'			
namıa	kɔası	dıa	naŋkɔasıdıa	abattoir	right-headed
'meat'	'sell'	'house'			

As observed earlier in the noun-adjective counterparts, the first noun and the verb do more of classifying the final noun than translate the actual properties of it. The distinction between Noun-Adjective compounds and Noun-Verb-Noun compounds is that, whereas the modifier in the former is a simplex adjective, the modifier in later is a compound in itself.

N-V-N compounds in Sısaalı are transparent in nature where the compound is in a hyponymy relation with nominal head constituent whiles the modifying constituents describes what kind of action the head noun is used for. An example is seen in *kʊʊdihɛnɛ* 'eating bowl' [lit. TZ eating bowl] from the combination of *kʊʊ* 'TZ', *di* 'eat' and *hɛnɛ* 'bowl'. The right-head constituent which is the head noun *hɛnɛ* is used for the left-hand compound constituent *kʊʊdii* 'eating TZ'. The Schema represents this relationship.

< [[N]i [N]j]Nk ↔ [SEMi is used for SEMj]k >

[[kʊʊdii] Ni [hɛnɛ]Nj]Nk [hɛnɛ is used for kʊʊdi j]k

kʊʊdii 'eating TZ' hɛnɛ 'bowl' > 'bowl for eating'

Another relationship observed in the data is 'gotten from' exemplified in *maŋgaabii* consisting of *maŋ* 'vagina', *gaa* 'steal' and *bii* 'child. The head noun is gotten from the maŋgaa 'fornicating or adultery'. This is instantiated by schema below.

< [[N]i [N]j]Nk ↔ [SEMi is gotten from SEMj]k >

[[maŋgaa]Ni [bii]Nj]Nk [bii is gotten from maŋgaı j]k

maŋgaa 'fornicating or adultery' bii 'child' > 'bustard'

4.4.2 Syntactic Category of Sɪsaalɪ Compound

From the data shown so far most of the compounds are nominal. Verb-verb compounds are all verbal apart from *jʊʊna* 'ladle' from jʊʊ 'enter' and na 'see' which is a noun. With regards to headedness, both endocentric and exocentric compounds are observed in Sɪsaalɪ. Endocentric compounds are those which are hyponyms of their headwords. The headword may be either the right hand or the left hand constituent. Those which are hyponyms of the right constituent are right-headed, examples are *wɪɪhɪdɪa* 'church building' formed from *wɪɪhɪ* 'God' and *dɪa* 'house', is a type of building. Those which are hyponyms of the left constituent are left-headed. Example is *hafɛlɪɪ* 'bride' formed from *haaŋ* 'woman' and *fɛlɪɪ* 'new'. A bride is a woman. In some of the compounds, the meanings are determined by both constituents. These compounds are referred to as co-ordinate compounds. Example is *pɛjʊʊl* 'nieghbour' formed from *pɛ* 'help' and *jʊʊ* 'live'. The meaning of the *pɛjʊʊ* is determined by both *pɛ* and *jʊʊ*.

Exocentric compounds are those that do not have a semantic head. The meaning of the compound cannot be derived from any of its constituents. Example of exocentric compound in Sɪsaalɪ is *jʊʊna* formed from *jʊʊ* 'enter' and *na* 'see'. In this case the noun *jʊʊna* 'ladle' cannot be drived from either of the constituents, *jʊʊ* enter' or *na* 'see'.

4.4.3 Noun-Noun-Adjective compounds in Sɪsaalɪ

Two nouns can be combined with an adjective to form another compound in Sɪsaalɪ. In such compounds the first two noun constituents form a nominal compound which then combines with the adjective which modifies it. The resultant compound remains a nominal. For instance, *jihal* 'egg' is a nominal compound from *jimii* 'hen' and *hal*

'egg'. *Jihalpɔlʊŋ* 'white egg' formed from *jimii* 'hen', *hal* 'egg' and *pɔlʊŋ* 'white'. The table below presents N-N-A compounds.

Table 9: Noun-Noun-Adjective compounds in Sɪsaalɪ

Base1	Base2	Base3	Compound	Translation	Headedness
haaŋ 'woman'	naaŋ 'leg'	kuu 'short'	hanaakuu	woman with amputated leg	left headed
nɔhɔ 'cow'	nɪ 'female'	bal 'big'	nɔnɪbal	big cow	left headed
jimii 'hen'	halɪ 'egg'	pɪlɪŋ 'white'	jihapɔlʊŋ	white egg	left headed
baal 'man'	naaŋ 'leg'	luoro 'bend'	banaaluoro	man with bended leg	left headed
baal 'man'	fuu 'stomach'	bal 'big'	bafubal	man with pot belly	left headed
haaŋ 'woman'	tembii 'body'	bal 'big'	hatembal	fat woman	left headed
bie 'child'	teŋ 'body'	wɪlɪ 'pain'	biitenwɪlɪ	lazy child	left headed

4.4.4 Interpretation of Sɪsaalɪ N-N-A Compounds

According to Appah (2016c), two types of compounds in Akan namely transparent and lexicalized compounds as explained in (4.3.6 of this chapter). He describes transparent compounds as those that are in hyponymy relationship with the nominal

head. Thus, the meaning of the compound is determined by one of the constituents which is its semantic head. N-N-A compounds in Sɪsaalɪ are transparent in nature. The adjective which is usually the final constituent of the compound performs a classifying function, distinguishing the compound noun from others of the same kind by expressing the features of the noun head. For example, *Banaaluoro* 'bended legged man' is a man whose *naahɪ* 'legs' are *luoro* 'bend' and *bafubal* 'pot belly man' is a *baal* 'man' whose *fuu* 'stomach' is *bal* 'big'. It is observed that N-N-A compounds in Sɪsaalɪ are left headed as the adjectives in the language are post modifiers. In *banaaluoro* 'man with bended legs', the adjective *luoro* 'bended' describes the nature of the man's legs '*banaahi'* with distinct featuers of the legs. This distinguishes that particular man from others. The schema below instantiates the relationship.

< [[N]i [A]j] Nk ↔ [SEMi is SEMj]k >

< [[Baal naahɪ]Ni[luori]Aj]Nk ↔ [SEMi which has featurej]k >

Baal naahɪ 'man legs' luori 'bended' 'man with bended legs'

4.4.5 Personal name Compounds

There are several personal names in Sɪsaalɪ that are compounds. The constituents of some of these names are a combination of different syntactic categories. In fact, most of them are complete clauses crump together as a compound. These structures are considered compounds because they function as single grammatical unit which do not allow internal modification. Syntactically, like phrasal compounds these personal name compounds also behave like simple words. For example, as nominal, they take

articles and can be pluralized whiles they exhibit syntactic relations within themselves, such as subject-predicate and attribute-head relations. The relationship among these different syntactic categories depends on their grammaticality in the language. Other scholars have described such compounds as phrasal compound (Bauer 1983, Bisetto & Scalise 2005, Lieber 2005, 2010, Meibauer 2007, Květen 2012) or quotational compounds (Mathesius 1961, Nosek 1985, Vachek 1976). The concept of phrasal compounds varies to a great extent. (Lieber 2010, p. 152) defines phrasal compound as "a word that is made up of a phrase as its first element, and a noun as its second element." Květen (2012, p. 16) also defines a phrasal compound as "a part of a sentence or even a whole clause moved to a different syntactic environment." Such complex personal name compounds in Sısaalı fit in Květen's definition because they are complete independent clauses. Such a sequence changes its syntactic function to form a new lexical unit, typically a noun or an attributive adjective. Jack-in-the-box, what-do-you-think movement and forget-me-not are typical examples. Table 10 presents some compound personal names in Sısaalı.

Table 10: Personal name Compounds

Bases	**Gloss**	**compound**	**Translation**
Ba+die+kın+laa	They power thing not	Badiekınlaa	It is not by their power
dɔn+we+dıaŋ	Enemy is there house	Dɔnwedıaŋ	Enemy is in the house
A+kaŋ+dɔmɔŋ	We hold each other	Akandɔmɔŋ	We should be united
Wıa+bɔŋ+nıŋ	Matters more than me	Wıabɔnıŋ	More troubles on me

Wɪhɪ+kaŋ+die	God has energy	Wɪhɪkandie	God has power
Ba+yaa+mɔgɔ	They do enough	Bayaamɔgɔ	They have done enough
Feŋ+bee+teŋ	Name not finish	Fembeeteŋ	Good name never ends
Dɔŋ+lɪɪ+dɪa	Enemy from house	Dɔnlɪɪdɪa	Enemy is within the house
Marɪɪ+ yaa+dɔŋ	Good is bad	marɪyaadɔŋ	Goodness is bad
N+-yaaŋ+ko	I again come	N-yaaŋko	I have come again
Baaŋ+yaa+bee	Anger do what	Baaŋyaabee	What will their anger do
Ba+aa+yaa+batɪɪ	They do themselves	baayaabatɪɪ	They are doing themselves
nala+rɛ+yaa+kɪna	People are things	Nalayaakɪna	People are wealth

4.4.6 Chapter Conclusion

The chapter discusses the compounds gathered from various sources based on the syntactic category of Sɪsaalɪ compounds, the syntactic category of the resultant compounds and the relationship between their constituents. From the literature, there are two dimensions along which compounds are categorized in terms of syntactic category. The first dimension is determined by the constituents' syntactic category. Hence, based on the syntactic category of the elements, N-N, N-V, N-A, V-V, N-V-N and N-N-V are some types of compounds identified in Sɪsaalɪ. A more complex type of nominal compounds identified in Sasɪaalɪ are personal name compound that are in the form of full sentences functioning as a single grammatical unit. The relationship among the constituents of these compounds depents on the grammaticality of the construction. The second category is determined by the syntactic category of the

resultant compound. In this regard, noun-noun, noun-verb, noun-adjective and noun-verb-noun all result in nominal compounds in Sɪsaalɪ. Verb-verb combination results in either a verb or a noun. In the case of noun-verb combination, the nominalizing suffix either *lɪ,nɪ,rɪ* (agent/ doer) is added to the verb constituent to give the nominal compound.

The interpretation of Sɪsaalɪ N-A compounds is not completely straightforward, because the adjective members of the compounds may sometimes not preserve their pure adjectival meaning in the compounds. They however express semantic properties such as colour (eg., fiaŋ 'red'), dimension (eg., dolii 'tall'), and physical property (eg., sɔŋ 'wet'). With regards to headedness, I argued that both left-headed and coordinate N-A compounds exist in the language. I also established that, there exist some relationship between the constituents that form N-N, N-A and N-V-N compounds in Sɪsaalɪ. Some relationships between the constituents are part of, used for, cause of etc. It has been shown that verb-verb compounds in Sɪsaalɪ occur as syntactically serial verbs that denotes an action a single endeavor.

CHAPTER FIVE

PHONOLOGICAL PROCESSES IN SIsAALI COMPOUNDING

5.1 Introduction

According to Katamba (1993), phonological processes are linguistic mechanisms that reflect the distributional patterns of sounds in a particular language and the phonological activities that take place as a result of sound combinations. Katamba (1989, p. 79) acknowledges that even though there is a level of similarities in phonological processes in languages no two languages have the same phonological rules governing the deployment of their sounds. These rules reflect the speakers' knowledge of which sounds combination are permissible or otherwise in a language. This is known as phonotactic constraints. Whenever morphemes are joined together to form new words, those constraints are violated. However, languages have their own way of repairing the violations. The process of repairing the violations is referred to as phonological processes. This is done in two ways; one by reorganizing the syllable structure (syllable structure processes) and the other by modifying some of the sounds (assimilation). Some phonological processes that occur in Sısaalı compounding include: vowel harmony, homorganic nasal assimilation, vowel elision and segment deletion.

5.2 Assimilatory Processes

Assimilation is the modification of a sound in order to make it more similar to some other sound in its neighbourhood, Katamba (1989). Three notable assimilatory processes occur in Sısaalı compounds; vowel harmony, vowel elision and homorganic Nasal Assimilation.

5.2.1. Vowel Harmony

The phenomenon of vowel harmony has been described by various linguists. According to Goldsmith (1990, p. 304) a vowel harmony system is one in which the vowels of a language are divided into two subsets with the condition that all vowels in a given word (or domain, generally) must come from a single subset.

Luri (2009), categorized Sɪsaalɪ vowels into two distinct sets based on the position of the tongue root (Advance Tongue Rooting) during their production (ATR classification; +ATR and –ATR), and there is a strict co-occurrence restriction of the two sets of vowels in mono-syllabic or simple multi-syllabic, non-compound words.

(+ATR) [i, o, u, e, æ]

(-ATR) [ʊ, ɔ, ɛ, ɪ, a]

In any phonological word with one or more syllables, only vowels from the same set of ATR harmony must co-exist.

Harmony across word boundary in Sɪsaalɪ is remarkable. In Sɪsaalɪ compounds vowel harmony occurs both within and across constituents. Though the individual word is the harmonic domains, where the harmony occurs across word boundaries, vowels in both constituents of the compound agree in [±ATR] harmony. Adongo (2018) reported similar phenomenon for Gurenɛ. However, some elision or deletion or even assimilation of a segment may occur in the compound. This is because the Sɪsaalɪ noun is made up of a root plus number marker. Therefore, during compounding, the number marker is dropped for the root to combines with the second element of the compound. In other instances, harmony does not spread across the two elements in a compound but is restricted within each constituent. In this process, only vowels of the

individual constituents of the compounds harmonise. For instance, when vowels of one constituents of the compound agree in either [±ATR] different from the other constituent, each remains in its harmony domain. The data below presents ATR harmony across word boundary in Sısaalı.

Example 10

ATR Harmony across word boundary

[+ATR]

/Piehu/ + /bie/ ⟶ [pebie]

'sheep' + 'child' 'lamb'

/gelii/ + /bie/ ⟶ [gelbie]

'cat' + 'child' 'Kitten'

/Nyuu/ + /guluŋ/ ⟶ [ɲuguluŋ]

'head' + 'round' 'illiterate

It is observed from the data above that, all the vowels in each of the words belong to the +ATR set. This shows that even across the word boundry, vowel harmony is relised during compounding in Sısaalı.

[-ATR]

/bʊʊŋ/ + /nʊʊ / ⟶ [bɒnʊ:]

'goat' + 'fat' 'goat fat'

/nʊʊma/ + /bʊɔ/ ⟶ [nʊmbʊɔ]

‘scorpion’ + ‘hole’ ‘scorpion hole’

/hɔgʊ/ + /jaagʊ/ [hɔgɪ ja:gʊ]

‘metal’ + ‘house’ ‘bycicle

In the same way, all the vowels in all the words bʊʊŋ, bʊɔ, hɔgɪ jaagʊ in this group belong to the –ATR set.

[+ATR] & [-ATR] Combination across word boundry

/bʊʊŋ/ + /bie/ ⟶ [bʊbie]

‘goat’ + ‘child’ ‘kid’

/nʊʊma/ + /bie/⟶ [nʊmbie]

‘scorpion’ + ‘child’ ‘small scorpion’

/Duoŋ/ + /nɯ/ ⟶ [duonɪ:]

‘rain’ + ‘water’ ‘rain water’

In this set of compounds, the vowels in each constituent belong to a different set. As in bʊʊŋ, nʊʊma and nɯ belong to –ATR set of vowels whiles bie and duoŋ belong to +ATR set. Therefore, across the word boundry [±ATR] vowel harony is restricted to the individual word.

5.2.2 Homorganic nasal Assimilation

Another remarkable assimilatory process in compounding in Sɪsaalɪ is homorganic nasal assimilation. Homorganic nasal assimilation is one of the commonest places of articulation assimilation attested in a variety of languages in the world (Kuubezelle

2013). In this process of assimilation, a nasal consonant inherits the place of articulation of a plosive. When two stems are brought together; the first stem ending in a nasal consonant and the second beginning with an oral plosive or another nasal to form a compound word, the nasal consonant in the first stem, inherits the place of articulation of the initial consonant of the second stem. The table below illustrates the homorganic Nasal Assimilation in Compounding.

Homorganic nasal assimilation in Sɪsaalɩ

/naŋ/ + /dɔŋɔ/ ⟶ /naŋdɔŋɔ/ ⟶ [nandɔŋɔ]

'see' 'other' 'a male friend'

/hɛŋ/ + /sʊʊlɩ/ ⟶ /hɛŋsʊʊlɩ/ ⟶ [hɛnsʊʊlɩ]

'arrow' 'poison' 'poisoned arrow'

/nammɪɛ/ + /balla/ ⟶ / nammɪɛballa/ ⟶ [namballa]

'meat' + 'game' 'a hunter'

/teŋ/ + /bii/ ⟶ /teŋbii/ ⟶ [tembii]

'skin' + 'seed' 'body'

/tɛŋ/ + /fɪɛl/ ⟶ /teŋfɪɛl/ ⟶ [tɛnfɪɛl]

'skin' 'cool' 'healthy'

As observed in the data, in the compounds *nandɔŋɔ*, *tembii* and *tɛnfɪɛl*. The final segment (velar nasal /ŋ/) of the first constituents of each compound *naŋ* and *teŋ*, changes to /n, and m / respectively in order to take the place of articulation of the first segments /d, b, and f/ of the second constituent.

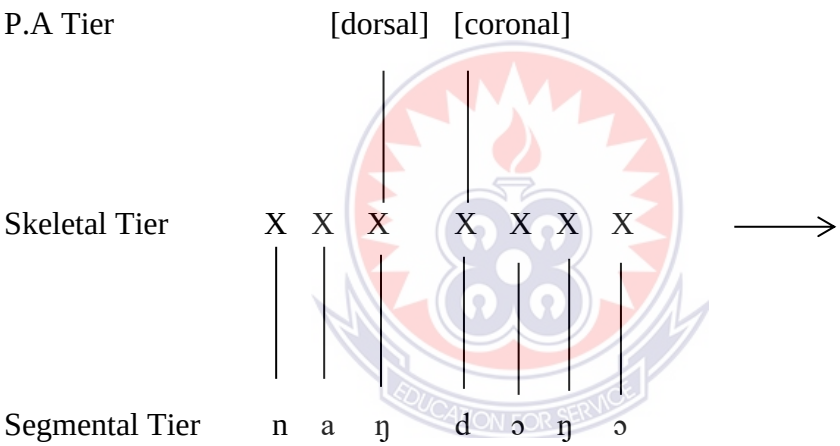
Autosegmental representation of homorganic nasal assimilation

Taking *naŋdɔŋɔ* as an example, in the underlying form, all the consonants of both stems appear in their natural place of articulation (P.A) but in the compound production, the dorsal /ŋ/ will change and become coronal [n] because the coronal [d] will spread its features to it, as illustrated below.

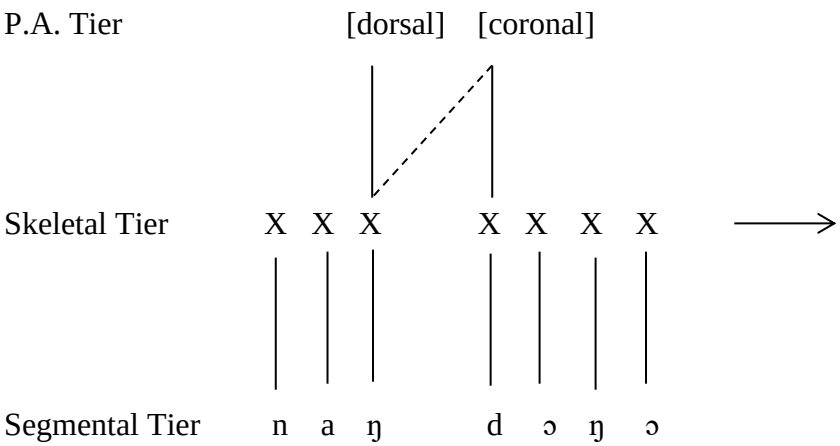
/naŋ/ + /dɔŋɔ/ ⟶ /naŋdɔŋɔ/ ⟶ [nandɔŋɔ]

'see' 'other' 'a male friend'

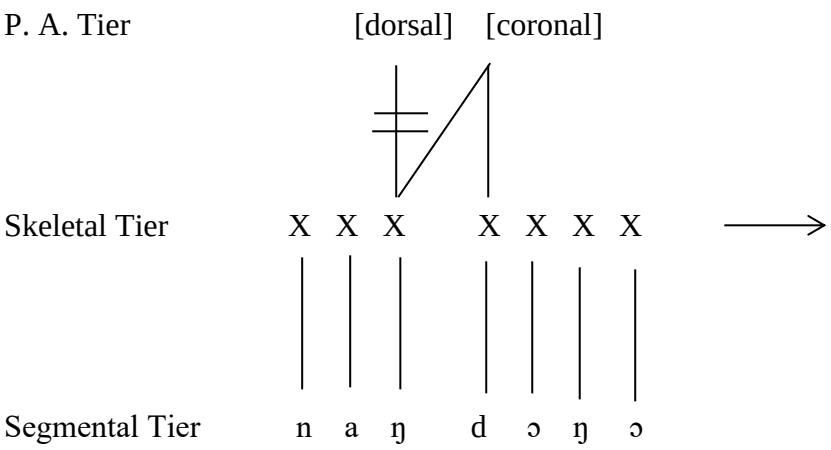
Underlying form:



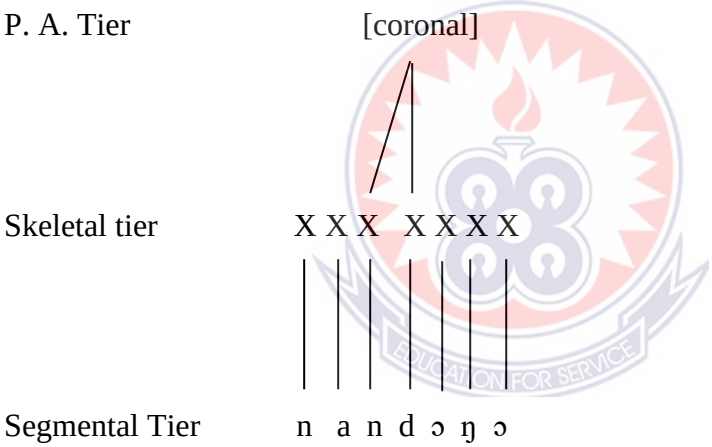
Coronal feature Leftward Spreading:



Dorsal feature Delinking:



Output Form:



5. 2.3 Syllable structure processes

Syllable structure processes are those processes that lead to the lost or addition of a sound in the word for morphophonological reasons. For instance, morphological processes of compounding and the adaption of loan words into a language results in segments deletion or insertions. These processes affect the basic syllable structure of words in a language by altering syllable shape of words. The syllable structure processes in Sısaalı compounding are discussed in this section.

5.2.3.1. Segment deletion/truncation

Some of the compounds may be made of monosyllabics stems. If the first element of the compound is monosyllabic, then it must be a heavy syllable (CVV). In that case the final vowel must be truncated during compounding changing the CVV-Syllable type to CV-Syllable type.

Monosyllabic vowel shortening

/Nyuu/ + /duo/ ⟶ [nyuduo]

'head' 'hard' stubborn

/sɯ/ + /bii/ ⟶ [sɪbii]

'eye' 'seed' 'eyeball'

/bii/ + /bɔŋ/ ⟶ [bibɔŋ]

'seed' 'bad' 'bad seed'

/sʊʊ/ + /daga/ ⟶ [sʊdaga]

'dead' 'box' 'coffin'

/pɯ/ + /wɛhʊ/ ⟶ [pɪwɛhʊ]

'yam' 'roast' 'roasted yam'

/tɪa/ + /pɒlʊŋ/ ⟶ [tɪpɒlʊŋ]

'inside' 'white' 'righteousness'

/mɪa/ + /pɒlʊŋ/ ⟶ [mɪpɒlɪma]

'guinnea corn' 'white' 'millet'

/wɯ/ + /tɯ/ ⟶ [wɪtɯ]

‘matter’ ‘exact’ ‘truth’

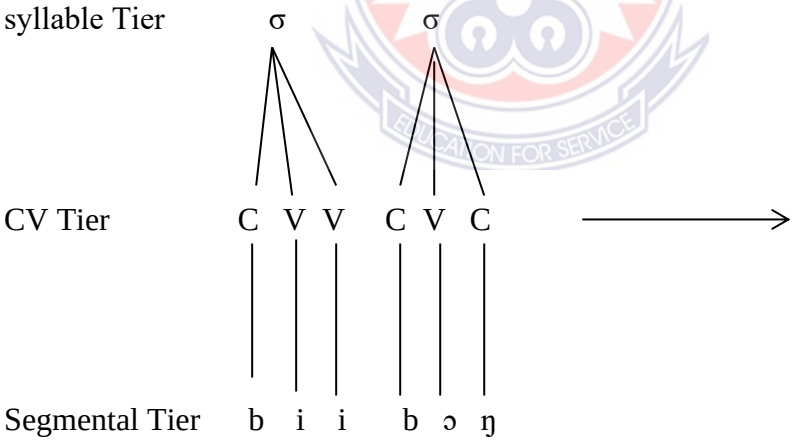
It is seen that the first syllabi of the compounds above are monosyllabic hence having the CVV structure. But to compound with other words, the final vowel of each of the first element is truncated leaving it in the CV structure.

Autosegmental representation of monosyllabic segment truncation and vowel shortening

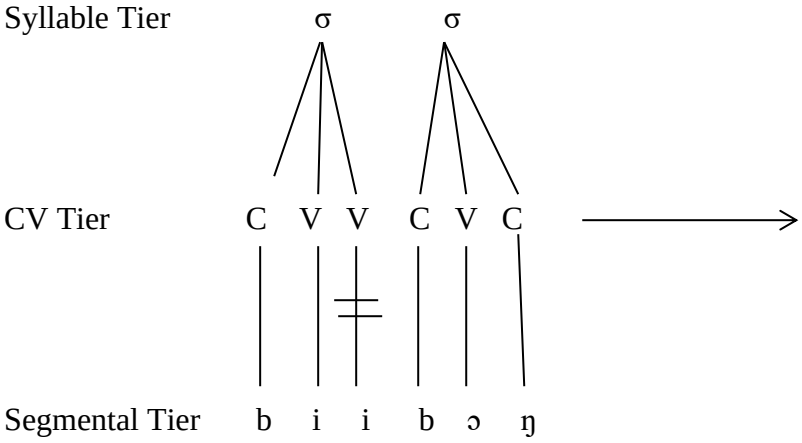
bii + bɔŋ bibɔŋ

‘seed’ ‘bad’ ‘bad seed’

Underlying form:



Final Vowel Elision:



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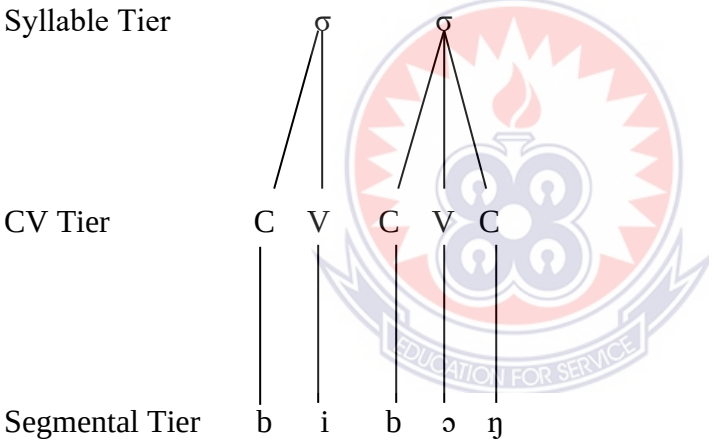


5.2.3.2 Syllable deletion

/nʊhʊ/ + /teŋ/ ⟶ [nʊteŋ]

'cow' 'skin' 'cow skin'

/bɔgɔ/ + /daa/ ⟶ [bɔgdaal]

'farm' 'follow' 'farmer'

/vaha/ + /bal/ ⟶ [vabal]

‘dog’ ‘big’ ‘big dog’

/loho/ + /haaŋ/ ⟶ [lohaaŋ]

‘funeral’ ‘woman’ ‘widow’

/gɔbaa/ + /hɪɛʊ/ ⟶ [gɔhɪɛʊ]

‘talented’ ‘old’ ‘spaecialist’

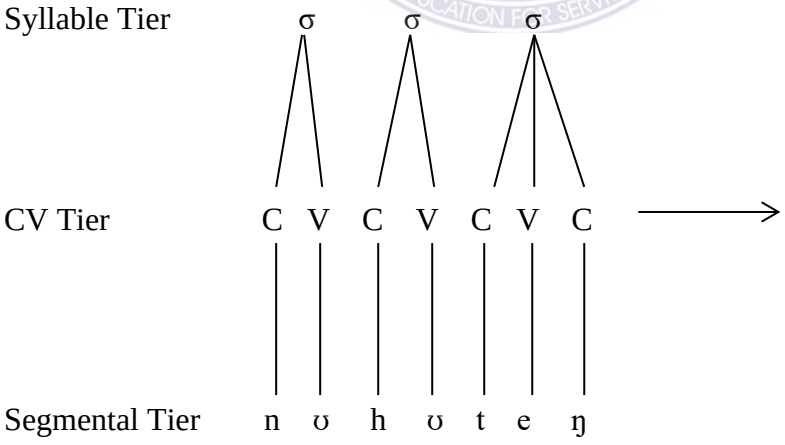
In the data it is observed that, the second syllabi of the first elements of the compounds are truncated before they compound with the second elements.

Autosegmental representation of syllable delition

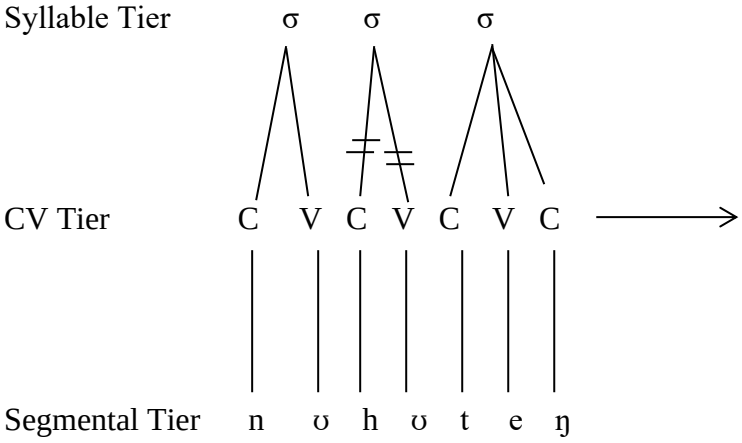
Underlying form:

nʊhʊ + teŋ ⟶ nʊteŋ

‘cow’ ‘skin’ ‘cow skin’



Syllable Truncation:



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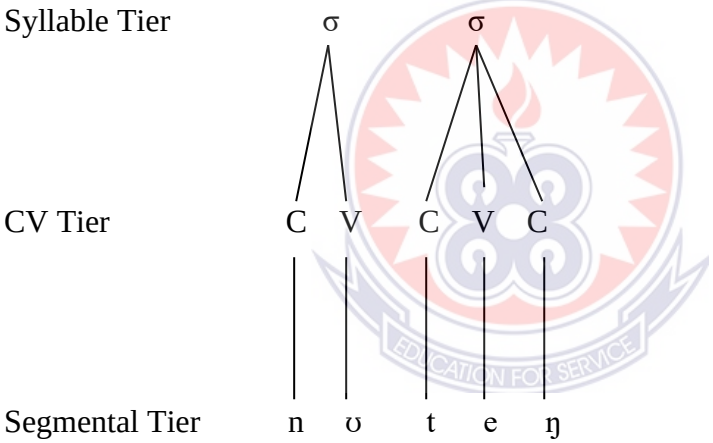


5.4.1.2 Vowel Elision

In Sısaalı compounding, any vowel that is preceded by a glide or a liquid forming the final syllable of the first constituent may be deleted. When this happens, the glide or liquid which is the onset of that syllable is reassigned to the preceding syllable as a coda. This is presented in the data below.

Stems vowel deletion

/sampɔlaa/ + /bie/ ⟶ [sam.pɔl.bie]

'toad' + 'child' 'young toad'

/luri/ + /bie/ ⟶ [lur.bie]

'Luri' + 'little' 'younger Luri'

/tolu/ + /hɪɔʊ/ ⟶ [tol.hɪɔʊ]

'daughter' + 'old' 'elderly daughter'

/gɪrɪ/ + /bal/ ⟶ [gɪr.bal]

'portion' + 'large' 'large portion'

/miili/ + /kʊʊ/ ⟶ [miil.kʊʊ]

'rice' + 'TZ' 'rice balls'

/hɔlɔ/ + /bʊɔra/ ⟶ [hɔl.bʊɔ.ra]

'charcoal' + 'bag' 'bag of charcoal'

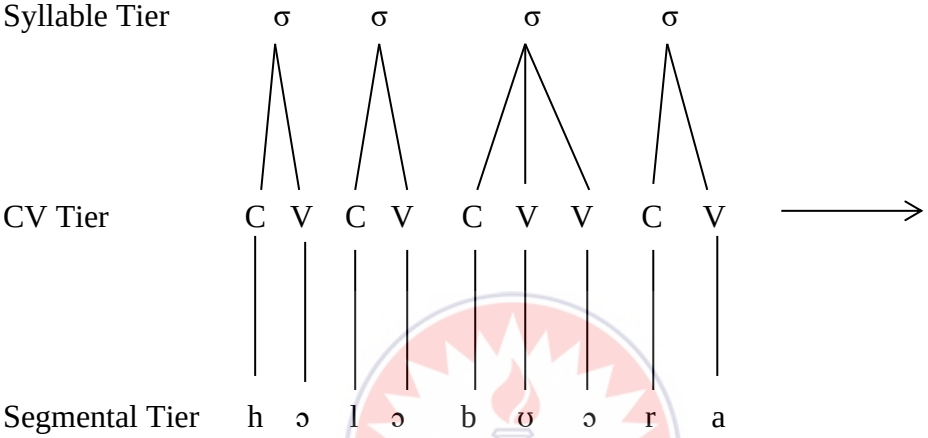
As the data indicates, the first constituents of the compounds [*sampɔlaa, Luri, tolu, giri, miili and hɔlɔ*] have the vowels of their final syllabi deleted and the liquids 'r' and 'l' which were onsets to the final syllabi reassigned as codas to their preceding syllabi.

Autosegmental representation of vowel elision

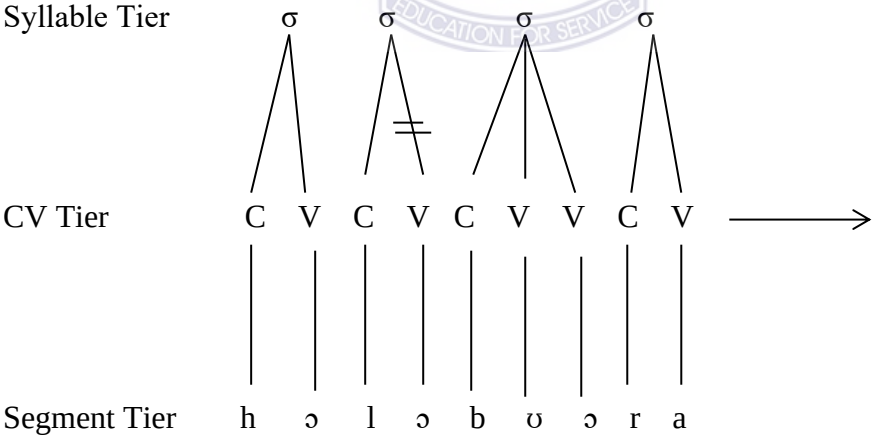
hɔlɔ + bʊɔra hɔlbʊɔra

'charcoal' + 'bag' 'bag of charcoal'

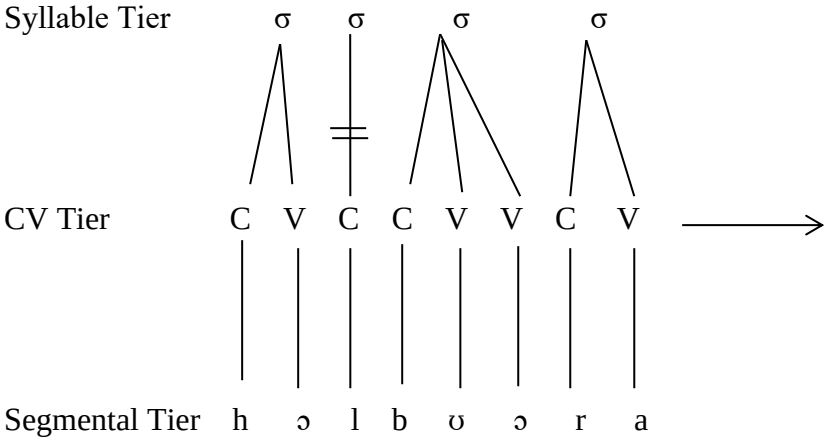
Underlying form:



Final Vowel Elision:



Resyllabification:



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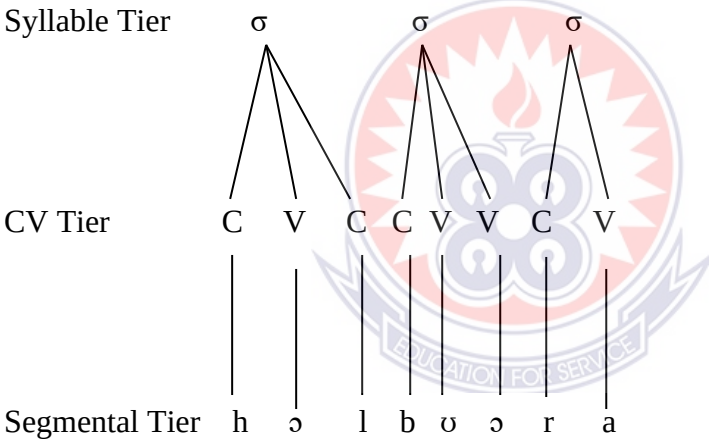

5.5 Chapter Conclusion

In this Chapter, I discussed phonological processes in compounding in Sısaalı. The phonological processes discussed are Assimilatory processes and syllable structure processes, and the data presented within Autosegmental framework. Some phonological processes discussed include Vowel Harmony, Homorganic Nasal Assimilation, segment truncation and vowel elision. It is observed that, Sısaalı has a very strict vowel harmony system, which operates within and across word boundaries.

Homganic nasal assimilation, segment truncation and vowel elision are also very pervasive in Sɪsaalɩ.

CHAPTER SIX

SUMMARY AND CONCLUSION

6.0 Introduction

This thesis sought to find out the nature of Sɪsaalɪ compounds by exploring their structure and formation as well as the related features that distinguish them from other complex structures like NPs and derived nominals in the language. It also intended to discover the syntactic relations between the constituents of Sɪsaalɪ compounds, and between the compounds as morphological constructions and the bases from which they are formed.

This chapter is the concluding chapter of the thesis. It gives a summary of all the other chapters discussed and seeks to highlight specific findings of the study as well as suggest recommendations for future research.

6.1 Summary

This thesis aims at exploring the processes and nature of compound words in Sɪsaalɪ. Chapter One is the general introduction to the thesis. It presents the background of the study, statement of the problem, objectives of the study, research questions, significance of the study, research methodology, and organization of the thesis. The background of the study also gives a brief description of the Sɪsaalɪ as a language and its dialects. Sɪsaalɪ has been classified as a Mabia (Gur) language under the Niger-Congo language family. Its closely related languages are Vagla, Tampʊlɪma, Dɛgɪ/Mo, Chakale, Delo, Kabiye, Lama, Kasem and Tem. Seven dialects are identified in Sɪsaalɪ which include Tumuluŋ, Gbieni, Gɪlbaglɪ, Bʊwaalɪ, Bosillu, Kpatoli and Pasaalɪ. Sɪsaalɪ has not received much attention in terms of study. However, following the introduction of the language for study in the Faculty of

Ghanaian Languages in the University of Education, Winneba in January 2022, much literature will be produced in the language.

Chapter Two reviewed related literature about compound words. Compound words pose very controversial issues to linguists; including the difficulty in arriving at a definition for compounds cross-linguistically, and the diverse ways of categorising compounds. Guevara and Scalise (2009) in an attempt to define compounds devoid of all the differences encompassing the earlier definitions, proposed that a compound be defined in categorial terms as [X r Y] Z. Where X, Y and Z are lexical categories and 'r' is the (hidden) grammatical relation between the two constituents. This definition assumes that the constituents of a compound (roots, stems, lexemes or words) have a lexical category. Z may be the same as X or Y or different from both, which gives rise to the following three patterns:

a. [X r Y] Y is a compound with the head to the right

b. [X r Y] X is a compound with the head to the left

c. [X r Y] Z is an exocentric compound.

Another issue is the lack of predictability of the meaning of compound words. This lack of predictability according to Fabb (1998, p. 66) arises mainly from two characteristics of compounds: (a) compounds are subject to processes of semantic drift, which can include metonymy and (b) there are many possible semantic relations between the parts in a compound. Again, Scalise and Vogel (2010a, p. 1) record that, compounds exhibit a kind of internal syntax which is somewhat covert. Compounds also "present a contact point between crucial linguistic and non-linguistic notions". These notions include (a) syntagmatic and paradigmatic relationships, (b) relationship

between syntax and morphology and (c) linguistic and pragmatic knowledge. In effect, the composition of compounds is syntactically and morphologically arranged and their meaning based on pragmatic knowledge.

On the issue of classification of compounds, Scalise and Bisetto (2009:35) outline three main reasons why the classification of compounds that appear in current linguistic literature lack inter-linguistic homogeneity: (a) terminology is often associated with a single language and is thus, not valid from an inter-linguistic point of view; (b) current research, but also less recent works. Scalise and Bisetto (2009, p. 51) posit that, "the Anglo-Saxon linguistics focused traditionally – and almost exclusively – on two types of formations: root (or primary) compounds and synthetic (or secondary) compounds. These two notions could not be adequately extended to languages such as Romance languages, in which terms like root or synthetic did not seem to apply conveniently; (c) classifications have often been built upon inconsistent criteria and therefore the different types of compounds are not easy to compare.

Compounds are classified based on form, syntactic categories and headedness. Based on form, Caesar (2018) classified them as closed/solid form, hyphenated form and the open/spaced form. Based on syntactic category, the syntactic categories which make up compound words are language specific, noun-noun, noun-adjective, noun-verb, noun-postposition, verb-verb, noun-verb-noun, etc are identified in different languages. Two types of compounds are classified based on headedness; those that have semantic head, known as headed or endocentric compounds and those that do not have semantic head also known as headless or exocentric compounds.

Another controversial issue about compounds is their distinction from phrases. Lieber & Štekauer (2009b) attribute that to two things; one the elements that make up

compounds in some languages are not free-standing words, but rather stems or roots. On the other hand, we cannot always make a clean distinction between compound words and derived words or phrases. Haspelmath & Sims (2010, p. 191) in an attempt to provide a solution to the problem posit that, "a semantic property of almost all compounds is that, a dependent noun does not denote a particular referent but the entire class; in other words, a dependent noun in a compound is not referential but generic." That notwithstanding, generic interpretation is not a sufficient criterion by itself. Therefore, we need additional phonological, morphological and syntactic properties to identify compounds when they and phrase patterns are formally similar.

Chapter Three discusses how data for the study was collected. Data for this study was gathered from both primary and secondary sources. From primary sources, I used electronic media, elicitation, and self-generated data by my native speaker intuition. Some of the secondary sources are; The Sısaalı orthography Guide by Sısaalı Literacy and Development Program (SILDEP), the translated version of the Old and New Testaments by the Ghana Institute of Linguistics, Literacy and Bible Translation (GILLBT) and the Sısaala-English/English-Sısaala Dictionary by Blass et. al (1975, 2002) and the grammar of Sısaalı-pasaalı by Mcgill, Fembeti and Toupin (1999). The data is analysed within the framework of Booij's construction morphology.

CxM deals with the structure, formation and meaning of words. According to Booij (2010b), CxM provides a framework within which both the similarities and the discrepancies of word level and phrase level constructs can be accounted for. Booij (2016) indicates that, "morphological schemas characterize the 'Gestalt' of complex words and their holistic properties." The schemas can account for holistic properties of morphological constructions, properties that cannot be derived from those of their

constituents. These morphological schemas express predictable properties of existing complex words and indicate how new ones can be coined. CxM is centred on the word as a minimal linguistic sign that combines form and meaning. Three types of information are thus linked to a word: PHON(ological), SYN(tactic) and SEM(antic) and as Booij (2010d, p. 5) argues, "any morphological system or the grammar of words must deal with the systematic relation between all three components." The theory of word structure in CxM then portrays a word as a complex piece of information that connects a particular sequence of sounds to a particular meaning. I therefore tried to present the forms of the words that constitute a complex word in Sɪsaalɪ and establish the relation that bines them together using the schemas.

In Chapter Four, I demonstrated that formal (syntactic and phonological) and semantic criteria can be utilized to separate compounds from other grammatical structures like noun phrases and derived complex words in Sɪsaalɪ. It has been established that, Sɪsaalɪ compounds are free standing words while derived words contain affixes. Compounding in Sɪsaalɪ is also characterized by segment elision. Sɪsaalɪ compounds are syntactically inseparable and do not undergo internal modification. Semantically, Sɪsaalɪ compounds name a new referent or concept that is distinct from the constituents. Sɪsaalɪ compounds are classified based on syntactic categories and headedness. The syntactic categories that form Sɪsaalɪ compounds are noun-noun, noun-adjective, noun-verb, verb-verb, noun-noun-adjective and noun-verb-noun. I also discussed a group of compounds Gariba (2017) referred to as complex compounds, namely, noun-noun-adjective, and personal name compounds. The relation between the constituents of a Sɪsaalɪ compound are solely dependent on the individual compounds. For noun-verb in Sɪsaalɪ the nominalising affix -lɪ/rɪ, ni/na

(singular,) la/ra (plural) must be attached to the compound to make it nominal. It remains an infinite verb without the nomilalising affix. Verb–Verb compounds are different from phrasal verbs because they do not have prepositions in between them or have any idiomaticity in meaning. The verbs denote two actions in single endeavour. They occur within a single non-complex clause and exhibit no explicit signs of coordination. I also established that both endocentric and exocentric compounds exist in Sısaalı.

In Chapter Five, I discussed the phonological processes that occur during compounding in Sısaalı. The phonological processes discussed are Assimilatory processes and syllable structure processes and presented them within Autosegmental framework. Vowel harmony, homorganic nasal assimilation, segment truncation and vowel elision are some of the phonological processes that are triggered in Sısaalı compounding process.

I argued that Sısaalı compounds obey strict co-occurrence restrictions of the two sets of vowels (+ATR and –ATR) harmony in mono-syllabic or simple multi-syllabic, non-compound words. Homorganic Nasal Assimilation, segment truncation and vowel elision are other phonological processes that are triggered in Sısaalı compounding.

6.2 Findings

Analysis from the data reveals that, the syntactic constituents of Sısaalı compounds include Noun-Noun, Noun-Adjective, Verb-Verb, Noun-Verb, Noun-Verb-Noun, Noun-Noun-Adjective and personal name compounds. It is revealed that, in Sısaalı, N-N compounds are the most prevalent forms of compounds. It is also noticed that N-N compounds in the language are nominal. There also exit personal names in Sısaalı

that are compounds. The constituents of some of these names are a combination of different syntactic categories. These structures are considered compounds because they function as single grammatical unit which do not allow internal modification. Syntactically, like phrasal compounds, these personal name compounds also behave like simple words.

In relation to headedness, it is observed that, there exist both endocentric and exocentric compounds in Sɪsaalɪ. The meanings of most endocentric compounds are hyponyms of the right hand constituent making the right constituents the semantic heads. Hence most endocentric compounds in Sɪsaalɪ are generally right-headed despite the existence of a few left-headed ones. It is also observed that Sɪsaalɪ N-V compounds are endocentric with all three types recorded; right headed, left headed and coordinate.

N-N compounds in Sɪsaalɪ has different semantic relationships between the elements. This affirms the observation of Bauer and Tarasova (2013) that pragmatics is required to fully interpret the relation between the elements of Sɪsaalɪ compounds. For noun – verb compounds, the semantic relationship between the noun and the verb is that of agentive. The interpretation of Sɪsaalɪ N-A compounds is not completely straightforward, because the adjective members of the compounds may sometimes not preserve their pure adjectival meaning in the compounds. They however express semantic physical properties such as colour and dimension. V-V compounds in Sɪsaalɪ behave as serial verb constructions, where both verbs have equal semantic contribution to the semantics of the whole, naming a complex event. N-V-N compounds in Sɪsaalɪ are transparent in nature where the compound is in a hyponymy relation with nominal head constituent whiles the modifying constituents describes

what kind of action the head noun is used for. The relationship among the different syntactic categories of the personal name compounds depends on their grammaticality in the language.

Some phonological processes that occur in Sɪsaalɪ compounding include: vowel harmony, homorganic nasal assimilation, vowel elision segment deletion and syllable deletion.

6.3 Conclusion

I established that, compounding is a very productive phenomenom in Sɪsaalɪ. I also argued that Noun-Noun, Noun-Adjective, Noun-Verb, Noun-Verb-Noun, Noun-Noun-Adjective and personal name compounds in Sɪsaalɪ result in nominal compounds. Contrary to Gariba (2017) assession, Sɪsaalɪ Verb-Verb combination is seen as serial verbs construction rather than compounds. Therefore Verb-Verb and Noun-Postposition compounding is unproductive in Sɪsaalɪ.

6.4 Recommendation

This thesis is the first comprehensive attempt that seeks to explore the nature of compounds in Sɪsaalɪ. Being the first study to have adopted word-based approach (CxM) to analyse Sɪsaalɪ compounds, the study has revealed how meanings of Sɪsaalɪ compounds that otherwise could not be accounted for using the compositionality principle, can actually be explained. Sɪsaalɪ is a tone language but owing to the limitation of time and space, this study couldn't delve into effects of tone in Sɪsaalɪ compounding. The types of exocentric compounds have not also been analysed in this study. I therefore recommend strongly that subsequent studies look into the type of exocentric compounds in Sɪsaalɪ and tonal effects on compounds in the language.

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